

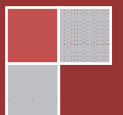
Turkish Online Journal of Educational Technology

Special Issue for INTE - ITICAM 2019
October 2019
Volume 1

Prof. Dr. Aytekin İşman
Editor-in-Chief

Prof. Dr. Jerry WILLIS - ST John Fisher University in Rochester, USA
Prof. Dr. J. Ana Donaldson - AECT President
Editors

Assist.Prof.Dr. Fahme DABAJ - Eastern Mediterranean University, TRNC
Associate Editor





**THE
TURKISH ONLINE
JOURNAL
OF
EDUCATIONAL
TECHNOLOGY**

October 2019
Special Issue for INTE-ITICAM 2019

VOLUME 1

Prof. Dr. Aytekin İşman
Editor-in-Chief

Editors
Prof. Dr. Jerry Willis
Prof. Dr. J. Ana Donaldson

Associate Editor
Assist. Prof. Dr. Fahme Dabaj

ISSN: 2146 - 7242

Indexed by
Education Resources Information Center - **ERIC**

Copyright © THE TURKISH ONLINE JOURNAL OF EDUCATIONAL TECHNOLOGY

All rights reserved. No part of TOJET's articles may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

Published in TURKEY

Contact Address:
Prof. Dr. Aytekin İŞMAN
TOJET, Editor in Chief
Sakarya-Turkey

Message from the Editor-in-Chief

Dear Colleagues,

We are very pleased to publish Special Issue Volume 1 for INTE-2019, ITICAM 2019 conferences. This issue covers the papers presented at International Conference on New Horizons in Education and International Trends and Issues in Communication & Media Conference which were held in Prague, Czech Republic. These papers are about different research scopes and approaches of new developments and innovation in education, communication, media and technology.

Call for Papers

TOJET invites you article contributions. Submitted articles should be about all aspects of educational technology. The articles should be original, unpublished, and not in consideration for publication elsewhere at the time of submission to TOJET. Manuscripts must be submitted in English. TOJET is guided by its editors, guest editors and advisory boards. If you are interested in contributing to TOJET as an author, guest editor or reviewer, please send your CV to tojet.editor@gmail.com.

October 15, 2019

Prof. Dr. Aytekin ISMAN

Sakarya University

Editorial Board

Editors

Prof. Dr. Aytekin İşnan - Sakarya University, Turkey
Prof. Dr. Jerry Willis - ST John Fisher University in Rochester, USA
Prof. Dr. J. Ana Donaldson - AECT President

Associate Editor

Assist.Prof.Dr. Fahne Dabaj - Eastern Mediterranean University, TRNC

Editorial Board

Prof.Dr. Ahmet Zeki Saka - Karadeniz Technical University, Turkey
Prof.Dr. Akif Ergin - Başkent University, Turkey
Prof.Dr. Ali Al Mazari - Alfaisal University, Kingdom of Saudi Arabia
Prof.Dr. Ali Ekren Özkul - Anadolu University, Turkey
Prof.Dr. Anil P. Gaikwad - Yashwantrao Chavan Maharashtra Open University, India
Prof.Dr. Antoinette J. Muntjewerff - University of Amsterdam
Prof.Dr. Arif Altun - Hacettepe University, Turkey
Prof.Dr. Arvind Singhal - University of Texas, USA
Prof.Dr. Asaf Varol - Firat University, Turkey
Prof.Dr. Aytekin İşnan - Sakarya University, Turkey
Prof.Dr. Brent G. Wilson - University of Colorado at Denver, USA
Prof.Dr. Buket Akkoyunlu - Hacettepe University, Turkey
Prof.Dr. Carmencita L. Castolo - Polytechnic University of the Philippines, Philippines
Prof.Dr. Cengiz Hakan Aydın - Anadolu University, Turkey
Prof.Dr. Chang-Shing Lee - National University of Tainan, Taiwan
Prof.Dr. Charlotte N. (Lani) Gunawardena - University of New Mexico, USA
Prof.Dr. Chi - Jui Lien - National Taipei University of Education, Taiwan
Prof.Dr. Chih - Kai Chang - National University of Taiwan, Taiwan
Prof.Dr. Chin-Min Hsiung - National pingtung university, Taiwan
Prof.Dr. Colin Latchen - Open Learning Consultant, Australia
Prof.Dr. Colleen Sexton - Governor State University, USA
Prof.Dr. Denetrios G. Sampson - University of Piraeus, Greece
Prof.Dr. Dinitier G. Velez - University of National and World Economy, Bulgaria
Prof.Dr. Don M. Flournoy - Ohio University, USA
Prof.Dr. Dongsik Kin - Hanyang University, South Korea
Prof.Dr. Enver Tahir Rıza - Dokuz Eylül University, Turkey
Prof.Dr. Eralp Altun - Ege University, Turkey
Prof.Dr. Feng-chiao Chung - National pingtung university, Taiwan
Prof.Dr. Ferhan Odabaşı - Anadolu University, Turkey
Prof.Dr. Finland Cheng - National pingtung university, Taiwan
Prof.Dr. Fong Soon Fook - Universiti Sains Malaysia, Malaysia
Prof.Dr. Francine Shuchat Shaw - New York University, USA
Prof.Dr. Gianni Viardo Vercelli - University of Genova, Italy
Prof.Dr. Gwo - Dong Chen - National Central University Chung - Li, Taiwan
Prof.Dr. Hafize Keser - Ankara University, Turkey
Prof.Dr. Halil İbrahim Yalın - Gazi University, Turkey
Prof.Dr. Heli Ruokano - University of Lapland, Finland
Prof.Dr. Henry H.H. Chen - National pingtung university, Taiwan
Prof.Dr. Ing. Giovanni Adorni - University of Genova, Italy
Prof.Dr. J. Ana Donaldson - AECT President
Prof.Dr. J. Michael Spector - University of North Texas, USA
Prof.Dr. Jerry Willis - ST John Fisher University in Rochester, USA
Prof.Dr. Jie-Chi Yang - National central university, Taiwan
Prof.Dr. Kinshuk - Athabasca University, Canada
Prof.Dr. Kiyoshi Nakabayashi - Chiba Institute of Technology, Japan

Prof.Dr. Kuniko Aoki - The Open University of Japan, Japan
Prof.Dr. Kuo - En Chang - National Taiwan Normal University, Taiwan
Prof.Dr. Kuo - Hung Tseng - Meiho Institute of Technology, Taiwan
Prof.Dr. Kuo - Robert Lai - Yuan - Ze University, Taiwan
Prof.Dr. Liu Meifeng - Beijing Normal University, China
Prof.Dr. Marina Stock Meisaac - Arizona State University, USA
Prof.Dr. Mehmet Ali Dikermen - Middlesex University, UK
Prof.Dr. Mehmet Çağlar - Near East University, TRNC
Prof.Dr. Mehmet Gürol - Fırat University, Turkey
Prof.Dr. Mehmet Kesin - Anadolu University, Turkey
Prof.Dr. Mei-Mei Chang - National pingtung university, Taiwan
Prof.Dr. Melissa Hui-Mei Fan - National central university, Taiwan
Prof.Dr. Min Jou - National Taiwan Normal University, Taiwan
Prof.Dr. Ming - Puu Chen - National Taiwan Normal University, Taiwan
Prof.Dr. Murat Barkan - Yaşar University, Turkey
Prof.Dr. Mustafa Murat Inceoğlu - Ege University, Turkey
Prof.Dr. Mustafa Şahin Dündar - Sakarya University, Turkey
Prof.Dr. Nabi Bux Junani - International Islamic University, Pakistan
Prof.Dr. Nian - Shing Chen - National Sun Yat - Sen University, Taiwan
Prof.Dr. Paul Gibbs - Middlesex University, UK
Prof.Dr. Petek Aşkar - Hacettepe University, Turkey
Prof.Dr. Randane Younsi - Ecole polytechnique de Montreal, Canada
Prof.Dr. Rauf Yıldız - Çanakkale 19 Mart University, Turkey
Prof.Dr. Roger Hartley - University of Leeds, UK
Prof.Dr. Rozhan Hj. Mohanned Idrus - Universiti Sains Malaysia, Malaysia
Prof.Dr. Saedah Siraj - University of Malaya, Malaysia
Prof.Dr. Sello Mokoena - University of South Africa, South Africa
Prof.Dr. Servet Bayran - Yeditepe University, Turkey
Prof.Dr. Shan - Ju Lin - National Taiwan University, Taiwan
Prof.Dr. Sheng Quan Yu - Beijing Normal University, China
Prof.Dr. Shi-Jer Lou - National pingtung university, Taiwan
Prof.Dr. Shu - Sheng Liaw - China Medical University, Taiwan
Prof.Dr. Shu-Hsuan Chang - National Changhua University of Education, Taiwan
Prof.Dr. Stefan Aufenanger - University of Mainz, Germany
Prof.Dr. Stephen Harnon - Georgia State University, USA
Prof.Dr. Stephen J.H. Yang - National Central University, Taiwan
Prof.Dr. Sun Fuwan - China Open University, China
Prof.Dr. Sunny S.J. Lin - National Chiao Tung University, Taiwan
Prof.Dr. Teresa Franklin - Ohio University, USA
Prof.Dr. Toshio Okamoto - University of Electro - Communications, Japan
Prof.Dr. Toshiyuki Yanamoto - Japan
Prof.Dr. Tzu - Chien Liu - National Central University, Taiwan
Prof.Dr. Ülkü Köyner - Lefke European University, TRNC
Prof.Dr. Vaseudev D.Kulkarni - Hutatna Rajjguru College, Rajguruunagar(Pune),(M.S.) INDIA
Prof.Dr. Xibin Han - Tsinghua University, China
Prof.Dr. Yau Hon Keung - City University of Hong Kong, Hong Kong
Prof.Dr. Yavuz Akpınar - Boğaziçi University, Turkey
Prof.Dr. Yen-Hsyang Chu - National central university, Taiwan
Prof.Dr. Yuan - Chen Liu - National Taipei University of Education, Taiwan
Prof.Dr. Yuan-Kuang Guu - National pingtung university, Taiwan
Prof.Dr. Young-Kyung Min - University of Washington, USA
Assoc.Prof.Dr. Abdullah Kuzu - Anadolu University, Turkey
Assoc.Prof.Dr. Adile Aşkın Kurt - Anadolu University, Turkey
Assoc.Prof.Dr. Ahmet Eskicunali - Sakarya University
Assoc.Prof.Dr. Aijaz Ahmed Gujjar - Sindh Madressatul Islam University, Pakistan
Assoc.Prof.Dr. Anita G. Welch - Ball State University, USA
Assoc.Prof.Dr. Aytaç Göğüş - Okan University, Turkey
Assoc.Prof.Dr. Chen - Chung Liu - National Central University, Taiwan

Assoc.Prof.Dr. Cheng - Huang Yen - National Open University, Taiwan
Assoc.Prof.Dr. Ching - fan Chen - Tankang University, Taiwan
Assoc.Prof.Dr. Ching Hui Alice Chen - Ming Chuan University, Taiwan
Assoc.Prof.Dr. Chiung - sui Chang - Tankang University, Taiwan
Assoc.Prof.Dr. Danguole Rutkauskienė - Kauno Technology University, Lithuania
Assoc.Prof.Dr. David Tawei Ku - Tankang University, Taiwan
Assoc.Prof.Dr. Eric Meng - National pingtung university, Taiwan
Assoc.Prof.Dr. Eric Zhi Feng Liu - National central university, Taiwan
Assoc.Prof.Dr. Erkan Tekinarslan - Bolu Abant İzzet Baysal University, Turkey
Assoc.Prof.Dr. Ezendu Ariwa - London Metropolitan University, U.K.
Assoc.Prof.Dr. Fahad N. AlFahad - King Saud University
Assoc.Prof.Dr. Fahriye Altınay - Near East University, TRNC
Assoc.Prof.Dr. Gurnan Kaur Sidhu - Universiti Teknologi MARA, Malaysia
Assoc.Prof.Dr. Hao - Chiang Lin - National University of Tainan, Taiwan
Assoc.Prof.Dr. Hasan Çalışkan - Anadolu University, Turkey
Assoc.Prof.Dr. Hasan KARAL - Karadeniz Technical University, Turkey
Assoc.Prof.Dr. Hsin - Chih Lin - National University of Tainan, Taiwan
Assoc.Prof.Dr. Huey - Ching Jih - National Hsinchu University of Education, Taiwan
Assoc.Prof.Dr. Huichen Zhao - School of Education, Henan University, China
Assoc.Prof.Dr. Hüseyin Yaratın - Eastern Mediterranean University, TRNC
Assoc.Prof.Dr. I - Wen Huang - National University of Tainan, Taiwan
Assoc.Prof.Dr. I Tsun Chiang - National Changhua University of Education, Taiwan
Assoc.Prof.Dr. Ian Sanders - University of the Witwatersrand, Johannesburg
Assoc.Prof.Dr. İsnail İpek - Fatih University, Turkey
Assoc.Prof.Dr. Işıl Kabakcı - Anadolu University, Turkey
Assoc.Prof.Dr. Jana Birova - Conenius University in Bratislava, Slovakia
Assoc.Prof.Dr. Jie - Chi Yang - National Central University, Taiwan
Assoc.Prof.Dr. John I-Tsun Chiang - National Changhua University of Education, Taiwan
Assoc.Prof.Dr. Ju - Ling Shih - National University of Taiwan, Taiwan
Assoc.Prof.Dr. Koong Lin - National University of Tainan, Taiwan
Assoc.Prof.Dr. Kuo - Chang Ting - Ming - HSIN University of Science and Technology, Taiwan
Assoc.Prof.Dr. Kuo - Liang Ou - National Hsinchu University of Education, Taiwan
Assoc.Prof.Dr. Larysa M. Mytsyk - Gogol State University, Ukraine
Assoc.Prof.Dr. Li - An Ho - Tankang University, Taiwan
Assoc.Prof.Dr. Li Yawan - China Open University, China
Assoc.Prof.Dr. Manoj Kumar Saxena - Central University of Himachal Pradesh, Dharanshala, Kangra, India
Assoc.Prof.Dr. Mike Joy - University of Warwick, UK
Assoc.Prof.Dr. Ming-Charng Jeng - National pingtung university, Taiwan
Assoc.Prof.Dr. Murat Ataizi - Anadolu University, Turkey
Assoc.Prof.Dr. Nergüz Serin - Cyprus International University, TRNC
Assoc.Prof.Dr. Norazah Mohd Suki - Universiti Malaysia Sabah, Malaysia
Assoc.Prof.Dr. Nornaliza Abd Rahin - Universiti Putra Malaysia, Malaysia
Assoc.Prof.Dr. Noushad Husain - Maulana Azad National Urdu University, Hyderabad
Assoc.Prof.Dr. Oğuz Serin - Cyprus International University, TRNC
Assoc.Prof.Dr. Ping - Kuen Chen - National Defense University, Taiwan
Assoc.Prof.Dr. Popat S. Tanbade - Prof. Rankrishna More College, India
Assoc.Prof.Dr. Prakash Khanale - Dnyanopasak College, INDIA
Assoc.Prof.Dr. Pranela Krish - Universiti Kebangsaan Malaysia, Malaysia
Assoc.Prof.Dr. Tzu - Hua Wang - National Hsinchu University of Education, Taiwan
Assoc.Prof.Dr. Vincent Ru-Chu Shih - National Pingtung University of Science and Technology, Taiwan
Assoc.Prof.Dr. Wu - Yui Hwang - National Central University, Taiwan
Assoc.Prof.Dr. Ya-Ling Wu - National pingtung university, Taiwan
Assoc.Prof.Dr. Yahya OMohamed Elhadj - AL Inan Muhammad Ibn Saud University, Saudi Arabia
Assoc.Prof.Dr. Yavuz Akbulut - Anadolu University
Assoc.Prof.Dr. Zehra Altınay - Near East University, TRNC
Assoc.Prof.Dr. Zhi - Feng Liu - National Central University, Taiwan
Assist.Prof.Dr. Aaron L. Davenport - Grand View College, USA
Assist.Prof.Dr. Alper Beyazıt - Yeditepe University, Turkey
Assist.Prof.Dr. Andreja Istenic Starcic - University of Primorska, Slovenia

Assist.Prof.Dr. Betül Özkan - University of Arizona, USA
Assist.Prof.Dr. Burçin Kısa Işık - Gaziantep University, Turkey
Assist.Prof.Dr. Chiu - Pin Lin - National Hsinchu University of Education, Taiwan
Assist.Prof.Dr. Chun - Ping Wu - Tankang University, Taiwan
Assist.Prof.Dr. Chun - Yi Shen - Tankang University, Taiwan
Assist.Prof.Dr. Chung-Yuan Hsu - National pingtung university, Taiwan
Assist.Prof.Dr. Dale Havill - Dhofar University, Sultanate of Onan
Assist.Prof.Dr. Devrin Akgündüz - İstanbul Aydın Üniversitesi, Turkey
Assist.Prof.Dr. Fernan Konuknan - College of Arts and Science, Sport Science Program, Qatar University
Assist.Prof.Dr. Filiz Varol - Fırat University, Turkey
Assist.Prof.Dr. Guan - Ze Liao - National Hsinchu University of Education, Taiwan
Assist.Prof.Dr. Hsiang chin - hsiao - Shih - Chien University, Taiwan
Assist.Prof.Dr. Huei - Tse Hou - National Taiwan University of Science and Technology, Taiwan
Assist.Prof.Dr. Hüseyin Ünlü - Aksaray University, Turkey
Assist.Prof.Dr. Jagannath. K Dange - Kuvenpu University, India
Assist.Prof.Dr. K. B. Praveena - University of Mysore, India
Assist.Prof.Dr. Kanvaria Vinod Kunar - University of Delhi, India
Assist.Prof.Dr. Lotfi Salhi - University of Gafsa, Tunisia
Assist.Prof.Dr. Marko Radovan - University of Ljubljana, Slovenia
Assist.Prof.Dr. Min-Hsien Lee - National central university, Taiwan
Assist.Prof.Dr. Mohannad Akran Mohannad Al-Zu'bi - Jordan Al Balqa Applied University, Jordan
Assist.Prof.Dr. Muhannet Denirbilek - Süleyman Demirel University, Turkey
Assist.Prof.Dr. Pamela Ewell - Central College of IOWA, USA
Assist.Prof.Dr. Pei-Hsuan Hsieh - National Cheng Kung University, Taiwan
Assist.Prof.Dr. Pey-Yan Liou - National central university, Taiwan
Assist.Prof.Dr. Phaik Kin, Cheah - Universiti Tunku Abdul Rahman, Kanpar, Perak
Assist.Prof.Dr. Ping - Yeh Tsai - Tankang University, Taiwan
Assist.Prof.Dr. S. Arulchelvan - Anna University, India
Assist.Prof.Dr. Seçil Kaya - Anadolu University, Turkey
Assist.Prof.Dr. Selma Koç Vonderwell - Cleveland State University, Cleveland
Assist.Prof.Dr. Sunil Kunar - National Institute of Technology, India
Assist.Prof.Dr. Tsung - Yen Chuang - National University of Taiwan, Taiwan
Assist.Prof.Dr. Vahid Motanedi - Tarbiat Moallan University, Iran
Assist.Prof.Dr. Wong Kung Teck - Sultan Idris Education University, Malaysia
Assist.Prof.Dr. Yalın Kılıç Türel - Fırat University, Turkey
Assist.Prof.Dr. Yasin Aslan - Sinap University, Turkey
Assist.Prof.Dr. Yu - Ju Lan - National Taipei University of Education, Taiwan
Assist.Prof.Dr. Zehra Alakoç Burna - Mersin University, Turkey
Assist.Prof.Dr. Zerrin Ayvaz Reis - İstanbul University, Turkey
Assist.Prof.Dr. Zülfü Genç - Fırat University, Turkey
Dr. Arnaud P. Prevot - Forest Ridge School of the Sacred Heart, USA
Dr. Balakrishnan Muniandy - Universiti Sains Malaysia, Malaysia
Dr. Brendan Tangney - Trinity College, Ireland
Dr. Chan Shiau Wei - Universiti Tun Hussein Onn Malaysia, Malaysia
Dr. Chen Haishan - China Open University, China
Dr. Chin Hai Leng - University of Malaya, Malaysia
Dr. Chin Yeh Wang - National Central University, Taiwan
Dr. Chun Hsiang Chen - National Central University, Taiwan
Dr. Chun Hung Lin - National central university, Taiwan
Dr. Esra Telli - Hacettepe University, Turkey
Dr. Farrah Dina Yusop - University of Malaya, Malaysia
Dr. Fatma Bayrak - Hacettepe University, Turkey
Dr. Gökhan Akçapınar - Hacettepe University, Turkey
Dr. Gökhan Dağhan - Hacettepe University, Turkey
Dr. H. İzzet İsmail - Universiti Sains Malaysia, Malaysia
Dr. H. İzzet İsmail - National University of Malaysia, Malaysia
Dr. I-Hen Tsai - National University of Tainan, Taiwan
Dr. İsmail İpek - Bilkent University, Turkey
Dr. Jarkko Suhonen - University of Eastern Finland, Finland

Dr. Li Ying - China Open University, China
Dr. Norlidah Alias - University of Malaya, Malaysia
Dr. Pinar Nuhoglu - Hacettepe University, Turkey
Dr. Rosnaini Mahnud - Universiti Putra Malaysia, Malaysia
Dr. Sachin Sharna - Faridabad Institute of Technology, Faridabad
Dr. Seetharan Chittoor Jhansi - Pushpa Navnit Shah Centre for Lifelong Learning, India
Dr. Tan Shu Sin - University of Malaya, Malaysia
Dr. Tiong Goh - Victoria University of Wellington, New Zealand
Dr. Vikrant Mishra - Shivalik College of Education, India
Dr. Zahra Nainie - University of Malaya, Malaysia
Dr. Zari Sadat Seyyedrezaie - Islamic Azad University, Iran

Table Of Contents

A COMMUNITY BASED-PROJECT THROUGH COLLABORATIVE DESIGN AND UPCYCLING: 'THE CO-UPCYCLING WORKSHOP' (2018, 2019)	1
<i>Irene MESTRE, Maria del Pilar ROVIRA, Maria F. ABANDO, Margalida CANET, Francisca M. TORRENS, Maria del Mar VILALTA</i>	
AN APPLICATION ON REDUCING STUDENTS' MATHEMATICAL ANXIETY LEVELS	14
<i>Meryem KESKİN, Mehmet BEKDEMİR</i>	
AN INVESTIGATION OF MIDDLE SCHOOL STUDENTS' SCIENTIFIC ATTITUDES IN TERMS OF DIFFERENT VARIABLES	20
<i>Murat GENÇ</i>	
ANALYSIS OF THE COVER DESIGNS OF CHILDREN'S JOURNALS IN TERMS OF BAUHAUS SCHOOL	25
<i>Yasemin Gülşen Yılmaz, Süleyman Hakan Yılmaz</i>	
APPROACHING TEACHING-LEARNING PROCESS IN DESIGN: COMPETENCE-BASED LEARNING AND PROFESSIONAL PROFILE	32
<i>Maria del Pilar ROVIRA, Maria del Mar VILALTA, Francisca M. TORRENS, Irene MESTRE, Margalida CANET, Maria F. ABANDO</i>	
BENEFITS AND CHALLENGES OF FRENCH IMMERSION SCIENCE INSTRUCTION	41
<i>Ginette ROBERGE, Yovita GWEKRENERE</i>	
CAMPUS VIOLENCE AND WOMEN'S ACADEMIC PERFORMANCE	51
<i>Lana Stermac, Jenna Cripps</i>	
CONTEXT-BASED PRACTICES IN SCIENCE COURSE BOOKS	58
<i>Murat GENÇ</i>	
CONTRADICTIONS BETWEEN PUBLIC SPENDING AND EMPLOYMENT IN GRADUATES OF HIGHER EDUCATION IN MEXICO	65
<i>Rubén Macías Acosta, Manuel Díaz Flores, Roberto González Acolt</i>	
DEVELOPING THE ALGORITHMIC SKILLS OF FOREIGN STUDENTS	70
<i>Piroska BIRÓ</i>	
DIFFUSION OF YOUTUBE IN TURKEY	77
<i>Aytekin ISMAN, Kübra GÜZELSOY</i>	
DIGITALIZATION OF THE STUDY PROCESS: CASE STUDY OF LATVIA PUBLIC	90

UNIVERSITIES

Gunta GRINBERGA-ZALITE, Andra ZVIRBULE, Baiba RIVZA, Tatjana LEJAVA

DISSEMINATION AND TRAINING EFFORTS IN THE FRAME OF EUROPEAN RESEARCH PROJECTS

95

W. Brenner, N. Adamovic

ETHICAL ISSUES IN EDUCATION AND THE ROLE OF TEACHERS IN ETHICS EDUCATION: FROM PAST TO PRESENT

100

Nur Yeliz GÜLCAN

EXAMINATION OF SECONDARY SCHOOL (5TH -8TH GRADES) PHYSICAL TRAINING AND SPORTS TEACHING PROGRAM ACCORDING TO TAXONOMIES

104

M. Enes IŞIKGÖZ, Kerim Karabacak

EXPLORING THAI IN-SERVICE SCIENCE TEACHERS UNDERSTANDING AND TEACHING PRACTICE IN STEM EDUCATION

112

Kotchakorn MANGMEE, Thitiya BONGKOTPHET

FACTORS ANALYSIS OF DIGITAL LEADERSHIP OF ADMINISTRATORS IN EDUCATIONAL OPPORTUNITY EXPANSION SCHOOLS

117

Panumas CHANSRI, Dawruwan THAWINKARN

FACTORS IN THE ABILITY OF (SELF) REFLECTION AS A TOOL TO COPE WITH THE DEMANDING PRACTICE OF SOCIAL WORK WITH VULNERABLE CHILDREN AND THEIR FAMILIES

122

Radka POLÁKOVÁ, Marek MIKULEC

FROM TRADITIONAL TO NEW MEDIA “An Evaluation of 31st March Local Elections in Turkey as a Sample”

129

Süleyman Bedri Kalyoncuoğlu, Özge Özgür Bayır

GUESSING THE MEANING FROM CONTEXT CLUES TO UNDERSTAND ENGLISH VOCABULARY OF MATHAYOM SUKSA 6 STUDENTS IN THE DEMONSTRATION SCHOOL OF KHON KAEN UNIVERSITY

136

Nujaree Sukasame

IMPLEMENTATION OF SUPERVISION IN NURSING

143

Zuzana Bachratá, Jarmila Kristová

INPUT FOR CURRICULUM DESIGN: DETERMINING THE ATTITUDES OF STUDENTS TOWARDS ENGLISH COURSES

151

Dilek Türkarlan, Elif Akdemir

INTEGRATION OF SOFT SKILLS IN THE NORMAL LECTURE TURNS OF BASIC ACADEMIC STUDIES

164

Eckehard MÜLLER

INTERVENTION PROGRAM FOR HELPING PARENTING STUDENTS IN
NON-FORMAL AND INFORMAL EDUCATION CENTERS (NF-IEC): THAILAND 169

Unchalee SANRATTANA, Pinayo PROMMUANG

INTRODUCTION TO PROBLEMATICS OF UNIVERSITY STUDIES OF SPACE
HOLISTIC ECONOMICS FROM THE VIEWPOINT OF DOCTORAL STUDIES 181

Tomáš R. ZEITHAMER

INVESTIGATION AND EVALUATION OF THE OPINIONS OF THE TRNC PRIMARY
SCHOOL ADMINISTRATORS FOR THEIR SUBSTANCE AND UNDERSTANDING OF
KNOWLEDGE MANAGEMENT 185

Tolga Küçüker, Hasan Eriş

MEASUREMENT OF HIGH SCHOOL STUDENTS' PERCEPTIONS OF INDUSTRIAL
CHEMISTRY COURSE LEARNING ENVIRONMENT 190

Serpil ÖZKURT SİVRİKAYA

METAPHORS ABOUT THE TREATMENT OF PATIENTS WITH JOINT,
NEUROLOGICAL AND SPORTS DISORDERS DURING REHABILITATION 194

*Ayla Tekin Orha, İsmail Sivri, Esra Kayabaşı, Buket Rende, Tuncay Colak, Belgin Bamaç,
Barış Zorbozan, Gazmend Rahova, Burhan İnan, Alper Talu, Ebuzer Akbaş*

ON THE ROLE OF PLAY IN MATHEMATICS 199

Rüveysa AKKAŞ DEDE

ON THE USE OF E-PORTFOLIO OPINIONS OF SCHOOL ADMINISTRATIVE
CANDIDATES 204

Hasan Eriş, Akış Yeşilada Vaiz, Derya Eriş, Özhan Güvenç

PERCEPTUAL LEARNING EXPERIMENTATION ON THE TEACHING OF
MANUFACTURING PROCESSES CONCEPTS FOR DESIGN STUDENTS 209

Ivan SANTOS, Sebastiana LANA

PHILOSOPHICAL MUSINGS ON BEING, CULTURE AND EXPERIENTIALITY 214

Matti ITKONEN

POEM WRITING THROUGH LESSON STUDY TO DEVELOP STUDENTS'
VOCABULARY DEMONSTRATION SECONDARY SCHOOL OF KHONKAEN
UNIVERSITY (FACULTY OF EDUCATION) THAILAND 222

Watcharaporn BUANI, Nujaree SUKASAME, Metta MARWIANG

SCIENCE TEACHER'S PERCEPTION OF SCIENTIFIC CONCEPT 230

Nuntawan PHUAPHAN, Sirinapa KIJKUAKUL, Suriya CHAPOO

SPACES IN 21ST CENTURY SCHOOL BUILDINGS EDUCATIONAL EXPECTATIONS – EXEMPLARY IMPLEMENTATIONS	237
<i>István Dániel SANDA</i>	
STRATEGIES USED IN THE INDIVIDUAL APPROACH AT LABOUR OFFICES AS A CHALLENGE FOR THE EDUCATIONAL PROCESS OF SOCIAL WORKERS	246
<i>Lenka CALETKOVÁ</i>	
STUDENTS' PERCEPTION ON MULTIPLE INTELLIGENCE-INSPIRED GENERAL EDUCATION CLASS	255
<i>KONG Siu Ping</i>	
STUDENTS' VIEWS ON USING OF THE INSTRUCTIONAL MATERIALS AND MATH LABORATORY BY TEACHER	260
<i>Sinan AYDIN</i>	
SUPPORTING HEART HEALTH	265
<i>Emília MIKLOVIČOVÁ, Jarmila KRISTOVÁ</i>	
SYNERGISTIC LEADERSHIP OF ADMINISTRATORS AFFECTING PROFESSIONAL TEACHERS UNDER THE OFFICE OF SURIN PRIMARY EDUCATIONAL SERVICE AREA 3	275
<i>Sudaporn KAEWDEE, Arkon UNGPUANG, Wallapha AREERUT, Dawruwan THAWINKARN</i>	
THE EXAMINATION OF EXPERIENCED CHEMISTRY TEACHERS' SCIENCE PROCESS SKILLS' DEVELOPMENT THROUGH PROFESSIONAL DEVELOPMENT	281
<i>Sevgi AYDIN-GÜNBATAR, Elif Selcan ÖZTAY, Ayşegül TARKIN-ÇELİKKIRAN, Betül EKİZ-KIRAN</i>	
THE FAIRY TALE AS A MEANS TO REINFORCE LEARNING IN MATHEMATICS: A DIDACTIC EXPERIMENT AT ITALIAN PRIMARY SCHOOL LEVEL	287
<i>Claudia Caprin, Daniela Leder, Marina Rocco, Verena Zadini</i>	
THE RELATIONSHIP BETWEEN MANAGEMENT FACTORS IN HIGHER EDUCATION INSTITUTE AND EMPLOYABILITY OF KHON KAEN UNIVERSITY GRADUATED	293
<i>Waraporn Phiewphanngam, Kanokorn Somprach, Dawruwan Thawinkarn</i>	
THE RELATIONSHIP BETWEEN THE ACADEMIC PROCRASTINATION BEHAVIORS AND THE ACADEMIC PERFORMANCE OF THE SECONDARY SCHOOL STUDENTS	299
<i>Seva Demiröz</i>	
THE STUDY OF MATHEMATICAL PROBLEM SOLVING FOR GRADE 6 STUDENTS USED LESSON STUDY AND OPEN APPROACH	306
<i>Metta MARWIANG, Kemmika SUWANNATHADA, Maneenapa SANGCHOMPU, Putcharee JUNPENG</i>	

THEORY OF EDUCATION IN A SOCIAL MOVEMENT. AN ETHNOGRAPHIC STUDY ON THE DISPUTE OF EDUCATION 314

Arminda Álamo Bolaños

WHAT MOVES TEACHERS TO MAKE IDEAS COME ALIVE? EXPLORING THE BRIDGE BETWEEN PROFESSIONAL DEVELOPMENT AND CLASSROOM TEACHING 319

Martin Klein

YOUR CUSTOMER IS CHANGING: THE END OF A 100-YEAR BUSINESS CYCLE 338

Barry Cross

A COMMUNITY BASED-PROJECT THROUGH COLLABORATIVE DESIGN AND UPCYCLING: 'THE CO-UPCYCLING WORKSHOP' (2018, 2019)

Irene MESTRE

Research Group in Innovation and design (GRID), member, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), professor, Palma, Mallorca, Illes Balears, Spain
imestre@escoladisseny.com

Maria del Pilar ROVIRA

Research Group in Innovation and design (GRID), main researcher, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), professor, Palma, Mallorca, Illes Balears, Spain
grid@escoladisseny.com

Maria F. ABANDO

Research Group in Innovation and design (GRID), lecturer, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), professor, Palma, Mallorca, Illes Balears, Spain
mabando@escoladisseny.com

Margalida CANET

Research Group in Innovation and design (GRID), member, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), lecturer, Palma, Mallorca, Illes Balears, Spain
mcanet@escoladisseny.com

Francisca M. TORRENS

Research Group in Innovation and design (GRID), member, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), professor, Palma, Mallorca, Illes Balears, Spain
ftorrens@escoladisseny.com

Maria del Mar VILALTA

Research Group in Innovation and design (GRID), member, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), professor
mvilalta@escoladisseny.com

ABSTRACT

The irruption of co-creation (co-design, collaborative design, and cooperative design) as a paradigm of Product Design is changing its practice. The collaborative design allows the participation of different stakeholders in the whole co-creation process, to ensure that the designed product meets the needs of the stakeholders involved. In addition, collaborating with ECOEMBES and the Fundació Deixalles allows the Balearics Higher School of Arts and Design to introduce sustainability issues into the process. In this context, 'The Co-Upcycling Workshop' was developed in 2018, February 19th-20th, and in 2019, February 19th-20th. The workshop was planned as a community-based research focused on Co-Upcycling, which uses the project methodology to encourage co-creation. Its aim was to bring the different stakeholders together to develop a co-design and Co-Upcycling project, in particular, to work together to create luminaires from selectively collected and sorted packaging materials. RESEARCH QUESTION: What impact has the co-upcycling experience had on participants' key competences and their perception about sustainability in 2018 and 2019? It being understood that 'Upcycling' is the transformation of waste into valuable objects. METHOD. Following the design methodology (theoretical introduction, design problem approach, collective development of ideas, realization from the proposed material, exhibition), a number of prototypes of lights were developed (thirteen prototypes in 2018; seven prototypes in 2019). They were made out of plastic material (PET, HDPE) that came from the collection of plastic packaging waste. RESULTS 'The Co-Upcycling Workshop' involved BA Product Design students from the Balearics Higher School of Arts and Design and high school students from the IES Politècnic. In the 2018 edition, there were 39 participants, 13 future product designers and 26 high school students, distributed in thirteen mixed working-teams. In the 2019 edition, there were 23 participants, 10 future product designers and 13 high school students, distributed in seven mixed working-teams. CONCLUSIONS. According to collected data, the positive results of the post-project satisfaction surveys will allow for a repetition of the workshop in future editions. This is an ongoing research project funded by the General Directorate of University Policy and Higher Education (Balearics Government), in the framework of a call to set up groups for academic research in higher artistic education in the Balearic Islands (2017-2020). This article reflects the views only of the authors, and the Balearics Government cannot be held responsible for any use which may be made of the information contained therein.

INTRODUCTION

The irruption of Co-Creation (Co-Design, Collaborative Design, and Cooperative Design) as a paradigm of Product Design, is changing its practice. THOMSON & KOSKINEN (2012: 38) defined co-design as a method that brings “the user closer to the design creation process”. It allows the participation of different stakeholders in the whole co-creation process, to ensure that the designed product meets the needs of all stakeholders involved.

In this context, ‘The Co-Upcycling Workshop’ was an Applied Research *through* Design (FRAYLING, 1993: 5) and a Teaching-Learning Co-Design Experience, developed in 2018, February 19th-20th, and in 2019, February 19th-20th.

In her analysis of musical creativities in real world practices, BURNARD (2012: 231-232, table 9.1) listed practice principles, mediating modalities, and authorship, which can be also used for design practice. This analysis is a very useful tool to describe ‘The Co-Upcycling Workshop’:

- Practice principles: original, problem solving, innovative, experimental, participatory, communicative, work-based, process-based and object-based.
- Mediating modalities: performance, low-tech, real-time and live.
- Authorship: collaborative.

‘The Co-Upcycling Workshop’ was planned as a Community-Based Research focused on Upcycling, which uses the Project-Based Learning method to encourage Co-Creation. It involved Balearics Higher School of Arts and Design stakeholders, such as ECOEMBES, the Fundaci3n Deixalles and the IES Polit3cnic.



Figure 1. ‘The Co-Upcycling Workshop’ (2018): theoretical introduction.

The Balearics Higher School of Arts and Design is specially interested in Community-Based Research activities, a kind of innovative research related to Project-Based Learning, that is the most important Learning-Teaching Method used in design and a type of Design-Based Approach that includes research and action by involving Community, which allow this higher education institution to promote participative design or co-design, involving stakeholders in the whole design process, that is, involving any group or individual who can affect or is affected by the achievement of the designers’ objectives (FREEMAN 2010).

RAMSDER (2003: 154) argued that practical work (‘learn by doing’, ‘hands-on’ experiences) is a teaching

strategy that includes different methods of instruction, such as clinical experience, projects, fieldwork, laboratories). Among them, Project-Based Learning is the most complete method of instruction and the most challenging approach.

Project-Based Learning promotes questioning, enhances research and allows participants to offer more options to be chosen, and ‘an open-ended question’, and it is also the way professional designers work. In fact, GARDNER (2006) ‘recommends student involvement in rich and multifaceted projects, encouraging them to sample widely and to make well motivated and diverse connections.’

As a method of instruction, Project-Based Learning is especially relevant in all stages of education, including early childhood education, primary education, secondary general education (lower and upper secondary level), secondary vocational education, post-secondary non-tertiary education, and tertiary education (short studies, first cycle/Bachelor, second cycle/Master, third cycle/Doctorate. It stimulates students’ motivation and creativity, design thinking, teamworking, and a close interaction between the context (environment), the object (project proposal) and the subjects (students, teachers, stakeholders). In fact, BOSS (2011) showed that ‘when the project approach takes place in the classroom, students gain opportunities to engage in real-world problem solving too’.

However, GARDNER (2006) stated that ‘it would be a mistake to consider projects a panacea for all education ills or as the royal road to a nirvana of knowledge. Some materials need to be taught in more disciplined, rote, or algorithmic ways. Some projects can become a license for fooling around, whereas others may function as a way of hiding fundamental deficiencies in the understanding of vital disciplinary context’.

For the purpose of ‘The Co-Upcycling Workshop’, and based on generic stakeholder map provided by FREEMAN (2010: 25), the Balearics Higher School of Arts and Design was able to create a stakeholder map based on an historical analysis of the environment of this higher education institution (FREEMAN, 2010: 54), with their own relationships, concerns and needs.

Stakeholders identified for ‘The Co-Upcycling Workshop’ were students, teaching staff, non-teaching staff, families, regional government, local government, national community organizations (such as ECOEMBES, a non-profit organization founded in 1996 that cares for the environment through recycling and the eco-design of packaging in Spain), local community organizations (such as, Fundació Deixalles, a non-profit organization created in 1986 by Acció Social del Bisbat de Mallorca & PiME Mallorca), local education institutions (such as the IES Politècnic).

Based on Sustainability, the ‘Co-Upcycling Workshop’ was aimed at working together two concepts: Collaborative Design (Co-Design) and Upcycling. It focused on bringing selected stakeholders together to develop a Co-Design and Upcycling Project, in particular, to work together to create luminaires from selectively collected and sorted waste packaging materials. This allowed the Balearics Higher School of Arts and Design to introduce sustainability issues into the process.



Figure 2. ‘The Co-Upcycling Workshop’ (2018): design problem approach.

The United Nations offered in 1987 the *official* definition for ‘Sustainability Development’, as the ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (BRUNDTLAND, 1987), and ‘Sustainable Development’ contains within it two key concepts (BRUNDTLAND, 1987): in the first place, as with stakeholders, the idea of ‘Needs’, and, in the second place, the idea of ‘Limitations’ imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

Further, researchers agreed that ‘Upcycling’ is a term introduced in 1994 by Reiner PILZ, and it is the opposite to ‘Downcycling’ or ‘Recycling’ (process of creating new low-quality materials or products): ‘Recycling (...), I call it down-cycling. They smash bricks, they smash everything. What we need is up-cycling, where old products are given more value, not less’ (KAY & MATRAVERS, 1994: 14; quoting Reiner PILZ words).

It’s all about sustainability, because this is the best background to face the future, especially during this period of crisis:

- Social Sustainability: education institutions, stakeholders, community in the whole, and its social actors; the people);
- Environmental Sustainability: resources (or the lack of them); and
- Economic Sustainability: money; profit.

To sum up, Sustainability, Limitations and Needs, Stakeholders, Co-Design, and Upcycling were in the centre of this Applied Research *through* Design and a Teaching-Learning Experience developed at the Escola d’Art i Superior de Disseny de les Illes Balears.

RESEARCH QUESTION

Focused on Sustainability, Limitations and Needs, Stakeholders, Co-Design, and Upcycling, ‘The Co-Upcycling Workshop’ objectives were:

- To pay attention to social problems.
- To encourage partnership among different social actors (higher education institutions, non-profit organizations, local companies, regional government)
- To promote synergies between different social actors.

- To focus on Co-Upcycling-
- To use workshop as a teaching-learning methodology that encourages collaborative design, with the participation of stakeholders, to promote social innovation.
- To stimulate creativity and entrepreneurship among participants.
- To develop innovative new possibilities for the garbage.
- To go on to create a number of prototypes of lights.
- To offer a benefit to students, and to society at large.

The whole experience aimed at investigating the following research question: What impact has the co-upcycling experience had on participants' key competences and their perception about sustainability in 2018 and 2019? It being understood that 'Upcycling' is the transformation of waste into valuable objects.

In order to answer the research question summarised above, a hands-on experience in the format of a workshop was planned.

METHOD

The research *through* design approach was chosen because, as an “activity of user-centred innovation that focused on people in the process of defining new products and service” (THOMSON & KOSKINEN, 2012: 77), the main goal for Design is to “contribute positively to an innovative society and improved quality of life” (THOMSON & KOSKINEN, 2012: 77) by solving practical problems in the real world too. Similarly, the main goal of an Applied Research is to improve the human condition by solving practical problems in the real world, “where the resulting knowledge is used for a particular application” (FRAYLING, 1993: 4), such as the creation of a number of prototypes of lights out of waste materials.

‘The Co-Upcycling Workshop’ involved BA Product Design students from the Balearics Higher School of Arts and Design and high school students from the IES Politècnic. Other participants in the workshop were ECOEMBES and the Fundación Deixalles. In the 2018 edition, there were 39 participants, 13 future product designers and 26 high school students, distributed in thirteen mixed working-teams. In the 2019 edition, there were 23 participants, 10 future product designers and 13 high school students, distributed in seven mixed working-teams (see Table 1).

Table 1: ‘The Co-Upcycling Workshop’ in numbers

	2018	2019
Partners	4	4
EASDIB staff:	9	9
Stakeholders staff:	4	4
* <i>IES Politècnic teachers</i>	2	2
* <i>ECOEMBES</i>	1	1
* <i>Fundación Deixalles</i>	1	1
Students (participant)	39	23
* <i>High School students (aged 16 to 19)</i>	26	13
* <i>BA Product Design students (aged 18 to 23)</i>	13	10
Students (surveyed)	32 82.1%	13 56.5%
* <i>High School students (aged 16 to 19)</i>	23 88.5%	8 61.5%
* <i>BA Product Design students (aged 18 to 23)</i>	9 69.2%	6 60.0%
Projects	13	7
Prices	3	2

Workshop observation, on-line survey and document analysis (including pictures, drawings and text for exhibition) were employed to collect the data. Quantitative data was analysed by basic descriptive statistic. On the other hand, qualitative data from observation was analysed using content analysis.



Figure 3. ‘The Co-Upcycling Workshop’ (2019): collective development of ideas.

The on-line form presented questions in four parts:

- a) Participant background questions, which included seven questions: surname, name, e-mail address, participant profile (students, teacher), year of study (first year, second year, third year, fourth year), gender (male, female), age.
- b) Key academic competences (six) for High School students (according to Spanish regulations), and key professional competences (twenty-two) for BA Product Design (ROVIRA, 2016: 99-102), to be developed, as shown in Table 2 and Table 3.
- c) Sustainability issues (seven), identified by researchers according to the purpose of the workshop, as shown in Table 4.
- d) Assessment of the activity, which included five questions, such as ‘How relevant was the activity for further academic pursuits (scored from 0 to 10)?’, ‘How relevant was the activity for future career paths (scored from 0 to 10)?’, ‘Overall satisfaction with the activity (scored from 0 to 10)?’, ‘Would you repeat the activity (closed question: yes, no)?’, and ‘Any Suggestion?’

Following the design methodology (theoretical introduction, design problem approach, collective development of ideas, realization from the proposed material, exhibition), a number of prototypes of lights were developed (thirteen prototypes in 2018; seven prototypes in 2019). They were made out of plastic material (PET, HDPE) that came from the collection of plastic packaging waste.

In particular, two types of plastics were used in ‘The Co-Upcycling Workshop’:

- PET (polyethylene terephthalate), a resin used for plastic containers (water, milk).
- High-density polyethylene (HDPE), a thermoplastic polymer used for containers (soap, bleach).

A number of prototypes of lights were the outcomes of the Design Process, and also the results of the Applied Research *through* Design, understood as a very complex hybrid inter/trans/cross disciplinary process, which involves Product Design, Creativity, Materials Knowledge, Communication, etc. This is important to highlight, because Design Process, as a Process, always involves Research, even participants noticed it or not.

Finally, during the months of March 2018 and March 2019, a number of participants filled in the questionnaire.

RESULTS

Questionnaire assessed student's perception about key competences to be developed during the workshop (see Table 2 and Table 3).

High School students' key academic main competences selected by researchers were:

- Research Competences (#4).
- Personal and Interpersonal Competencies (#5).
- Competence in knowledge of and interaction with the physical world (#6).

Key academic competences selected are highlighted in grey in Table 2.

Table 2: High School students' key academic competences

	2018	2019
	N=23	N=8
1. Competence in linguistic communication	56.5%	data not available
2. Competence in processing information and use of ITC	39.1%	data not available
3. Digital Competence	17.4%	data not available
4. Research Competences	52.2%	data not available
5. Personal and Interpersonal Competencies	60.9%	data not available
6. Competence in knowledge of and interaction with the physical world	39.1%	data not available

As shown in Table 2, in 2018, over half of surveyed students identified competence #4 and competence #5 selected by researchers; however, only 39.1% of those surveyed identified competence #6. In 2019, there was a loss of data due to a data collecting process mistake.

On the other hand, BA

Product Design students' key professional main competences selected by researchers were:

- Professional knowledge (#8).
- Research (#12).
- Problem Solving (#13).
- Design Thinking (#14).
- Decision-making (#15).
- Theory into practice (#16).
- Teamwork (#17).
- Leadership (#18)
- Ethical commitment and social & environmental responsibility (#22).

Key professional competences selected are highlighted in grey in Table 3.

Table 3: BA
Product Design students' key professional competences

	2018	2019
	N=9	N=6
1. Social and civic global awareness	62.5%	33.3%
2. Cultural global awareness	0.0%	33.3%
3. Adaptability and flexibility	50.0%	50.0%
4. General knowledge	25.0%	50.0%
5. Communication in the native language	37.5%	33.3%
6. Communication in a foreign language	0.0%	0.0%
7. Digital knowledge	0.0%	16.7%
8. Professional knowledge (specific body of knowledge)	0.0%	33.0%
9. Self-management	50.0%	100.0%
10. Personal development	75.0%	83.3%
11. Analytical and critical thinking	50.0%	50.0%
12. Research	12.5%	33.3%
13. Problem Solving	87.5%	100.0%
14. Design Thinking	87.5%	100.0%
15. Decision-making	75.0%	100.0%
16. Theory into practice	100.0%	66.7%
17. Teamwork	75.0%	66.7%
18. Leadership	37.5%	50.0%
19. Autonomy, organization and planning	37.5%	83.3%
20. Initiative and entrepreneurship	25.0%	50.0%
21. Concern for quality	50.0%	83.3%
22. Ethical commitment and social & environmental responsibility	87.5%	33.3%

As can be seen from Table 3, in 2018, a 100% of those surveyed identified competence #16, as theory into practice is an important part of an Applied Research *through* Design; over 75% of those surveyed identified competences #13, competence #14, competence #15, competence #17 and competence #22, directly linked with design methodology and with the topic of the workshop, that is, sustainability. On the contrary, a minority of those surveyed identified competence #12 and competence #18. Finally, surveyed do not identified competence #8.

In 2019, 66.7% of those surveyed identified competence #16 and competence #17; but only half of surveyed identified competence #18. Over 100.0% of those surveyed identified competences #13, competence #14, and competence #15, directly linked with design methodology and with the topic of the workshop, that is, sustainability. On the contrary, a minority of those surveyed identified competence #8, competence #12 and competence #22.

On average, results decreased and one possible explanation is that BA Design students took sustainability for granted. There is also a lack of communication in order to correct misunderstandings. Furthermore, participants asked for a basic preparation, prior to the workshop.

What is relevant in these data is that, apart from identifying key competences (or not), students also perceived other competences. These other competences are not prior in workshop, but they can also be developed during the workshop.



Figure 4. ‘The Co-Upcycling Workshop’ (2018): realization from the proposed material.

On the other hand, the questionnaire also analysed sustainability issues for personal and/or professional practice (see Table 4).

Table 4: Sustainability Issues (scored from 0 to 10)

Students	High School		BA Product Design	
	2018	2019	2018	2019
	N=23	N=8	N=9	N=6
Upcycling optimizes the use of resources and recovered material, by promoting minimum intervention or transformation	8.0	7.1	8.3	6.8
Upcycling promotes zero-mile products	6.3	6.4	8.4	8.3
Upcycling avoids obsolescence by transforming waste material at minimum expense	8.4	6.8	8.3	7.5
Upcycling encourages experimentation to produce customizable items	7.6	7.6	7.9	8.7
Upcycling encourages creativity and critical thinking.	8.5	7.1	8.8	8.0
Upcycling benefits the environment and allows innovation	8.2	6.6	8.4	7.0
Upcycling can become a business model and a source of job creation	6.6	6.5	7.6	7.2
Average	7.6	6.9	8.2	7.6

Table 4 is quite revealing in several ways. High School students scored on average 7.6 (over 10.0) in 2018 and 6.9 (over 10.0) in 2019. On the other hand, BA Product Design students scored on average 8.2 (over 10.0) in 2018 and 7.6 (over 10.0) in 2019.

Comparing the two results, it can be seen that students’ perception of sustainability is high scored, but it decreases

during the second year of the project. EASDIB researchers believe that these values would increase by changing the project, but keeping on working on co-design and sustainability.



Figure 5. 'The Co-Upcycling Workshop' (2018): exhibition.

Table 5: Assessment of the activity (scored from 0 to 10)

Students	High School		BA Product Design	
	2018	2019	2018	2018
	N=23	N=8	N=9	N=23
Relevance of the activity for further academic pursuits	5.3	7.5	8.3	7.0
Relevance of the activity for future career paths	4.5	6.0	8.3	6.7
Overall satisfaction with the activity	7.7	7.9	6.5	6.8

As shown in Table 5, related to academic relevance of the activity, High School students scored 5.3 (over 10.0) in 2018 and 7.5 (over 10.0) in 2019. By contrast, BA Product Design students scored 8.3 (over 10.0) in 2018 and 7.0 (over 10.0) in 2019.

Related to professional relevance of the activity, High School students scored 4.5 (over 10.0) in 2018 and 6.0 (over 10.0) in 2019. By contrast, BA Product Design students scored 8.3 (over 10.0) in 2018 and 6.7 (over 10.0) in 2019.

Related to overall satisfaction, High School students scored 7.7 (over 10.0) in 2018 and 7.9 (over 10.0) in 2019. By contrast, BA Product Design students scored 6.5 (over 10.0) in 2018 and 6.8 (over 10.0) in 2019.

From 2018 to 2019, High school students' values increases, but BA Product Design students' values decreases; the reason is the same as explained above, values would increase by changing the project, but keeping on working on co-design and sustainability.



Figure 6. 'The Co-Upcycling Workshop' (2019): exhibition.

Despite the mixed results, both, High School students and BA Product Design students will repeat the experience in similar percentage (87.0% in 2018; 75.0 in 2019 and 88.9% in 2018: 66,7% in 2019).

CONCLUSIONS

'The Co-Upcycling Workshop' was a relevant hands-on experience of Community-Based Research and a way to develop a Project-Based Learning, engaging with the local community and its social actors (such as, ECOEMBES, Fundación Deixalles and IES Politènic), which could contribute to local economic development.



Figure 7. 'The Co-Upcycling Workshop' (2018): three awards.

Results allow Balearics Higher School of Arts and Design researchers to answer the main research question: What impact has the co-upcycling experience had on participants' key competences and their perception about sustainability in 2018 and 2019?

Collaborative design and upcycling do allow participants (designers, users, etc.) to improve design; and it is also a pedagogical tool that allow students (designers or not) to improve their academic and/or professional key competences.

Although, according to data, participants (high school students and BA Product Design students) worked different key competences during the two editions of ‘The Co-Upcycling Workshop’, they do not identify main competences selected by researchers.

During the exhibition opening, three prizes were awarded in 2018, and two prizes were awarded in 2019. They were offered by ECOEMBES. Local press devoted special coverage to the workshop.



Figure 8. ‘The Co-Upcycling Workshop’ (2019): two awards.

To sum up, the advantages and disadvantages of the ‘The Co-Upcycling Workshop’ are:

a) Strengths:

- Students teamwork with a different background.
- Research project promotes inquiry practices among students and teaching staff.
- Final exhibition to communicate projects results.

b) Weaknesses:

- More previous communication about competences involved.

Finally, the positive results of the post-project satisfaction surveys will allow for a repetition of the workshop in future editions, that could take into account some suggestions for improvement, such as: develop a double process inquiry practice and reflexive practice, move the project on the next level and develop the workshop as a high-quality Service-Learning project, and produce open source material to reproduce experience at home.

REFERENCES

- BAINES, AnneMarie, DEBARGER, Angela Haydel, DE VIVO, Krintin, WARNER, Nathan, BRINKMAN, Jordan, and SANTOS, Sheree (2015). *What is rigorous project-based learning?* (LER Position Paper 1). San Rafael, CA: George Lucas Educational Foundation. Retrieved May 31, 2019, from <https://www.lucasedresearch.org/files/WhatIsRigorousProjectBasedLearning.pdf>.
- Balearics Decree 43/2013 - Decreto 43/2013, de 6 de septiembre, por el que se establece en las Illes Balears el plan de estudios de las enseñanzas artísticas superiores conducentes al título superior de diseño de las especialidades de diseño gráfico, diseño de interiores, diseño de moda y diseño de producto y se regula su evaluación (BOIB núm. 125, 10-09-2013). Retrieved May 31, 2019, from <http://www.caib.es/eboibfront/es/2013/8191/523353/decreto-43-2013-de-6-de-septiembre-por-el-que-se-e>.
- BOSS, Suzie (2011). *Project-Based Learning: A Short History*. San Rafael (California, USA): EDUTOPIA (George Lucas Educational Foundation). Retrieved May 31, 2019, from <https://www.edutopia.org/project-based-learning-history>.
- BURNARD, Pamela (2012). *Musical Creativities in Practice*. Oxford University Press: Oxford (United Kingdom).
- BRUNDTLAND, Gro Harlem (president) (1987). *A/42/427. Our Common Future: Report of the World Commission on Environment and Development*. Oslo (Norway): United Nations Secretariat-General. Retrieved May 31, 2019, from <http://www.un-documents.net/our-common-future.pdf>.
- Designing Our Tomorrow (2014). *Designing for people, profit and planet. DOT in a nutshell*. Cambridge (United Kingdom): University of Cambridge. Retrieved May 31, 2019, from http://www.designingourtomorrow.com/business/UND_nut_shell/DOT_in_a_nutshell_v15.pdf.
- FERNÁNDEZ, Alex (17-12-2009). Upcycling: transformar residuos en objetos de valor. *EROSKI CONSUMER*. Retrieved May 31, 2019, from http://www.consumer.es/web/es/medio_ambiente/urbano/2009/12/17/189900.php.
- FRAYLING, Christopher (1993). *Research in Art and Design (Monograph)*. Royal College of Art Research Papers, Vol. 1, No. 1, 1993/4, pp. 1-5. Royal College of Art, London (England, United Kingdom).

- Retrieved May 31, 2019, from http://researchonline.rca.ac.uk/384/3/frayling_research_in_art_and_design_1993.pdf.
- FREEMAN, R. Edward (2010). *Strategic Management: A Stakeholder Approach*. Cambridge (United Kingdom): Cambridge University Press.
- GARDNER, Howard E. (2006). *Multiple Intelligences: New Horizons in Theory and Practice*. New York (USA): Basic Books (Perseus Books Group).
- IUCN, UNEP, and WWF (1980). *World Conservation Strategy, Living Resource Conservation for Sustainable Development*, Gland (Switzerland): IUCN, UNEP, and WWF. Retrieved May 31, 2019, from <http://data.iucn.org/dbtw-wpd/edocs/WCS-004.pdf>.
- KAY, Thornton, and MATRAVERS, Hazel (11-10-1994). Reiner Pilz, Thinking about a green future. *SALVO*, 23, pp. 11-14. Retrieved May 31, 2019, from <https://www.salvoweb.com/files/sn99sm24y94tk181119.pdf>.
- MEADOWS, Donella H.; MEADOWS, Dennis L.; RANDERS, Jorgen, and BEHRENS III, William W (1972). *Limits to Growth. A report for The Club of Rome's Project on Predicament of Mankind*. Nueva York (USA): Universe Books (A Potomac Associates Book). Retrieved May 31, 2019, from <http://www.donellameadows.org/wp-content/userfiles/Limits-to-Growth-digital-scan-version.pdf>.
- MEADOWS, Donella H.; RANDERS, Jorgen, and BEHRENS III, William W. (2006). *Limits to Growth. The 30-years update*. London (United Kingdom): James & James (Science Publishers) Ltd.
- RAMSDER, Paul (2003). *Learning to teach in higher education*. Abingdon (Oxon, United Kingdom): RoutledgeFalmer.
- ROVIRA, M. Pilar (2016). New Opportunities, new Competences, new Challenges. Learning through Civic Engagement at the Balearics School of Art and Design. *Diálogos com a arte. Revista de Arte, Cultura e Educação*, 6, pp. 95-129. Retrieved May 31, 2019, from http://docs.wixstatic.com/ugd/6d6107_b259b7099802407fa09e9ede690b607c.pdf.
- SIERRA-BRAVO, Restituto (1997). *Técnicas de Investigación Social: Teoría y Ejercicios*. Madrid (Spain): Ediciones Paraninfo S.A.
- Spanish Royal Decree 633/2010 - Real Decreto 633/2010, de 14 de mayo, por el que se regula el contenido básico de las enseñanzas artísticas superiores de Grado de Diseño establecidas en la Ley Orgánica 2/2006, de 3 de mayo, de Educación (BOE núm. 137, 05-06-2010). Retrieved May 31, 2019, from <https://www.boe.es/boe/dias/2010/06/05/pdfs/BOE-A-2010-8957.pdf>.
- THOMSON, Michael, and KOSKINEN, Tapio (Eds.) (2012). *Design for Growth & Prosperity. Report and Recommendations of the European Design Leadership Board*. Helsinki (Finland): DG Enterprise and Industry of the European Commission. Retrieved May 31, 2019, from http://europeandesigninnovation.eu/wp-content/uploads/2012/09/Design_for_Growth_and_Prosperty.pdf.
- TOFFLER, Alvin (1980). *The Third Wave*. New York (USA): William Morrow & Company Inc. Retrieved from https://archive.org/stream/TheThirdWave-Toffler/The-Third-Wave_-_Toffler_djvu.txt.
- United Nations (2015). *The 2030 Agenda for Sustainable Development*. Retrieved May 31, 2019, from https://www.unssc.org/sites/unssc.org/files/2030_agenda_for_sustainable_development_kcsd_primer_en.pdf.
- United Nations. *Sustainable Development Goals: About the Sustainable Development Goals*. Retrieved May 31, 2019, from <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>.
- United Nations. *Sustainable Development Goals: Knowledge Platform*. Retrieved May 31, 2019, from <https://sustainabledevelopment.un.org/sdgs>.
- WILLIAMS, Doug; GOWNDER, J. P.; CORBETT, Annie, and VOKSH, Andia. (2012). *US Consumers Are Willing Co-Creators*. Cambridge (Massachusetts, USA): Forrester Research Inc.

AN APPLICATION ON REDUCING STUDENTS' MATHEMATICAL ANXIETY LEVELS¹

Meryem KESKİN²

Mehmet BEKDEMİR³

²Teacher, in the Ministry of National Education, mkeskinerzincan@gmail.com

³Lecturer in the Erzincan Binali Yıldırım University, mbekdemir@erzincan.edu.tr

¹This study is one part of the graduate dissertation called “An Application in Real Classroom and School Environment for Reducing the Mathematics Anxiety Levels of Middle School Students”

ABSTRACT

The main aim of this study is to put forward an application for increasing mathematics achievement in real classroom and school environment in order to reduce the level of math anxiety of students who have math anxiety. In this process, we investigate how increasing the mathematics achievement of the student affects the level of math anxiety. Therefore, we expect that the cycle, which is among math anxiety, the failure and the feeling of inadequacy, would be broken by increasing the student's mathematics achievement.

We conducted the study in a middle school with low socio-economic and academic achievement in a medium-sized province in terms of population of Eastern Anatolia Region. In the 2018-2019 academic year. The study group consisted of all of the sixth-grade students and two students selected among them for purpose of study in this school. In this study, the action research model was used. The implementation of the study took seven weeks. During the application, the deficiencies related to the mathematics course of two student-selected before were first detected, then they were given additional face-to-face training and homework to eliminate them. In addition, students have been given support or guidance on the subjects they need.

This study is related to a dissertation study and quantitative and qualitative data were collected in it. However, we shared only the result of quantitative data results in this paper. Quantitative data were obtained from Mathematical Anxiety Scale (MSI), the scores related to courses such as mathematics and social studies, science on e-school and the scores of the general trial exams in the school. Before and after the study, all students were administered MSI and anxiety scores were calculated for each student. Again, all students' scores of mathematics, science, social studies, and the general trial exams were recorded. All scores were converted to standard z-scores to see the class average ($z = 0$), and these scores give us to compare with two students' the achievement before and after the application and with the average grade achievement levels.

We found out that the two students' mathematics achievement, which was below the class average at the beginning, increased and was slightly above the class average at the end of the research. In parallel with these result, we saw also that the success of these students in Science and Social Studies (in a student) courses and general trial exams raised up. We revealed that both the anxiety score and the anxiety level for one of these two students decreased, while the other student's anxiety score increased but the level of anxiety did not change. These results show that math anxiety could be reduced by increasing the students' mathematics achievement and thus the cyclical structure between the sense of insufficiency and failure and math anxiety could be broken.

INTRODUCTION

Today, an understanding of an individual, who has multi-faceted thinking skills, effective problem-solving skills, is creative and capable of self-producing knowledge, stands out, not individuals who receive and consume information readily. At this point, mathematics is one of the most significant and vital sciences. Mathematics enables individuals to acquire a lot of knowledge and skills such as problem-solving, reasoning and proof, reflective and creative thinking, generalization and analytical thinking (Usta et al., 2018). Communities and states that want to keep up with the age, try to adapt and have power in the field of science and technology, ought to educate their citizens in this direction. There are several factors, including environmental, parental and personal, that influence the individuals' learning mathematics. One of these is general anxiety and math anxiety in particular. The general anxiety, which directly affects the student achievements, can be described as a sense of tension arises as a result of students' thinking of something bad will happen and not knowing the reason (TDK, 2018).

The math anxiety, that is a specific case of general anxiety arise in definite conditions (Brady and Bowd, 2005), has become one of the most significant subjects in mathematics tried to be described in mathematics education and researches have been conducted on (Aydın, Keskin, 2017; Arslan, Güler and Gürbüz, 2017; Bekdemir, 2010; Saygı, 1989; Szucs, 2017; Dede and Dursun, 2008;). Some of the math anxiety descriptions are: “feelings of anxiety and tension that prevent solving mathematical problems and using the numbers in daily and academic life (Richardson and Suinn 1972)”, “irrational feeling of fear that makes students stay still when they think of math, drop their performance, thus prevent them from learning (Miller and Mitchell, 1994)”, and “math anxiety is irrational panic, anxiety, shame, avoidance, failure and feeling of fear that prevents emerges during dealing

with mathematics or in the cases in which mathematics is needed to be applied, whose symptoms appear physically, prevents mathematical solution, learning and achievement, doing mathematics in short (Bekdemir, 2009)". As it has been put forth in the national and international researches on anxiety, some of the students from primary school to end of university have high math anxiety (Aydın and Keskin, 2017; Bekdemir, 2010; Passolunghi et al., 2016; Richardson and Suinn, 1972; Szucs, 2017). In addition, there are researches referring that these students fail both during their education and that this situation has negative effects such as not choosing mathematics-related fields when determining their future careers (Malanchini et al., 2017). There are even studies showing that high math anxiety causes students to think that they are not smart enough to learn mathematics (Yenilmez and Özbey, 2006). In short, students with high levels of anxiety experienced various academic failures, such as low academic achievement, early dropout, and failure in higher education. The academic failures experienced by the student cause further increase in the math anxiety level of the student. In this high anxiety, a feeling of inadequacy about the mathematics course or subject leads to failure or internalization of the failure again. Thus, a sense of inadequacy, failure and math anxiety become a cyclical structure. That is, while sometimes the sense of inadequacy causes math anxiety (Ma, 1999; Trujillo and Hadfield, 1999;), and math anxiety causes failure, some sometimes the math anxiety causes the sense of inadequacy and the sense of inadequacy causes failure. Also, failure contributes to high anxiety, this high anxiety to failure, or internalization of failure (Bekdemir, 2009). The cycle between the sense of inadequacy, failure and math anxiety can only be broken by positively developing at least one or more of these three.

Considering this, this present study was conducted. The main aim of this study is to put forward an application in a real classroom and school environment in order to reduce the level of math anxiety of students who have math anxiety. It was aimed to break the cycle between math anxiety, sense of inadequacy and failure by increasing the math achievement. Thus, the level of math anxiety that caused inadequacy and failure was tried to be reduced. For this purpose, it is aimed to increase students' mathematics achievement mainly related to a cognitive field in practice. It was investigated whether math anxiety level would decrease by increasing the mathematics achievement of the student. According to this purpose, the following research questions were asked:

1. Did the mathematics achievement increase application affect students' mathematics achievement?
2. Did the mathematics achievement increase application affect students' Science and Social Studies course and exam achievements?
3. Did the mathematics achievement increase application affect students' anxiety levels?
- 4.

RESEARCH MODEL

The action research method was applied in this research. Action research consists of the activities that the supervisor and a researcher participate in the application process together to understand and solving the problems emerged during application. Action research, having a flexible approach, allows the researcher to be close to the data, know the process closely and live it. Action research is process-oriented, allowing a process to be studied for a long time in its environment and collecting data on the problem being focused on. In this way, developments, changes and interactions with individuals in the environment can be understood in detail and in-depth (Yıldırım and Şimşek, 2013). Considering this fact, in this research, some activities were carried out to reduce anxiety levels of two sixth grade students with math anxiety for an eight-week period, and the manner and effect of these activities were tried to be examined. As the research supervisor was also the teacher of the participating students and the process was tried to be put forth, action research was chosen as the model of the research. In addition, both the qualitative and quantitative data were collected in this research, but as this study is a part of the dissertation called "An Application in Real Classroom and School Environment for Reducing the Mathematics Anxiety Levels of Middle School Students", only the quantitative data and results will be presented here.

STUDY GROUP

This study was conducted in a middle school with low socio-economic and academic achievement in a medium-sized province in terms of population of Eastern Anatolia Region. In this school where the study was conducted, there were two class branches as 6/A and 6/B and totally 18 students, 13 of whom were female, 5 were male, students in these classes. The two students who were selected for the research were students who received the highest score from the anxiety scale applied to all students, that is with the highest anxiety level. While one of these students was in the "Normal Anxiety Group" the other was in the "High Anxiety Group". The reason for choosing this school was that the researcher was working in this school. Choosing the sixth-grade level as the research-grade was based on two reasons. First, in the researches conducted in our country on anxiety, it was found that the seventh grade is the grade level that increases the anxiety level of students (Bekdemir, 2010). However, these studies were mostly related to the period at which the 5+3 education system was applied. As the 4+4 system is being applied now, considering that the seventh grade is thought to be transformed into sixth grade, this class level was chosen. The second reason was that the abstract concepts such as the variable x, y were

first taught among the functions of sixth grade. The two students, who were selected as they had the highest anxiety scores at the mathematical anxiety scale, were the female students in different classes.

DATA COLLECTION TOOLS

As the data collection tool in this study, the Mathematical Anxiety Scale (MSI), the students' achievement scores (exam scores and general trial exam scores) were applied. MSI consists of 45 items in 4 point-Likert type. The lowest score that can be taken from this scale is 45 and the highest score is 180. A low score indicates a low level of anxiety and a high level indicates a high level of anxiety. While the Cronbach alpha internal consistency of MSI is 0.91, this was calculated for this study as 0.91. Also, according to the scores from this scale, the math anxiety was classified as 45-68 low, 69-108 normal, 109-128 anxious, 129-180 highly anxious (Erktin, Dönmez and Özel, 2006). The aim of this scale is to determine the anxious students by measuring the math anxiety levels of sixth-grade students.

The course achievement scores of all the 6th-grade students in the 2018-2019 educational year were taken from the e-school system just before starting to the study and after finishing the study. In addition, The general trial exam scores applied to the schools before and after the study were obtained from the school administration.

APPLICATION AND DATA COLLECTION

The research was carried out in the fall term of the 2018-2019 education year. The MSI was applied to all the 6th classes including totally 18 students just after the first mathematical exam and the anxiety scores for each student were calculated. It was noticed that the two female students in different classes had taken the highest scores when the math anxiety scores of all the students in the 6th grade were taken into consideration in the study. An agreement to participate in the study was obtained from these two female students and the study was conducted with these two students. All the activities with these two students were carried out outside the classroom. These two students continued their lessons with other students in the classroom. Semi-structured protocols were held with these two students about mathematics and math anxiety before starting the application. Also before the application, a study plan was prepared with these students by the researcher. Appropriate to the plan the application continued for totally seven weeks and finished at the end of the seventh week. In the eighth week of the application, the second exam of mathematics was performed. A day after this exam, the MSI has applied to all the sixth-grade students again and their anxiety scores were calculated once more. After this application, the semi-structured protocols were carried out with the two students, who were studied with, about mathematics and math anxiety. The first and second written exam scores of these two students from the Mathematics, Science and Social studies courses were taken from the e-school system. In addition, the general trial exam scores, which were held for twice before the application and twice after the application, were taken from the school administration.

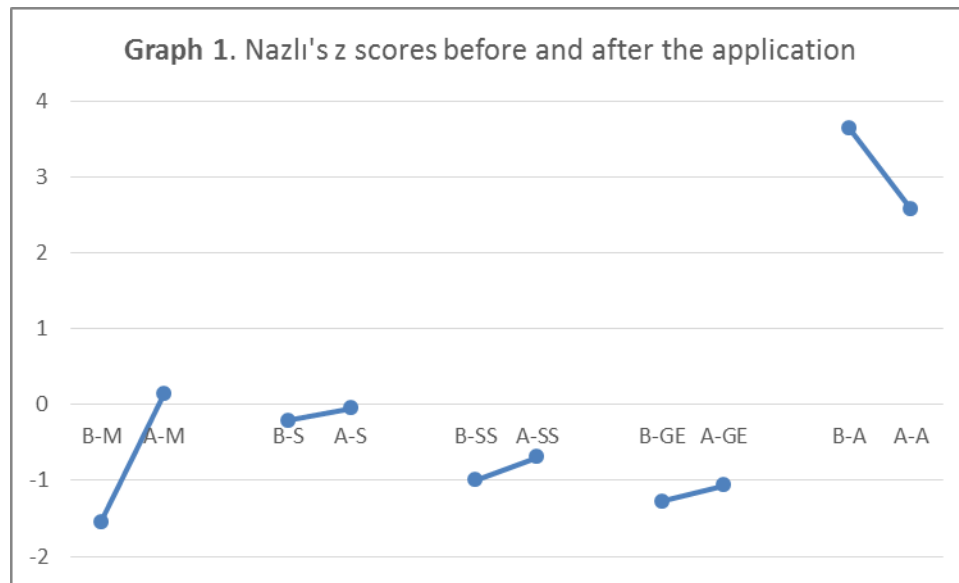
In the first week of the study which consisted of eight weeks, the basic mathematics knowledge of the students such as the knowledge and skills of four operations in natural numbers were checked with the help of a test. It was noticed that Nazlı, who was one of these students, had some difficulties with the division operation with neutral numbers. In the first week, Nazlı was instructed on the division operation through worksheets face-to-face. Since no deficiency was detected in relation to the basic mathematical knowledge of the other student, the application was initiated directly. The operation of the division was tried to be taught by giving assignments with worksheets. A mathematics test book was prepared for these two students according to their sixth-grade mathematics course gains. Starting from the first gains of this test book, the gains related to the subjects were tried to be gained to the students respectively to the end of the first semester. For this purpose, in addition to the course, students were given daily assignments from the test book, after checking homework by the researcher during the day, questions, that students cannot do or understand at home or during their free time, were checked together with the students and the next day's assignment was given by the researcher. The study of finding solutions to the problems faced by these students, checking the assignments and giving new assignments was carried out with two students four days a week, but separately during the break and lunch breaks. In addition, on Thursdays, face to face instruction was provided to the students for one hour during the lesson according to their needs. In this process, in addition to the textbooks and test books, the worksheets prepared by the researcher for some gains were also used.

ANALYSIS OF THE DATA

The anxiety scores of each student as the pre-test and post-test scores were calculated according to their scores from the MSI. Likewise, before and after the application, the mathematics, science, social studies and general trial achievement scores of all the students were taken. As the Turkish teacher of the students changed during the application, their scores from Turkish lesson was not included in the evaluation. With the pre-test and post-test scores of MSI, all the course and general trial exam scores were converted into the z-score. In this standard z-score, as it is known that the class average is 0, the standard deviation is 1, with the help of this score, it is possible to compare the start and end scores of the two participants within themselves and

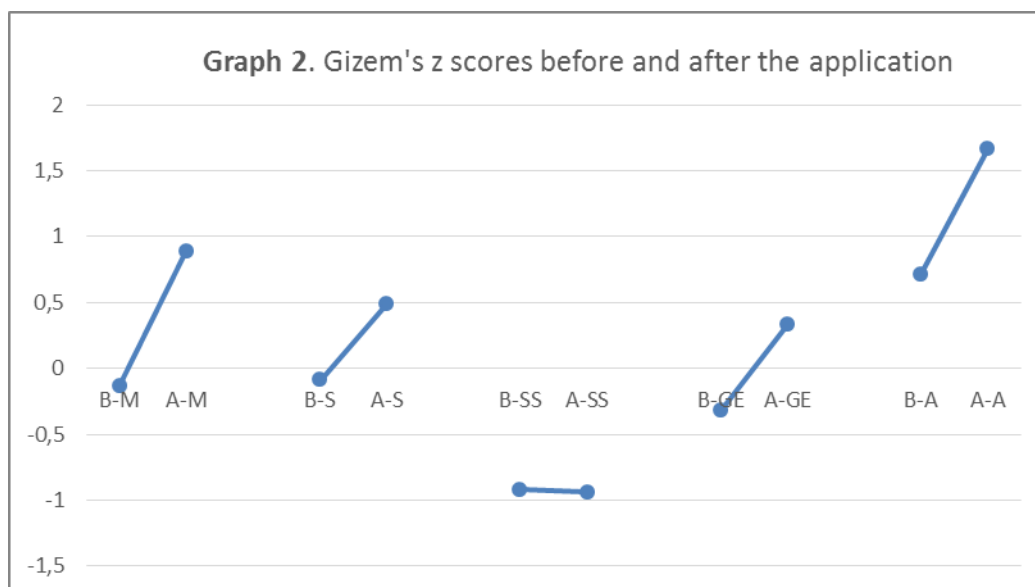
FINDINGS

The change in the course achievement as a result of eight weeks of application to increase the mathematics achievement of the first student to carry out the aim of this study which was “ to investigate whether the mathematics achievement of the student decrease the math anxiety or not” is shown in Graph 1.



According to Graph 1, the achievement of the first student in all the courses, specifically the mathematics achievement, increased as at the end of the eight-week- application. Although this student's course achievement at the end of the application increased, their achievement levels are still below the class average, except mathematics. However, although the level of achievement in mathematics was well below the average class level, it became slightly above the class average at the end of the application. While the anxiety level was well above the average class level before the application, although the level of anxiety decreased at the end of the application, it was still above the average class level. However, according to the MSI score before the application, while the student was in the high anxiety level (137), at the end of the application, she was in the normal anxiety level (106).

The change in the course achievement as a result of eight weeks of application to increase the mathematics achievement of the second student is shown in Graph 2.



According to the Graph 2, the achievement of the first student in all the courses except the achievement in the social studies course, specifically, the mathematics achievement, increased as at the end of the eight-week-application. While the course achievement of this student was lower than the class score average, it was above the class score average at the end of the application. Anxiety score of this student increased after the application. However, although the anxiety score increased after the application, her anxiety level was similar. Because, according to the MSI score before the application, while she was in the normal anxiety level (81), she was in the normal anxiety level (92) after the application.

RESULT AND DISCUSSION

According to this study, whose aim was “to investigate whether the mathematics achievement of the student decrease the math anxiety or not” both students achievement levels in the courses, specifically in mathematics, increased during the application process.

For the first sub-problem, it was observed that both of the participants’ mathematical achievements, which was below the class level, increased at the end of the seven-week application, the achievements of both slightly exceeded the class average. This increase is reasonable for it is as short as seven weeks. This result is in line with the results of the other studies which show that if the student is given additional study time and opportunity, his/her success increases (Bulut et al., 1999, Gür and Seyhan, 2016; Kapıkıran and Kıran, 1999; Köroğlu and Yeşildere, 2004; Savaş et al., 2010).

It is observed for the second sub-problem at the end of the application that the increase in mathematics achievement caused an increase in Science and Social studies (in one of them) causes and general trial exam scores of both of the students. Although the increase in course achievement of one of the students was still below the class average, other student’s achievement increase exceeded the class average. This was an expected result. Because Science lesson and trial exams are directly related to mathematics. In addition, this result coincides with the results of other studies (Arslan and Babadoğan 2005; Bütüner and Uzun, 2011; Ünal, Coştu and Karataş 2004; Güleç and Alkış, 2003), which refer that the increase in the increase of the mathematics course is in line with the results that affect the achievements of the other courses.

For the third sub-problem, while the achievements in mathematics for both students increased, one student’s mathematical anxiety level decreased, one’s anxiety level increased but her level did not change. While the increase in achievement in one course takes a shorter time, changes in beliefs and attitudes, such as anxiety takes a longer time. Therefore, this is a normal result. In addition, this result; that is, students’ mathematics achievement increases while anxiety level decreases, coincides with several study results conducted related to the mathematical anxiety (Bozkurt and Bircan, 2015; Kaçar and Sarıçam, Namkung, Peng and Lin 2019; Passolunghi et al., 2016; Şad et al., 2016; Szucs, 2017).

These results indicate that mathematics anxiety can be reduced by increasing mathematics achievement and feeling of inadequacy and failure. In addition, the increase in mathematics achievement also contributes to the achievement of direct or indirect related courses such as Science and Social Studies. This study has shown that showed that in the short term, negative beliefs and attitudes such as anxiety and inadequacy can be changed by increasing the success of mathematics courses in the long run; thus, the cycle between failure, inadequacy and anxiety can be broken.

REFERENCES

- Aydın, M., & Keskin, İ. (2017). 8. Sınıf öğrencilerinin matematik kaygı düzeylerinin bazı değişkenler açısından incelenmesi. *Kastamonu Eğitim Dergisi*, 25(5), 1801-1818.
- Arslan, B., & Babadoğan, C. (2005). İlköğretim 7. ve 8. sınıf öğrencilerinin öğrenme stillerinin akademik başarı düzeyi, cinsiyet ve yaş ile ilişkisi. *Eurasian Journal of Educational Research*, 21, 35-48.
- Arslan, Ç., Güler, H. K., & Gürbüz, M. Ç. (2017). Ortaokul öğrencilerinin matematik kaygı düzeyleri ile öğrenme stratejileri arasındaki ilişki. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, 42, 123-142.
- Bekdemir, M. (2007). İlköğretim matematik öğretmen adaylarındaki matematik kaygısının nedenleri ve azaltılması için öneriler (Erzincan eğitim fakültesi örneği). *Erzincan Üniversitesi Eğitim Fakültesi Dergisi*, 9(2), 131-144.
- Bekdemir, M. (2009). Meslek yüksekokulu öğrencilerinin matematik kaygı düzeylerinin ve başarılarının değerlendirilmesi. *Erzincan Üniversitesi Fen Bilimleri Enstitüsü Dergisi*, 2(2), 169-189.
- Bekdemir, M. (2010). The pre-service teachers’ mathematics anxiety related to depth of negative experiences in mathematics classroom while they were students. *Educational Studies in Mathematics*, 75, 311-328. <http://dx.doi.org/10.1007/s10649-010-9260-7>
- Bozkurt, E., & Bircan, M. A. (2015). İlköğretim beşinci sınıf öğrencilerinin matematik motivasyonları ile matematik dersi akademik başarıları arasındaki ilişkinin incelenmesi. *Uluslararası Türk Eğitim Bilimleri Dergisi*, 2015(5), 201-220.

- Brady, P., & Bowd, A. (2005). Mathematics anxiety, prior experience and confidence to teach mathematics among preservice education students. *Teachers and Teaching*, 11(1), 37–46.
- Bulut, S., Ekici, C., & İşeri, A. İ. (1999). Bazı olasılık kavramlarının öğretimi için çalışma yapraklarının geliştirilmesi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 15(15).
- Bütünler, S. Ö., & Uzun, S. (2011). Fen öğretiminde karşılaşılan matematik temelli sıkıntılar: Fen ve teknoloji öğretmenlerinin tecrübelerinden yansımalar. *Kuramsal Eğitimbilim Dergisi*, 4(2), 262-272.
- Dede, Y., ve Dursun, Ş. (2008). İlköğretim II. kademe öğrencilerinin matematik kaygı düzeylerinin incelenmesi. *Uludağ Üniversitesi Eğitim Fakültesi Dergisi*, 21(2), 295-312.
- Erkin, E., Dönmez, G., & Özel, S. (2006). Matematik kaygısı ölçeği'nin psikometrik özellikleri. *Eğitim ve Bilim*, 31(140), 26-33.
- Güleç, S., & Alkış, S. (2003). İlköğretim birinci kademe öğrencilerinin derslerdeki başarı düzeylerinin birbiri ile ilişkisi. *İlköğretim Online*, 2(2), 19-27.
- Gür, H., & Seyhan, G. (2016). İlköğretim 7. sınıf matematik öğretiminde aktif öğrenmenin öğrenci başarısı üzerine etkisi. *Balikesir Üniversitesi Fen Bilimleri Enstitüsü Dergisi*, 8(1), 17-27.
- Işık, A., Çiltas, A., & Bekdemir, M. (2008). Matematik eğitiminin gerekliliği ve önemi. *Atatürk Üniversitesi Kazım Karabekir Eğitim Fakültesi Dergisi*, 17, 174-184.
- Kacar, M., & Sarıçam, H. (2015). Sınıf öğretmen adaylarının üstbiliş farkındalıkları ile matematik kaygı düzeyleri üzerine bir çalışma. *Trakya Üniversitesi Eğitim Fakültesi Dergisi*, 5(2), 137-152.
- Kapıkıran, Ş., & Kıran, H. (1999). Ev ödevinin öğrencinin akademik başarısına etkisi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 5(5), 54-60.
- Koroğlu, H., & Yeşildere, S. (2004). İlköğretim yedinci sınıf matematik dersi tamsayılar ünitesinde çoklu zekâ teorisi tabanlı öğretimin öğrenci başarısına etkisi. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi*, 24(2), 25-41.
- Malanchini, M., Rimfeld, K., Shakeshaft, N. G., Rodic, M., Schofield, K., Selzam, S., & Kovas, Y. (2017). The genetic and environmental aetiology of spatial, mathematics and general anxiety. *Scientific reports*, 7, 42218.
- Ma, X. (1999). A meta-analysis of the relationship between anxiety toward mathematics and achievement in mathematics. *Journal for Research in Mathematics Education*, 30(5), 520–540.
- Miller, L. D., & Mitchell, C. E. (1994). Mathematics anxiety and alternative methods of evaluation. *Journal of Instructional Psychology*, 21(4), 353–358.
- Namkung, J. M., Peng, P., & Lin, X. (2019). The relation between mathematics anxiety and mathematics performance among school-aged students: a meta-analysis. *Review of Educational Research*, 89(3), 459-496.
- Passolunghi, M. C., Caviola, S., De Agostini, R., Perin, C., & Mammarella, I. C. (2016). Mathematics anxiety, working memory, and mathematics performance in secondary school children. *Frontiers in psychology*, 7, 42.
- Richardson, E., & Suinn, R. M. (1972). The mathematics anxiety rating scale: Psychometric data. *Journal of Counseling Psychology*, 19(6), 551–554.
- Savaş, E., Taş, S., & Duru, A. (2010). Matematikte öğrenci başarısını etkileyen faktörler. *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, 11(1), 113-132.
- Saygı, M. (1989). Matematik kaygısı ve matematik kaygı ölçeği Mars A'nın Türkiye'ye uyarlama çalışmaları. *Eğitim ve Bilim*, 13(71), 47-52.
- Szucs, D. (2017). Developmental dyscalculia and mathematics anxiety: Large population studies. <https://riuma.uma.es/xmlui/handle/10630/14855>.
- Şad, S. N., Kış, A., Demir, M., & Özer, N. (2016). Matematik başarısı ile matematik kaygısı arasındaki ilişki üzerine bir meta-analiz çalışması". *Pegem Eğitim ve Öğretim Dergisi*, 6(3), 371-392.
- Trujillo, K. M., & Hadfield, O. D. (1999). Tracing the roots of mathematics anxiety through in-depth interviews with pre-service elementary teachers. *College Student Journal*, 33, 219–232.
- Türk Dil Kurumu [TDK](2018). Türkçe Sözlük. Türk Dil Kurumu Yayınları: 549, Türk Dil Kurumu, 4. Akşam Sanat Okulu Matbaası, Ankara.
- Usta, N. Işık, A. D., Taş, F., Gülay, G., Şahan, G., Genç, S., & Küçük, K. (2018). Oyunlarla matematik öğretiminin ortaokul öğrencilerinin matematik başarısına etkisi. *İlköğretim Online*, 17(4), 183-202.
- Ünal, S., Çoştı, B., & Karataş, F. Ö. (2004). Türkiye de fen bilimleri eğitimi alanındaki program geliştirme çalışmalarına genel bir bakış. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi*, 24(2).
- Yenilmez, K., & Özbey, N. (2006). Özel okul ve devlet okulu öğrencilerinin matematik kaygı düzeyleri üzerine bir araştırma. *Uludağ Üniversitesi Eğitim Fakültesi Dergisi*, 19(2), 431-448.
- Yıldırım, A. & Şimşek, H. (2013). *"Eylem araştırması" Sosyal bilimlerde nitel araştırma yöntemleri*. Ankara: Seçkin Yayınları, 9. Baskı, Syf. 334-344.

AN INVESTIGATION OF MIDDLE SCHOOL STUDENTS' SCIENTIFIC ATTITUDES IN TERMS OF DIFFERENT VARIABLES

Murat GENÇ

Faculty of Education, Düzce University, Turkey

muratgenc@duzce.edu.tr

ABSTRACT

The aim of this study is to investigate middle school students' scientific attitudes in terms of different variables. The sample of the study is composed of middle school students studying in different schools in Düzce. "Scientific Attitude Scale" was used as a data collection tool. There are 40 items in the scale. These substances are structured to explain how the students feel about the nature of science, the way scientists work, and science. The results of the study were determined to compare the students' scientific attitudes in terms of gender, type of school, educational status of parents and the professions of mother and father. According to the results of the study, it was determined that there was no significant difference in the scientific attitudes of the students in terms of gender factor. Scientific attitude scores were compared in terms of other variables.

Keywords: Scientific Attitude, Middle School, Different Variables.

INTRODUCTION

According to Demirel (2005); it is defined as the "learned tendency that drives the individual to behave in the face of certain people, objects and situations". According to TDK, it means "the way, attitude". Inceoglu (2010) defines the attitude as "the individual's reaction tendency to any phenomenon or object around him". The concept of attitude, which affects our perspective on a human being, has an important place in our lives. Our attitudes, which directly or indirectly affect our behavior, are even more important when they are related to science, which is an occupation of the human being who aims to understand the world.

According to Jayasree and Rao (1999); researcher thoughts and behaviors that make it easier to solve problems, to produce information, and to apply research technical competencies to practice. These attitudes and behaviors are indispensable not only for research or learning, but also for democratic life. Scientific attitude is the tendency to seek the right, to think logically and to act reasonably (Rani and Rao, 2000). Stating that scientific knowledge and scientific attitude are two separate things, Vucinich (1970) defined scientific knowledge as the reservoir of facts and theories, and scientific attitude as a state of life philosophy and reason. Scientific attitude is the most important result of science education. Scientific attitude is the complex behavioral aspect of science. To develop scientific attitudes, teachers need to remember that without a questioning mind and spirit of inquiry, students will not lead the development of scientific attitudes.

Students should make observations and practices in science, thus gaining opportunities to feel and develop the components of scientific attitude in their minds (Rao, 2003). It is possible to group the scientific attitude as follows:

- Willingness to understand and know,
- Request to question everything,
- Collecting data and researching its meaning,
- The desire to prove its accuracy,
- Respect logic,
- Consideration of the predecessors,
- Considering the results "(Demirbaş and Yağbasan, 2006)

Science education should be appropriate and functional today. Science knowledge, competencies and skills should help the development of a strong scientific and technological workforce and develop the scientific attitudes of all citizens for meaningful life in the modern world (Rani and Rao, 2000). In order to realize the vision of the science and technology curriculum, students should be provided with scientific attitudes and values as well as gaining knowledge, understanding and skills in order to become a science and technology literate. (MOE, 2005). Individuals with these attitudes and values have specific characteristics of their own.

Attitude is defined as an established way of thinking or feeling about someone or something, often reflected in a person's behavior. On the other hand, the scientific attitude can be defined as the way an individual interprets the events, the curiosity of knowing and knowing how and why the events or phenomena occur. Scientific attitude is controlled by factors such as the intellectual structure of the individual, honest, open-mindedness and creativity. Having a scientific attitude means accepting the validated state of the new facts with the desire to reject the old theories. What is an important element of the scientific attitude, truth is to bring. These facts are based on the principle of neutrality, with skepticism and humility, contrary to one's self-confidence and prejudices. In other words, individuals with this attitude approach the events objectively and reach the questions in their minds in the process of critical thinking.

The basic characteristics of individuals with scientific attitudes are as follows (Pitafi and Farooq, 2012):

1. Objectivity: They approach objectively (events) in a powerful way.
2. Curiosity: These individuals have a strong desire to know or learn something.
3. Open-mindedness: These individuals are open to new ideas.
4. Persistence: They insist on achieving their goals despite difficulties or obstacles.
5. Knowledge: Such individuals tend to have more information about the subject.
6. Creativity: These individuals are successful in the use of their imagination, in producing original ideas or in the production of an artistic work.
7. Flexibility: Individuals of this nature are open and inclined to all kinds of thoughts and opinions.
8. Risk-taking: They are capable of taking damage or potential risks in the hope of winning important things.
9. Intellectual honesty: They tend to be honest in getting different ideas, analyzing and transmitting.
10. Humility: They know that they are important, but they are modest about it.

All these qualities help a person to ask the right questions, make efficient observations, access information accurately and clearly, and achieve fluid, lasting productive solutions. It consists of six dimensions: scientific attitude, rationality, open-mindedness, curiosity, avoidance of superstition, impartiality of intellectual beliefs and skeptical judgment. (Raj and Malliga, 2015).

Scientific attitude can be regarded as a complex of values and norms that are thought to be binding on scientists (Pitafi and Farooq, 2012; Spronken-Smith and Kingham, 2009). Scientific attitude has three basic components; they are beliefs, feelings and actions (Mukhopadhyay, 2014). Scientific attitudes have various qualities such as objectivity, open-mindedness, objectivity, curiosity, decision-making, critical opinion and rationality (Lacap, 2015).

THE STUDY

The sample of the study consists of secondary school students studying in different schools in Düzce. “Scientific Attitude Scale” was used as data collection tool in the research. There were 40 items in the scale. These items are structured to explain the nature of science, how scientists work, and how students feel about science. The results of the study were determined to compare the students' scientific attitudes in terms of different variables such as gender, type of school, educational status of the parents and occupations of the parents.

In the study, the Scientific Attitude Scale (SAS) developed by Moore and Foy (1997) and adapted to Turkish by Demirbaş and Yağbasan (2006) was used. The original scale was in English and consisted of 6 different subscales and consisted of 40 items. As a result of the Turkish adaptation Demirbaş and Yağbasan (2006) decided that the scale should be single factor.

FINDINGS

According to the results of the research, there was no significant difference in the scientific attitudes of the students in terms of gender factor. Scientific attitude scores were also compared in terms of other variables.

Table 1. Results of t-test of Scientific Attitude Scale According to Their Gender

Gender	N	X	sd	t	p
Female	34	102,235	78	,113	,910
Male	46	101,957			

When Table 1 was examined, it was found that the scientific attitude scores of the students were not significantly different in terms of gender ($t = ,113$, $p > 0.05$).

Table 2. The Anova Results of Scientific Attitudes of Students Participating in the Research According to Mother Education

	Sum of Squares	df	Mean Squares	F	p
Between Groups	110,011	2	55,005	,463	,631
Within Groups	9139,539	77	118,695		
Total	9249,550	79			

When the results of the analysis in Table 2 are examined, it is seen that the scientific attitude scores of the students do not show a significant difference according to the education level of the mother ($p > .05$). This situation can be interpreted as no difference in terms of scientific attitude scores of students according to mother education level.

Table 3. The Anova Results of Scientific Attitudes of Students Participating in the Research According to Father Education

	Sum of Squares	df	Mean Squares	F	p
Between Groups	358,777	2	179,388	1,554	,218
Within Groups	8890,773	77	115,465		
Total	9249,550	79			

When the results of the analysis in Table 3 are examined, it is seen that the scientific attitude scores of the students do not show a significant difference according to the education level of the father ($p > .05$). This situation can be interpreted as no difference in terms of scientific attitude scores of students according to father education level.

Table 4. The Anova Results of Scientific Attitudes of Students Participating in the Research According to Mother Profession

	Sum of Squares	df	Mean Squares	F	p
Between Groups	362,778	2	181,389	1,572	,214
Within Groups	8886,772	77	115,413		
Total	9249,550	79			

When the results of the analysis in Table 4 are examined, it is seen that the scientific attitude scores of the students do not show a significant difference compared to the mother occupation groups ($p > .05$). This situation can be interpreted as not making a difference in terms of scientific attitude scores of students according to mother occupation groups.

Table 5. The Anova Results of Scientific Attitudes of Students Participating in the Research According to Father Profession

	Sum of Squares	df	Mean Squares	F	p
Between Groups	614,066	6	103,344	,865	,525
Within Groups	8635,484	73	118,294		
Total	9249,550	79			

When the results of the analysis in Table 5 are examined, it is seen that the scientific attitude scores of the students do not show a significant difference compared to the father occupational groups ($p > .05$). This situation can be interpreted that there is no difference in terms of scientific attitude scores of students according to fathers occupational groups.

CONCLUSIONS

The results of the gender variable of the scientific attitude in the literature (Boz et al., 2011; Cano, 2005; Deryakulu and Büyüköztürk, 2005; Eroğlu and Güven, 2006; Genç, 2015; Topçu and Yılmaz Tüzün, 2009; Tosun and Genç, 2015; Tosun and Genç, 2016; Tüken, 2010; Mıhladı and Duran, 2010) showing compatibility; In addition to this, there are studies indicating that gender variable is different in scientific attitude (Sadıç, Çam and Topçu, 2012; Yeşilyurt, 2013).

In the study, it was examined whether there is a relationship between the education level of the parents and the other variables affecting the scientific attitudes of the students and there is no significant difference between the education levels of the parents. Papanastasiou (2002) investigated the effect of various variables on students' scientific attitudes and found that the educational status of the family had little effect on children's attitudes towards science. Çokadar and Külçe (2008) conducted a study in which the families examined the relationship between educational status and students' scientific attitudes. They stated that the educational background of parents did not significantly affect children's attitudes towards science. In the research, it was examined whether there is a relationship between the professions of the parents and the other variables that affect the scientific attitudes of the students and it is determined that there is no significant difference in terms of parents' occupation types.

Demirbaş and Yağbasan (2005), which investigated the effect of teaching activities based on social learning theory on the permanence of students' scientific attitudes, designed their studies according to experimental design model with pre-test and post-test control groups. The researchers carried out their studies with seventh grade students in

three different schools in Kırşehir. In the experimental group, activities based on social learning theory were taught and in the control group, the activities included in the science curriculum were applied. It was concluded from the research that teaching with activities based on social learning theory had a great effect on the permanence of scientific attitudes.

Tatar (2006) used experimental design in his study, which investigates the effect of research-based learning approach on scientific process skills, academic achievement and attitude in science education. “Scientific Process Skills Test” and “Academic Achievement Test” were prepared by the researcher and Science course attitude scale was prepared by Geban et al. (1994). A total of 104 students, 52 in the experimental group and 52 in the control group, participated in the study. In the research, the scientific process skills, academic achievement and attitudes towards science course of the experimental group using the research-based learning approach showed a significant difference compared to the students in the control group.

Altınok and Acikgoz (2006) examined the effects of collaborative and individual concept mapping on the attitude towards science course and studied with 122 fifth grade students (at three branch levels). Researchers using the experimental research model with pre-test and post-test control groups in their research conducted cooperative concept mapping in one class, individual concept mapping, and traditional teaching in the other. Um Attitude Scale towards Science Course prepared by the researcher was applied to the participants. From the research, it was concluded that cooperative concept mapping had a more positive effect on students' attitudes towards science than individual concept mapping, and that there were no significant differences between individual concept mapping and traditional teaching attitudes towards Science course.

Serin, Kesercioğlu, Saracaloğlu and Serin (2003), who tried to determine the attitudes of the students who were studying in primary school and science teaching to science, took 103 students in primary school and science teaching at Dokuz Eylül University as a sample. The Science Attitude Scale developed by Gürdal (1997) was applied to the participants and the Personal Information Form was also distributed. It was concluded that the attitudes of science teachers and science teacher candidates towards science were moderate.

Yılmaz (2005), who aimed to determine teachers' opinions about the effectiveness of science course in gaining scientific attitude and behavior in primary education, used the screening model in his study and interviewed 20 primary school teachers working in 6 primary schools in Eskişehir city center. The researcher collected the data through a semi-structured interview. It was concluded from the research that the teachers faced some problems in the science course due to various reasons (crowded classes, ignorance of science course etc.).

REFERENCES

- Altınok, H. & Açıkgöz, K. (2006). İşbirlikli ve bireysel kavram haritalamanın fen bilgisi dersine yönelik tutum üzerindeki etkileri. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 30, 21-29.
- Boz, Y., Aydemir, M. & Aydemir, N. (2011). Türkiye’deki 4, 6 ve 8. sınıf ilköğretim öğrencilerinin epistemolojik inançları. *İlköğretim Online*, 10 (3), 1191-1201.
- Cano, F. (2005). Epistemological beliefs and approaches to learning: their change through secondary school and their influence on academic performance. *British Journal of Educational Psychology*, 75, 203-221.
- Çokadar H. & Külçe C. (2008). Pupils’ attitudes towards science: A case of Turkey. *World Applied Sciences Journal*. 3(1), 102-109.
- Demirbaş, M. & Yağbasan, R. (2006) Fen bilgisi öğretiminde bilimsel tutumların işlevsel önemi ve bilimsel tutum ölçeğinin türkçe’ye uyarlanma çalışması, *Uludağ Üniversitesi Eğitim Fakültesi Dergisi*, 19(2), 271-299.
- Demirel, Ö. (2005). *Eğitim sözlüğü*. Ankara: Pegem Yayıncılık
- Deryakulu, D. ve Büyüköztürk, Ş. (2005). Epistemolojik inanç ölçeğinin faktör yapısının yeniden incelenmesi: cinsiyet ve öğrenim görülen program türüne göre epistemolojik inançların karşılaştırılması. *Eğitim Araştırmaları*, 5 (18), 57-70.
- Eroğlu, S., E. & Güven, K. (2006). Üniversite öğrencilerinin epistemolojik inançlarının bazı değişkenler açısından incelenmesi. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 16, 295-312.
- Genç, M. (2015). The effect of scientific studies on students’ scientific literacy and attitude. *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi*, 34 (1), 141-152. Retrieved from <http://dergipark.org.tr/omuefd/issue/20280/215035>
- İnceoğlu, M. (2010). Tutum, Algı, İletişim. İstanbul: Beykent Üniversitesi Yayınevi. http://www.beykent.edu.tr/WebProjects/Uploads/METIN%20İNCEOĞLU_Tutum-algi-iletisim.pdf adresinden 19 Ocak 2017 tarihinde indirilmiştir
- Jayasree, K. & Rao, D. (1999). Correlates Of Socialization. New Delhi: Discovery Publishing House. <http://books.google.com.tr/books?id=J2qgdzOYSwkC&pg=PA50&dq=jayasree+rao+scientific+attitude&hl=tr&sa=X&ei=XW3wT6LrE4vjTQbjnKmQDw&ved=0CDMQ6AEwAA#v=onepage&q&f=false> adresinden 19 Ocak 2017 tarihinde indirilmiştir
- Lacap, M. P. (2015). The scientific attitudes of students major in science in the new teacher education curriculum. *Asia Pacific Journal of Multidisciplinary Research*, 3(5), 7–15. Retrieved from <http://www.apjmr.com/wp-content/uploads/2016/04/APJMR-2015-3.5.3.02.pdf>

- Mıhladı G. & Duran, M. (2010). İlköğretim öğrencilerinin bilime yönelik tutumlarının demografik değişkenler açısından incelenmesi. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, 10(20), 100-121.
- Milli Eğitim Bakanlığı (2005). *İlköğretim Fen ve Teknoloji Dersi Öğretim Programı ve Kılavuzu*(4.-5. Sınıflar). Ankara :Devlet Kitapları Müdürlüğü.
- Moore, W. R, & Foy, R. (1997). The scientific attitude inventory: a revision(SAI II) *Journal of Research in Science Teaching*, 34,(4), 327-336.
- Mukhopadhyay, R. (2014). Scientific attitudesome psychometric considerations. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*, 19(1), 98–100. Retrieved from www.iosrjournals.org
- Papanastasiou, C. (2002). School, teaching and family influence on student attitudes toward science: based on TIMSS data for Cyprus. *Studies in Educational Evaluation*, 28(1),71-86. (ERIC Document Reproduction Service No.EJ3651437)
- Pitafi, A. I., & Farooq, M. (2012). Measurement of scientific attitude of secondary school students in Pakistan. *Academic Research International*, 2(2), 379–392. Retrieved from www.savap.org.pk%5Cwww.journals.savap.org.pk
- Raj, R.G. & Malliga, T. (2015). A Study on Scientific Attitude among Pre Service Teachers. *Research Journal of Recent Sciences*, 4 (IYSC-2015), 196-198
- Rani, K. & Rao, D.(2000). *Educational Aspirations and Scientific Attitudes*. New Delhi: Discovery Publishing House.
http://books.google.com.tr/books?id=LrMdM0_2_z0C&pg=PA43&dq=rani+ve+rao+scientific+attitude&hl=tr&sa=X&ei=327wT_2yCMrVtAaU3uCODw&102ved=0CDUQ6AEwAA#v=onepage&q=rani%20ve%20rao%20scientific%20attitude&f=false adresinden 19 Ocak 2017 tarihinde indirilmiştir.
- Rao, D.(2003). *Scientific Attitude*. New Delhi: Discovery Publishing House.
<http://books.google.com.tr/books?id=nOeBDwXvJXMC&printsec=frontcover&dq=rao+2003+scientific+attitude&hl=tr&sa=X&ei=HnHwT6HDNcTesgaX65WPDw&ved=0CDEQ6AEwAA#v=onepage&q&f=false> adresinden 19 Ocak 2017 tarihinde indirilmiştir
- Sadıç, A., Çam, A. ve Topçu, M. S. (2012). İlköğretim öğrencilerinin epistemolojik inançlarının cinsiyet ve sınıf düzeyine göre incelenmesi. X. Ulusal Fen Bilimleri ve Matematik Eğitimi Kongresi, 27-30 Haziran 2012, Niğde.
- Serin, O., Kesercioğlu, T., Saracaloğlu, S. & Serin, U.(2003). Sınıf öğretmenliği ve fen bilgisi öğrencilerinin fen (bilimlerin)’e yönelik tutumları. *Marmara Üniversitesi Atatürk Eğitim Fakültesi Dergisi*, 17, 75-86.
- Spronken-Smith, Rachel & Kingham, S. (2009). Strengthening Teaching and Research Links: The Case of a Pollution Exposure Inquiry Project. *Journal of Geography in Higher Education*, 33(2) 241-253. DOI: 10.1080/03098260802276813
- Tatar, N.(2006).*İlköğretim fen eğitiminde araştırmaya dayalı öğrenme yaklaşımının bilimsel süreç becerilerine, akademik başarıya ve tutuma etkisi*. Doktora Tezi, Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara.
- Topçu, M. S. & Yılmaz Tüzün, O. (2009). Elementary students’ metacognition and epistemological beliefs considering science achievement, gender and socioeconomic status. *Elementary Education Online*, 8 (3), 676-693.
- Tosun, C. & Genç, M., (2015). Adaptation of science attitude scale developed for primary school students to turkish: validity and reliability studies, *İlköğretim Online Dergisi, Elementary Education Online*, 14(3), 946-960, 2015. <http://dx.doi.org/10.17051/ieo.2015.08787>
- Tosun, C. & Genç, M. (2016). Secondary school students’ predictors of science attitudes. *Kuramsal Eğitimbilim Dergisi [Journal of Theoretical Educational Science]*, 9(4), 497-514. DOI number: <http://dx.doi.org/10.5578/keg.24227>
- Tüken, G. (2010). Kentlerde ve kırsal kesimde öğrenim gören öğrencilerin bilimsel epistemolojik inançlarının belirlenmesi. Yayınlanmamış yüksek lisans tezi. Eskişehir Osmangazi Üniversitesi, Fen Bilimleri Enstitüsü, Eskişehir.
- Vucinich, A. (1970). *Science in Russia Culture 1861-1917*. California: Stanford University Press.
http://books.google.com.tr/books?id=YoeIwsA6USQC&pg=PR15&dq=vucinich+scientific+attitude&hl=tr&sa=X&ei=1W_wT4LuC8r2sgaZy9iODw&ved=0CDcQ6AEwAQ#v=onepage&q&f=false adresinden 19 Ocak 2017 tarihinde indirilmiştir.
- Yeşilyurt, E. (2013). İlköğretim okulu öğrencilerinin bilimsel epistemolojik inançları. *International Journal of Social Science*, 6 (1), 1587-1609.
- Yılmaz, F.(2005). İlköğretimde bilimsel tutum ve davranış kazandırmada fen bilgisi dersinin etkililiğine ilişkin öğretmen görüşleri. *Yüksek Lisans Tezi*. Anadolu Üniversitesi Eğitim Bilimleri Enstitüsü, Eskişehir.

ANALYSIS OF THE COVER DESIGNS OF CHILDREN'S JOURNALS IN TERMS OF BAUHAUS SCHOOL

Yasemin Gülşen Yılmaz
Selçuk University, Communication Faculty, Turkey
yasegulsen@hotmail.com

Süleyman Hakan Yılmaz
Selçuk University, Communication Faculty, Turkey
shakany@yahoo.com

ABSTRACT

Magazine covers are important to transfer information about the content of the magazine reader. Journal of visual and verbal elements used in the design of the cover to draw the attention of the target audience in the design, set up and improve the readability of the magazine. The communication between the reader and the magazine of the magazine covers by means provides visual elements and composition consisting of that element. During the preparation of these compositions magazine observed invisible grid system is used. Inserting into each message a certain visual grading linguistic and visual composition with a balanced layout in the framework of design elements and principles to be placed on these lines, the design and the lead to be removed is to emphasize the desired message. To examine how the grid system is used on the covers of children's magazines, the cover of children's magazines of the first three months of 2019 are the subject of this research. In this study, e-journals implementation of the youth and children's category "bilge çocuk, minika çocuk, minika GO, National Geographic kids and bilge minik" is aimed to study the design of the children's magazine cover.

INTRODUCTION

"Leipziger Wochenblatt für Kinder" which was known as the first children's magazine in the world and published in Germany in 1722 (Yılar, 2010: 48). The first children's magazine as for the Ottoman period which was the journal published in 1869 as a weekly supplement of a newspaper called a Mümeyyiz (Gönenç, 2007,64).

Children's magazines which was especially onwards the 18th century, have emerged as a result of the change in the understanding of childhood. The most important factor in the emergence of literature about children's magazines and other children which is the idea that children's perceptions of reality are different from adults with the discovery of childhood (Oğuzkan, 2001: 207).

The transformation of journalism from traditional magazines to digital magazine is as for the product of a process from the 1990s to the present. Digital journal types which, technical possibilities, software differences, design preferences and content varies depending on the application shows differences, are the most widely used into five categories: digital magazines that are not based in the printed version, digital-only magazines, iPad, Android or iPhone apps of magazine editions, PDF replicas of print editions, applications for Kindle or Sony eReader (Silva, 2011:1-5).

The design of the page which visual materials such as photographs, graphics in order of importance specific order and under the rules, is placed on a two-dimensional surface to attract the attention of the reader (Seçim, 1996: 3).

Page design and grid which accepted as a message form of the writing of ideas and visual materials by many people throughout history, are one of the most important of today's graphic design topics (Uztuğ, 2002: 41).

The purpose of the Bauhaus school, which was established in Germany in 1919 after the First World War, was to raise the artist's consciousness on social issues and to put responsibility on. At the same time, the school aimed to the problems of art as well as the problems of artist (Erkmen, 2009: 18-19).

The most important influence of the Bauhaus school on magazine design was the "From Follows Function" motto. Use of grid method in page designs, use of templates to create integrity between numbers, it constitutes an important turning point in magazine design under the conditions of that day (Bektaş, 1992:144). Bauhaus school's the most important point of view in the page design, the surface is divided into small squares, the visual elements are deployed with a symmetrical approach, and the simplicity comes to the fore (Becer, 2009:63).

"Grid's word meaning is means a particular line, track, grid. In other words, the grid is the horizontal and vertical lines that help to organize the elements (text, image, figure, graphic, drawing, etc.) that will be used in the page design" (Uçar, 2004: 147). "Grid is an effective solution to the problem of editing when multiple design elements are put together" (Uçar, 2004: 151). Grid is the most important starting point of the page design process. The grid is also called gridlines. As the name suggests, grid lines guide the designer throughout the design. The grid, which is related to proportionality, takes part in designs in daily life. Grid is the imaginary creation of horizontal and vertical lines. These fictitious lines are the most practical way of organizing and organizing an area, and the surface. The designer prepares the design with the help of grid lines. It should be

noted that grid lines are based on a certain system and in proportional relationship with each other. “The benefit of using grids is vital when the design on the surface is high on the basis of the number of pages” (Uçar, 2004: 149). Since journals are also a multi-page graphical product, it is inevitable to prepare them with the grid system. It is necessary to give importance to the grid in the inner pages design as well as the cover. “It would not be wrong to use the definition of the planned solution of the problem for grid. A well-designed grid is a potential plan for solving future situations beyond the current regulatory problems. Although the reader is not aware of this system, it defines and uses it for tracking purposes. Grid turns into a system that identifies the transmission language of information such as a visual password” (Uçar, 2004: 147).

THE STUDY

In the journals section of Türk Telekom's e-magazine application; fashion women, special attention, decoration, economy, youth & children, magazine, travel, health, fitness, life, food and technology categories. In the youth& children category; Minika Go, National Geographic Kids, Heygirl, New Istanbul, Postkol, Bos, Burda çocuk, Bilge çocuk, Kore POP, Minika çocuk, Bilge minik magazines. In this study, we aimed to investigate children's magazines to 0-5 age group (pre-school) and 6-8 age group children will be our priority. Burda çocuk's magazine, which is outside of our study in terms of youth journals and content, whose target audience is 13-15 years old (first youth age) has not been included in the study. Bilge çocuk, Bilge minik, Minika çocuk, Minika Go, National Geographic Kids magazines in the category of youth children of Türk Telekom's e-magazines were selected for research. For this reason, the grid system of the children's magazines of the first three months of 2019 was examined in terms of Bauhaus School.

To give brief information about the children of Bilge çocuk, Bilge minik, Minika çocuk, Minika Go, National Geographic Kids magazines in the youth children category of Türk Telekom's e-magazines application; target group is 3-6 age group, 4-6 age group and 7 year age group. Minika Çocuk's target group is children aged 3-6 and their families, Bilge minik's target group is children of the age group of 4-6 years and their families, Bilge çocuk, Minika Go and National Geographic Kids's target groups are 7 years old child.

FINDINGS



Figure 1: Bilge Çocuk Magazine's January 2019 Cover Grid System



Figure 2: Bilge Çocuk Magazine's February 2019 Cover Grid System



Figure 3: Bilge Çocuk Magazine's March 2019 Cover Grid System

Bilge Çocuk

	Number of horizontal line	Number of vertical line
January 2019	25	10
February 2019	19	14
March 2019	22	9
TOTAL	66	33

Table 1: Bilge Çocuk Magazine January, February, March 2019 in the numbers of the Grid System in the Table

The visual and verbal elements on the covers of January, February and March 2019 of Bilge Çocuk magazine are placed on the cover in certain dimensions over the invisible horizontal and vertical lines. On the cover of Bilge Çocuk dated January 2019, there are four short titles next to the logo type, a large visual and small items that complement this image. Below the large image is the cover subject " Üşüyen Gezegen Uranüs ". On the cover of Bilge Çocuk dated February 2019, five short titles next to the logo type include a large visual and small items

that complement this image. Below the large image is the cover subject " Çelik Kuşlar ". On the cover of Bilge Çocuk dated March 2019, four short titles next to the logo type include a large visual and small items that complement this image. In the upper left corner of the large image is the cover subject "Balın Ustasıyım Çiçeklerin Hastasıyım". January, February, March cover a large area on the cover and a visual image on the left side of this image with more than one short title and cover subject was prepared with the title. The majority of written messages provide that the horizontal lines forming the grid system are more than vertical lines. This situation adds a static state to the design. In the three issues of the journal, the horizontal lines are more than the vertical lines. Dimension and color differences within the text groups eliminate the static structure brought by the horizontal lines used in the grid system.



Figure 4: Bilge Minik Magazine's January 2019 Cover Grid System



Figure 5: Bilge Minik Magazine's February 2019 Cover Grid System



Figure 6: Bilge Minik Magazine's March 2019 Cover Grid System

Bilge Minik

	Number of horizontal line	Number of vertical line
January 2019	12	10
February 2019	12	10
March 2019	11	9
TOTAL	35	29

Table 2: Bilge Minik Magazine January, February, March 2019 in the numbers of the Grid System in the Table

The visual and verbal elements on the covers of January, February and March 2019 of Bilge Minik magazine are placed on the cover in certain dimensions over the invisible horizontal and vertical lines. On the cover of Bilge Minik dated January 2019, a short title next to the logo type is a large visual and small items that complement this image. Below the large image is the cover subject " Kardan Adam ". On the cover of Bilge Minik dated February 2019, a short title next to the logo type is a large visual and small items that complement this image. Under the large image is the cover subject " Dost Makineler ". On the cover of Bilge Minik dated March 2019, a short title next to the logo type is a large visual and small items that complement this image. In the upper left corner of the large image is the cover subject " Kaplumbağayı uyandırılım mı?". January, February, March cover a large area on the cover and the title of the cover was prepared under the large image in February, above the large image in January and March. Due to the target audience of the magazine, there is no written messages on the cover of the magazine. This ensures that the horizontal lines forming the grid system are almost equal to the vertical lines. The fact that the horizontal and vertical lines are almost equal in all three magazine is directly proportional to the age range of the target audience. One great visual and its complementary elements are noticeable due to the font, punto and color differences of the title of the cover.

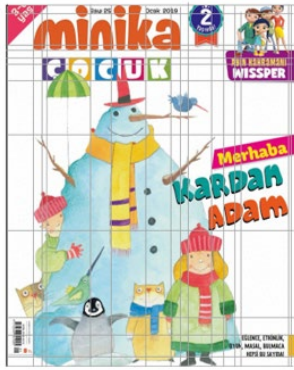


Figure 7: Minika Çocuk Magazine's January 2019 Cover Grid System

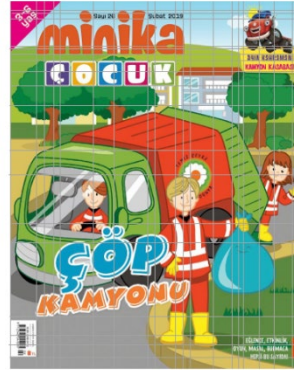


Figure 8: Minika Çocuk Magazine's February 2019 Cover Grid System



Figure 9: Minika Çocuk Magazine's March 2019 Cover Grid System

Minika Çocuk

	Number of horizontal line	Number of vertical line
January 2019	12	17
February 2019	19	20
March 2019	15	17
TOTAL	46	54

Table 3: Minika Çocuk Magazine January, February, March 2019 in the numbers of the Grid System in the Table

The visual and verbal elements on the covers of January, February and March 2019 of Minika Çocuk magazine are placed on the cover in certain dimensions over the invisible horizontal and vertical lines. On the cover of Minika Çocuk dated January 2019, there is a short title and two visual elements next to the logo type. The cover features a large visual and small items that complement this image. On the right side of the large image is the cover subject "Merhaba Kardan Adam". On the cover of Minika Çocuk dated February 2019, there is a short title and two visual elements next to the logo type. The cover features a large visual and small items that complement this image. Under the large image is the cover subject "Çöp Kamyonu". On the cover of Minika Çocuk dated March 2019, there is a short title and two visual elements next to the logo type. The cover features a large visual and small items that complement this image. In the upper right corner of the large image is the cover subject "Miyav Miyav kedi". January, February, March cover a large area on the cover and the title of the cover was prepared under the large image in February, to the right of the large image in January and March. Due to the target audience of the magazine, there is no written messages on the cover of the magazine. In the three months of the magazines, the vertical lines are more than the horizontal lines. Because of being a children's magazine, the high number of vertical lines indicates enthusiasm, joy and mobility. One great visual and its complementary elements are noticeable due to the font, punto and color differences of the title of the cover.



Figure 10: Minika Go Magazine's January 2019 Cover Grid System



Figure 11: Minika Go Magazine's February 2019 Cover Grid System



Figure 12: Minika Go Magazine's March 2019 Cover Grid System

Minika Go

	Number of horizontal line	Number of vertical line
January 2019	10	14
February 2019	14	11
March 2019	15	15
TOTAL	39	40

Table 4: Minika Go Magazine January, February, March 2019 in the numbers of the Grid System in the Table

The visual and verbal elements on the covers of January, February and March 2019 of Minika Go magazine are placed on the cover in certain dimensions over the invisible horizontal and vertical lines. On the cover of Minika Go, dated January 2019, there is a short title and two visual elements next to the logo type. The cover features a large visual and small items that complement this image. On the right side of the large image is the cover subject "Takvimler". On the cover of Minika Go dated February 2019, there is a short title and two visual elements next to the logo type. The cover features a large visual and small items that complement this image. On the right side of the large image is the cover subject "Dinazorlar nereye gitti?". On the cover of Minika Go dated March 2019, there is a short title and two visual elements next to the logo type. The cover features a large visual and small items that complement this image. On the right side of the large image is the cover subject "Bulutlar". January, February, March cover a large area on the cover and the title of the cover was prepared upper right the large image in February, under the right of the large image in January and March. A lot of written messages causes the horizontal lines forming the grid system to be more than vertical lines. This situation adds a static state to the design. In the January of the magazine, the vertical lines are more and the horizontal lines are more in the February and the horizontal and vertical lines are equal in the March. Horizontal line in which the horizontal and vertical lines are equal on the caps within the size of the font groups and color differences eliminate the static and serene structure of the horizontal lines used in the grid system.



Figure 13: National Geographic Kids Magazine's January 2019 Cover Grid System



Figure 14: National Geographic Kids Magazine's February 2019 Cover Grid System



Figure 15: National Geographic Kids Magazine's March 2019 Cover Grid System

National Geographic Kids

	Number of horizontal line	Number of vertical line
January 2019	12	18
February 2019	15	19
March 2019	18	14
TOTAL	45	51

Table 5: National Geographic Kids Magazine January, February, March 2019 in the numbers of the Grid System in the Table

The visual and verbal elements on the covers of January, February and March 2019 of National Geographic Kids magazine are placed on the cover in certain dimensions over the invisible horizontal and vertical lines. On the

cover of National Geographic Kids dated January 2019, there is a short title and a small visual element next to the logo type. The cover has a large visual, three small visual and captions. Below the large image is the cover subject "Buzda tek başına ". On the cover of National Geographic Kids dated February 2019, there are two short titles and two visual elements next to the logo type. The cover has a large visual, three small visual and captions. In the lower left corner of the large image is the cover subject " Dünyanın en nadir parısı ". On the cover of National Geographic Kids dated March 2019, there are two short titles and two visual elements next to the logo type. The cover has a large visual, three small visual and captions. In the upper left corner of the large image is the cover subject " Goril dili ". January, February, March cover a large area on the cover and the title of the cover was prepared below the large image in January, in the lower left corner of the large image in January and in the upper left corner of the large image in March. Because of being a children's magazine, joy, excitement and enthusiasm were obtained with vertical lines. In January and February, the number of vertical lines is more than horizontal lines. The majority of written messages provide that the horizontal lines forming the grid system are more than vertical lines. This situation adds a static state to the design. In the January and February of the magazines, the vertical lines are more and the horizontal lines are more in the March. Dimension and color differences within the text groups eliminate the static structure brought by the horizontal lines used in the grid system.

	Ocak	2019	Şubat	2019	Mart	2019
	Number of horizontal line	Number of vertical line	Number of horizontal line	Number of vertical line	Number of horizontal line	Number of vertical line
Magazines						
Bilge Çocuk	25	10	19	14	22	9
Bilge Minik	12	10	12	10	11	9
Minika Çocuk	12	17	19	20	15	17
Minika Go	10	14	14	11	15	15
National Geographic Kids	12	18	15	19	18	14
TOTAL	61	69	79	74	81	64

Table 6: Bilge Çocuk, Bilge Minik, Minika Çocuk, Minika Go and National Geographic Kids Magazines January, February, March 2019 in the numbers of the Grid System in the Table

In the study, there are more vertical lines in the January issue of journals and horizontal lines in February and March. In January, vertical lines 6% more than horizontal lines, horizontal lines in February are 4% more than vertical lines, in March, horizontal lines are 12% more than vertical lines.

CONCLUSIONS

Bauhaus school which contains the tendencies of modernity towards experimentalism and abstraction, was founded in 1919 by architect Walter Gropius in Weimar, Germany (Aksel, 2004, 1-2). The purpose of the school was to raise the artist's awareness of social issues and to put responsibility on. At the same time, as the school will express the problems of artist audiences, also aimed at bringing solutions to the problems of the masses (Erkmen, 2009: 18-19). As Walter Gropius, one of the founders of the Bauhaus school, "The transition from craftsmanship to industry means the transition from personal experience to collective experience" (Tepecik, 2002:13).

To design, you need to divide the page before you can plan. The division process is the first stage of planning. Grids which is called grid to divide the pages, is used. Grid helps to design elements, such as writing, photography and illustration to be used in design (İstek, 2005:99).

Grid is a structure that constitutes the basic skeleton of the page; The guide lines and areas that are not seen as printed in the publication but play a critical role in the design process. Grid design can be simple, detailed as well. A grid system designed to be detailed and capable of carrying all kinds of content, Instead of dealing with new problems about the layout of the designer's content, can easily complete them, allowing them to spend time on more creative quests (Taşcıoğlu ve diğerleri, 2012:15).

Bilge çocuk, Bilge minik, Minika çocuk, Minika Go, National Geographic Kids magazines in the category of youth children of Türk Telekom's e-magazines were selected for research. For this reason, the grid system of the children's magazines of the first three months of 2019 was examined in terms of Bauhaus School.

When looking at the grid system of the quarterly covers of five journals, it was seen that horizontal and vertical lines were used in accordance with the target audience. The cover of magazines is an important reason for the target audience to read and buy, or to download the phone to its ipad.

The designers who prepare the covers benefit from the grid system, but readers can never see these invisible grid lines. But when the reader looks at the covers, they see that the elements such as photos, text and illustration are placed in a very meaningful way.

REFERENCES

- Aksel E (2004) "Temel sanat kararları" Anadolu Üniversitesi, Eskişehir. easiv.anadolu.edu.tr, (erişim 20.2.2019)
- Becer E (2005) *İletişim ve Grafik Tasarım*, Dost Yayınevi Ankara.
- Bektaş D (1991) *Çağdaş Grafik Tasarımının Gelişimi*, Yapı Kredi Yayınları, İstanbul.
- Celbiş Ü (2009) "Bauhaus'un Alman Tasarım Kültürüne Etkileri", *Bauhaus: Modernleşmenin Tasarımı*, İletişim Yayınları, İstanbul.
- Erkmen, N. (2009) "Bauhaus ve Marmara Üniversitesi Güzel Sanatlar Fakültesi" *Bauhaus: Modernleşmenin Tasarımı*, İletişim Yayınları, İstanbul.
- Gönenç Aslı Yapar (2007) "Türkiye'de Dergiciliğin Tarihsel Gelişimi" *İstanbul Üniversitesi İletişim Fakültesi Dergisi*, İstanbul, 63-78.
- Hall, Frania (2014) *Dijital Yayıncılık*, Türkan Çolak (çev), Profil Yayıncılık, İstanbul.
- İstek, R (2005) *Görsel İletişimde Tipografi ve Sayfa Düzeni*, Pusula Yayıncılık, İstanbul.
- Oğuzkan A F (2001) *Çocuk Edebiyatı*, Anı Yayıncılık, Ankara.
- Seçim F (1996) *Halkla İlişkilerde Basım ve Yayın Teknikleri*, Anadolu Üniversitesi Yayını, Eskişehir.
- Silva S D (2011) "The future of digital magazine publishing." https://www.researchgate.net/publication/260320567_The_Future_of_Digital_Magazine_Publishing, (erişim: 20.2.2019)
- Şeyda E (2005) "Çocuk Dergiciliğine Dair Tarihi Bakış: Osmanlıca Çocuk Dergileri", *Yağmur Dergisi*, http://www.yagmurdergisi.com.tr/konu.php?konu_id=35&yagmur=bolum2&kat=12 (erişim: 20.2.2019)
- Taşcıoğlu M, Bodur F, Eryılmaz H, Özkanal B, Aydın H, Göksel E (2012) *Halkla İlişkiler Uygulama Teknikleri*, Anadolu Üniversitesi Yayınları, Eskişehir.
- Uçar T F (2004) *Görsel İletişim ve Grafik Tasarım*, İnkilap Kitabevi İstanbul.
- Uztuğ F (2002) *Halkla İlişkilerde Uygulama Teknikleri*, Anadolu Üniversitesi AÖF Yayını, Eskişehir.
- Yılar Ö (2010) "Çocuk Yayınları", *Çocuk Edebiyatı*, Pegem Akademi Yayınları, Ankara, 38-50.

APPROACHING TEACHING-LEARNING PROCESS IN DESIGN: COMPETENCE-BASED LEARNING AND PROFESSIONAL PROFILE

Maria del Pilar ROVIRA

Research Group in Innovation and design (GRID), main researcher, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), professor, Palma, Mallorca, Illes Balears, Spain
grid@escoladisseny.com

Maria del Mar VILALTA

Research Group in Innovation and design (GRID), member, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), professor
mvilalta@escoladisseny.com

Francisca M. TORRENS

Research Group in Innovation and design (GRID), member, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), professor, Palma, Mallorca, Illes Balears, Spain
ftorrens@escoladisseny.com

Irene MESTRE

Research Group in Innovation and design (GRID), member, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), professor, Palma, Mallorca, Illes Balears, Spain
imestre@escoladisseny.com

Margalida CANET

Research Group in Innovation and design (GRID), member, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), lecturer, Palma, Mallorca, Illes Balears, Spain
mcanet@escoladisseny.com

Maria F. ABANDO

Research Group in Innovation and design (GRID), lecturer, Escola d'Art i Superior de Disseny de les Illes Balears (EASDIB), professor, Palma, Mallorca, Illes Balears, Spain
mabando@escoladisseny.com

ABSTRACT

With a long tradition in higher design schools, EASDIB researchers agree that the use of project methodology (Project-Based Learning) is the best tool to train future design professionals, since this methodology allows both, students and professors, to work with the four fundamental capabilities a designer needs to design (to analyse, to project, to execute, to communicate). In this context, this paper will seek to answer one main research question: Do design students identify key professional competences selected and professional profile areas involved when developing a co-design project? **METHOD.** Therefore, a small-scale pilot study is presented in this paper, in which students from different courses and specialties participated in the role of designers (a dramatized guided tour on April 19th, 2018, on the occasion of the centenary of EASDIB current headquarters' opening). The entire process was monitored and a web-based survey instrument was used to collect quantitative and qualitative data from participants at the end of the co-design project. **RESULTS.** The small-scale pilot study results do answer the question: students do not identify all main competences prior selected by EASDIB researchers for the co-design project, and, also, they do not identify all professional profile areas involved; it is all about students' perception, not about the work professors have done. **CONCLUSIONS.** Despite the mixed results, EASDIB researchers are convinced that Students-Centred Learning, Competence-Based Learning and Professional Profile, along with Project-Based Learning, allow professors a greater assess of what a design student is expected to know, understand or be able to do when studying Bachelor in Design at the EASDIB. Enhancing communication (before, during, and after the activity) is the key to improve results in future co-design projects, not only about the main key professional competences prior selected but especially about professional profile areas involved. This is an ongoing research project funded by the General Directorate of University Policy and Higher Education (Balearics Government), in the framework of a call to set up groups for academic research in higher artistic education in the Balearic Islands (2017-2020). This article reflects the views only of the authors, and the Balearics Government cannot be held responsible for any use which may be made of the information contained therein.

INTRODUCTION

Contents are important for a course, but, since the implementation of the European Higher Education Area in

Spain in 2010, in addition to the transferred knowledge, competences acquired are particularly valued (defined by the European Qualifications Framework in terms of the ability to use knowledge, skills and abilities in study/work situations and in professional/personal development, and described in terms of responsibility and autonomy) and also learning outcomes achieved (defined in 2009 by the European Commission in terms of what a student is expected to know, understand or be able to do).

It is important to say that there is a great confusion in the Spanish scientific literature of both concepts, competences and learning outcomes, as a result of their identification as synonymous in the Spanish regulations; but, within the framework of the European Higher Education Area there is a difference, as fostering competences is the object of a process of learning and of an educational programme and learning outcomes express the level of competence attained by the student and verified by assessment (European Commission, 2009; European Commission, 2015).

Despite the handicap described above, this milestone in higher education was (and still is) a paradigm shift in the Teaching-Learning process, which changes from a Teacher-Centred Teaching approach (where activity in the class is centred on the teacher) into a Student-Centred Learning approach (where activity in the class is centred on the students).

In short, the current Spanish Bachelor in Design curricula (first cycle studies) focus on competences to be acquired, developed and/or consolidated by design students when graduating. The Annex I of the Spanish Royal Decree 633/2010 and the Annex I of the Balearics Decree 43/2013 listed 17 key transversal competences (related to employability and entrepreneurship of future design graduates), 22 key general competences (related to Design as a field of knowledge), and 15 key specific competences of the design specialities (related to Graphic Design, Interior Design, Fashion Design, and Product Design).

After reviewing Spanish and Balearics regulations and also a selected number of European research projects and reports, ROVIRA (2016) simplified, set out and defined 22 key professional competences to be acquired, developed and/or consolidated by design students when graduating in order to improve employability and entrepreneurship, and tested them in the framework of the labour market needs. Currently, these 22 key professional competencies are used by EASDIB researchers in a longitudinal research study, started in 2014, aimed at assessing international mobility, Service-learning Projects, internship and co-design project developed by the Balearics Higher School of Art and Design, and so do they in this activity.

But, in addition, Spanish and Balearics regulations for Bachelor in Design (first cycle studies) include one more parameter to be taken into account in this equation, and it is the professional profile defined for each of the design specialities (graphic, product, interior, fashion), an open list that represents a wide range of professional areas for future graduates in the design sector. The annex I of the Spanish Royal Decree 633/2010 listed a number of the main areas where designers develop their activity, known as professional profile (12 areas for graphic design, 12 areas for interior design, 15 areas for fashion design, 21 areas for product design). Professional profile is also used by EASDIB researchers for research purposes.

This is the framework of a small-scale pilot study which is presented in this paper and developed at the Balearics Higher School of Art and Design during the academic year 2017-2018, on the occasion of the centenary of its current headquarters' opening, which took place on October 1st, 1917.

RESEARCH QUESTION

With a long tradition in higher design schools, EASDIB researchers agree that the use of project methodology (Project-Based Learning) is the best tool to train future design professionals, since this methodology allows both, students and professors, to work with the four fundamental capabilities a designer needs to design (to analyse, to project, to execute, and to communicate, as described in article 3.3 of the Balearics Decree 43/2013).

EASDIB researchers proposed a co-design project titled 'Itineraris (1778-2018). De l'Escola de Dibuix de Palma a l'Escola d'Art i Superior de Disseny de les Illes Balears', a dramatized guided tour around EASDIB building in order to highlight its history (which opened its doors on December 1st, 1778) and its building (whose opening took place on October 1st, 1917).

The dramatized guided tour took place on April 19th, 2018. From 15:00pm to 19:00pm, there were scheduled seven tours, 30 minutes each, with about 15-20 people per visit. The last visit scheduled at 19:00pm gathered more than 100 people.

'As soon as I climbed the first step of the school entrance, all the visual information managed to awaken my five senses. The didactic route and the personalized characters' staging in each itinerary, teleported me to that precise moment of which the guide was talking about. It managed to get fully involved. For me, the best itinerary was the one in the drawing room. It managed to create a very real atmosphere.' (Graphic Design students)

This was a global experience, involving students from different years and specialties who participated in the role of designers: Fashion Design (costumes for selected characters), Interior Design (sets) and Graphic Design (leaflet, panels along the tour, video).

'The drawing class looked spectacular, with the lights, the bases, the figures and the personalized characters. Besides, the explanation in each scenario was very relevant.' (Interior Design students)

In order to answer the research question for this study, the entire process was monitored by questionnaires given to students and the first results are presented below. In this context, this paper will seek to answer one main research question: Do design students identify key professional competences selected and professional profile areas involved when developing a co-design project?

METHOD

A web-based survey instrument was used to collect quantitative and qualitative data from 23 participants at the end of the co-design project. The questionnaire was developed to assess if students perceived professional profile areas, key professional competences and learning outcomes as EASDIB researchers had planned.

The on-line form presented questions in six parts:

- a) Background questions, which included six questions: name and surname, e_mail address, gender (male, female), year of study (1st, 2nd, 3rd, 4th), speciality (graphic, interiors, fashion, product), activity (costumes, set design, leaflet, panels, photo, video, performance).
- b) Personal profile, previously identified by EASDIB researchers for each speciality, involving different areas for Graphic Design students (corporate and visual identity, editorial design, audio visual design, environmental design, teaching), Interior Design students (ephemeral spaces design, teaching), and Fashion Design students (costumes for theatre plays, styling, teaching).
- c) Professional competences, which included main and secondary key professional competences. On the one hand, eight main key professional competences were identified by EASDIB researchers before the co-design project started, such as professional knowledge as specific body of knowledge (#8), problem-solving (#13), Design Thinking (#14), decision-making (#15), theory into practice (#16), teamwork (#17), leadership (#18), and concern for quality (#21). On the other hand, thirteen secondary key professional competences (the rest) could be identified by students when the co-design project was completed, such as social and civic global awareness (#1), cultural global awareness (#2), adaptability and flexibility (#3), general knowledge (#4), communication in the mother language (#5), communication in a foreign language (#6), digital knowledge (#7), self-management (#9), personal development (#10), analytical and critical thinking (#11), research (#12), autonomy, organisation and planning (#19), initiative and entrepreneurship (#20), and ethical commitment and social/environmental responsibility (#22).
- d) Learning outcomes (fail, pass, remarkable, outstanding), which included three items: to participate in a co-design project, to develop an experience that enhances the acquisition of transversal competences, and to show design as a key success factor for organizations.
- e) Personal experience, which included five open questions to fill in a single word and/or a short sentence about 'The best of the experience has been...', 'The worst of the experience has been...', 'Three things I've learned...', 'This learning is important to me because...', and 'Write down a micro-story of the experience'.
- f) Assessment of the activity, which included five questions, such as 'How relevant was the activity to your future academic pursuits?' (scored from 0 to 10)?', 'How relevant was the activity to your future career paths (scored from 0 to 10)?', 'Overall satisfaction with the activity (scored from 0 to 10)?', 'Would you repeat the activity (closed question: yes, no)?', and 'Any Suggestion?'

All items were explained to students at the beginning of the activity, before starting the co-design project. Students were later expected to identify them at the end of the activity, once the global experience had finished.

RESULTS

During the months of May and June 2018, a total of 23 participants filled in the questionnaire: four graphic

design students (100% from third-year students; 50% women, 50% men), two interior design students (100% third-year students; 50% women, 50% men), seventeen fashion design students (47.1% in their first year, 17.6 in their second year; 29.4% in their third year, 0.1 in their fourth year; 82.4% women, 17.6% men).

Table 1: Participants results for main key professional competences.

Teamwork (#17)	82.4%
Problem-solving (#13)	73.9%
Theory into practice (#16)	47.8%
Concern for quality (#21).	34.8%
Decision-making (#15)	30.4%
Design Thinking (#14)	26.1%
Leadership (#18)	17.4%
Professional knowledge as specific body of knowledge (#8)	0.0%

As shown in table 1, not all students identified main competences selected by EASDIB researchers for the co-design project proposed. Students did not perceive ‘Professional knowledge as specific body of knowledge (#8)’ as a key professional competence; however, they highlighted this knowledge when writing down a micro-story of the experience:

‘The experience of being together with different people with a common goal has been rewarding. I felt that, apart from improving my sewing skills, I have improved my relationship with my mates.’ (Fashion Design students)

Table 2: Participants results for professional profile areas.

	Graphic Design	Interior Design	Fashion Design
Corporate and visual identity	25.0%	---	---
Editorial design	50.0%	---	---
Audio visual design	25.0%	---	---
Environmental design	25.0%	---	---
Ephemeral spaces design	---	100.0%	---
Costumes for theatre plays	---	---	58.8%
Styling	---	---	41.2%
Teaching	0.0%	0.0%	5.9%

As shown in table 2, participant mainly identified professional profiles developed during the co-design project, especially Interior Design students. It is important to say that, maybe, “Teaching” was the area of the professional profile especially highlighted in this experience, as EASDIB researchers promoted during de co-design project a learning community in which participants improved their key professional competences by being students and teachers at the same time. However, not all participants identified this competence:

‘Even though I have worked with dressmaking and pattern making at home. However, the time I have been in the workshop, with my mates, has been edifying for me. Teamworking, in addition to working in a chain, motivates me. If there is any doubt, I can ask someone; also, if I have something already sewn, I can try it on a person, and modify the outfit.’ (Fashion Design students)

Finally, participants scored learning outcomes as remarkable: Dramatized guided tour relevance for further academic pursuits and/or future career paths scored 7.9, and the overall activity scored 8.1.

‘This project taught us to face problems of our future professional sector. Thus, we have been able to see our strengths and weaknesses. As an experience, it was very illustrative, and I think it is necessary in the academic field.’ (Fashion Design students)

Despite only 82.6% of students identified teamwork competence (#17), they highlighted teamworking (39.1%), developing real projects for future career paths (34.8%), and the ‘learning by doing’ kind of activity (13.0%) as the main learnings’ outcomes for students. These are the main reasons why a 95.7% of participants will repeat the experience.

‘It was a great experience. I did not imagine that we could achieve it in the established times. It showed us that, if we worked as a team, things could be done well.’ (Fashion Design students)

Finally, feedback from participants was about increasing the number of dramatized guided tour in order to allow more visitors; using as sound system to hear performers better; involving former students experience into the dramatized guided tour; and, last but not least, turning this voluntary activity into a compulsory activity for students.

CONCLUSIONS

This article was aimed at answering one research question: Do design students identify key professional competences selected and professional profile areas involved when developing a co-design project? The 'Itineraris (1778-2018)' co-design project (Figures 1 to 6) was developed and a small-scale pilot study results do answer the question.



Figure 1. First itinerary (1778-1850).

The response to the first part of the question was certainly a “no”, students do not identify all main competences selected by EASDIB researchers for the co-design project. When asked, students took it for granted and/or there was a lack of communication.



Figure 2. Second itinerary (1850-1910).

Neither was the response to the second part of the question positive. Participants did not identify all professional profile areas involved in the co-design project, especially the teaching area; although they really highlighted the importance of teamwork competence (#17).



Figure 3. Third itinerary (1910-1931).

It is all about students' perception, not about the work professors have done. It is all about communication, professors' better communication skills.



Figure 4. Fourth itinerary (1931-1963).

Despite the mixed results, EASDIB researchers are convinced that Students-Centred Learning, Competence-Based Learning and Professional Profile, along with Project-Based Learning, allow professors a greater assess of what a design student is expected to know, understand or be able to do when studying Bachelor in Design at the EASDIB.



Figure 5. Fifth itinerary (1963-2000).

Enhancing communication (#5) is the key to success, as it is the most important tool to improve results in future co-design projects, not only about the main key professional competences prior selected, but especially about

professional profile areas involved (communication before, during, and after the activity).



Figure 6. Sixth itinerary (2000-2018).

By choice, students joined a co-design project, participated in the dramatized Guided Tour, heard the untold stories about the history of the school and the building, and really enjoyed the visit, as the experience tried to involve the five Senses, but this will be a research work for another paper.

ACKNOWLEDGMENTS

The 'Itineraris (1778-2018)' co-design project was supported by EASDIB students. For their availability and priceless cooperation, our special thanks go to Francisco HEREDIA, Brigittte ESPINOSA, Xesca FERNANDEZ DE HEREDIA, Charlotte CAPUT, Isabella SÁNCHEZ, Antonio PLASENCIA, Selene CIFRE, Rosana GUTIERREZ, Iago RODRIGUEZ, Victoria BAUZÁ, Victoria GIL, Neus GUILLÉN, Daniela GÓMEZ, Aina MESQUIDA, Judit BARROSO, Abraham GOST, Daniela GÓMEZ, Cristian MATEO, Ana SANTANA, Rafael VEGA, Marta DURAN, Nathalia GUERRERO, Eva María NADAL. Also, assistance provided by Maureen de España was greatly appreciated.

REFERENCES

- Balearics Decree 43/2013 - Decreto 43/2013, de 6 de septiembre, por el que se establece en las Illes Balears el plan de estudios de las enseñanzas artísticas superiores conducentes al título superior de diseño de las especialidades de diseño gráfico, diseño de interiores, diseño de moda y diseño de producto y se regula su evaluación (BOIB núm. 125, 10-09-2013). Available: <http://www.caib.es/eboibfront/es/2013/8191/523353/decreto-43-2013-de-6-de-septiembre-por-el-que-se-e>.
- European Commission (2009). *ECTS Users' Guide*. Luxembourg: Office for Official Publications of the European Communities. Available: http://ec.europa.eu/education/ects/users-guide/docs/year-2009/ects-users-guide-2009_en.pdf.
- European Commission (2015). *ECTS Users' Guide*. Luxembourg: Office for Official Publications of the European Communities Available: https://ec.europa.eu/education/ects/users-guide/docs/ects-users-guide_en.pdf.
- FRAYLING, Christopher (1993). Research in Art and Design (Monograph). *Royal College of Art Research Papers*, Vol. 1, No. 1, 1993/4. Royal College of Art, London (England, United Kingdom). Available: http://researchonline.rca.ac.uk/384/3/frayling_research_in_art_and_design_1993.pdf.
- ROVIRA, M. Pilar (2016). New Opportunities, new Competences, new Challenges. Learning through Civic Engagement at the Balearics School of Art and Design. *Diálogos com a arte. Revista de Arte, Cultura e Educação*, 6, 95-129. Available:

http://docs.wixstatic.com/ugd/6d6107_b259b7099802407fa09e9ede690b607c.pdf.

SIERRA-BRAVO, Restituto (1997). *Técnicas de Investigación Social: Teoría y Ejercicios*. Madrid (Spain): Ediciones Paraninfo S.A.

Spanish Royal Decree 633/2010 - Real Decreto 633/2010, de 14 de mayo, por el que se regula el contenido básico de las enseñanzas artísticas superiores de Grado de Diseño establecidas en la Ley Orgánica 2/2006, de 3 de mayo, de Educación (BOE núm. 137, 05-06-2010). Available: <https://www.boe.es/boe/dias/2010/06/05/pdfs/BOE-A-2010-8957.pdf>.

BENEFITS AND CHALLENGES OF FRENCH IMMERSION SCIENCE INSTRUCTION

Ginette ROBERGE

Faculty of Education, Laurentian University, Sudbury, ON (Canada)

gx_roberge@laurentian.ca

Yovita GWEKRERERE

Faculty of Education, Laurentian University, Sudbury, ON (Canada)

ygwekrerere@laurentian.ca

The authors wish to gratefully acknowledge the valuable contribution of the Ontario Ministry of Education and of the Council for Ontario Directors of Education in the completion of this study.

ABSTRACT

In Ontario, Canada, the country's two official languages, French and English, are commonly taught in schools. Students with limited opportunities of exposure to the French language outside of the school context who wish to develop their proficiency in this language typically opt to attend a French Immersion program (FI). In an FI program, students are immersed in French instruction for a varied number of academic subjects. In the science classroom, FI teachers have the additional challenge of teaching scientific concepts while taking into consideration the fact that their students' language competencies may be varied or limited. Furthermore, parents appear to sometimes be reticent to have their children learn sciences and mathematics in French when it is not their first language. The current study was funded by the Ontario Ministry of Education and was conducted subsequent to a request by FI science teachers who wished to hone their instructional capacity to meet the needs of their students who were learning science in French. A qualitative approach, utilizing in-depth interviews and participant classroom observations was applied to gain perspective on the state of FI science instruction in Ontario. 37 teachers from the intermediate level (grades 7-10) from FI programs across the province participated in the study. The results provide insight into the identified benefits and challenges that are commonly associated with FI science instruction. Recommendations for the enrichment of FI science teaching and learning in a second language setting are also proposed.

INTRODUCTION

Today's students come from a variety of social, linguistic and academic backgrounds. The particular needs of these diverse student populations require teaching approaches that consider student individual differences. In the case of content-based subjects such as science and mathematics, French Immersion (FI) teachers have the additional challenge of teaching scientific concepts while taking into consideration the fact that their students' language competencies may be varied or limited. Furthermore, teachers are required to utilize the second language exclusively in their instruction, yet must also teach the same content as their first language counterparts. Numerous studies on second language production have shown, however, that students learning in a second language setting commonly rely heavily on their knowledge of their first language to negotiate meaning and to learn the concepts being taught (Chung, Chen & Deacon, 2017; Harley, 2008; Swain, 2003). Given the complexity of interlaying factors associated with language acquisition, such as the students' and teachers' varied levels of abilities in the second language, opportunities (or lack of) of exposure to the language outside the classroom, the availability of appropriate educational resources as well as governmental regulations of mandated instructional approaches, French Immersion teachers identify a number of benefits and challenges when teaching content-based material in their classrooms.

In response to a request from French Immersion science teachers across the province of Ontario, in Canada, the current action research project strove to build their capacity and to provide professional development and resources to support them in their science instruction. The research team encompassed a collaborative effort between university researchers and members from an innovative science center, who have worked in partnership to provide professional development and to develop pedagogical resources geared to French Immersion Science Teachers. As a starting point, to gain insight on the current state of French Immersion science in Ontario schools, the researchers undertook an in-depth study of teacher beliefs about science instruction, of what they perceived to be the benefits to learning a second language, as well as the difficulties that they encounter in their daily instruction. As such, the current paper examines the benefits and challenges associated with French Immersion science instruction, as reported by FI teachers from across the province of Ontario.

LITERATURE REVIEW

BENEFITS OF FRENCH IMMERSION SCIENCE INSTRUCTION

In the current study, the focus was on French Immersion science educators, though the findings may be generalized to other content-based educational settings. By nature, science is the process of gaining knowledge about how the natural world works, hence it answers the myriad of questions that children are curious about from the time they begin to explore their surroundings. By the time children come to school they already have formulated a somewhat naïve understanding of the natural world and the role of science teachers is to uncover these naïve or alternative understandings in order to support the process of knowledge construction and understanding of scientific concepts, laws and theories. Science inquiry promotes curiosity as students are encouraged to wonder and ask questions, research in order to explain their findings (Henser, 2005; Kur & Heitzmann, 2008). Numerous studies suggest that teachers' specific subject beliefs tend to be compatible with their instructional strategies (Gallagher, 1991; Laplante, 1996; Rowell & Gustafson, 1993). In turn, as mentioned, it is widely accepted that student intrinsic motivation and self-regulatory practices can be directly linked to student engagement and achievement (Velayutham, Aldridge & Fraser, 2011). Taking into consideration these findings, it is noteworthy to mention that a teacher's own beliefs and motivation has a considerable impact on their science instruction. Furthermore, student motivation towards science learning also plays an important part in their learning. Teaching science through inquiry in French Immersion therefore helps French Immersion learners to create new understandings of their world in the language of instruction as they are provided the chance to ask their own questions in French, design their own experiments, discuss, communicate and write in the French language.

In Ontario, the vision for French Immersion education is grounded in the federal linguistic duality approach, which perceives knowledge of Canada's two official languages (French and English) as an important part of Canadian history as well as a notable asset in terms of student interaction and employability on an international spectrum (Ontario Ministry of Education, 2013). This position is supported by numerous studies, which confirm that communicative competency in more than one language has positive academic benefits, facilitates the learning of additional languages, and may even enhance overall language proficiency (Cenoz & Genesee, 1998; Diamond, 2010; Ontario Ministry of Education, 2013). In a publication that presents the framework for French as a Second Language instruction in Ontario, the Ministry of Education has further recognized that knowledge of French and English may also increase career opportunities and enhance student understanding and appreciation of global diversity (Ontario Ministry of Education, 2013). This framework requires that all students should have access to French Immersion education regardless of their linguistic background, and proposes that French language experiences should extend beyond the school and involve parental and community engagement.

The cognitive benefits of learning a second language are well documented in extant literature. In terms of FI programs, research has shown that they nurture student proficiency in French and English, Canada's two official language. Furthermore, cognitive research links bilingualism to enhanced critical thinking skills, metalinguistic cognance, as well as enhanced communicative capacity (Lazaruk, 2007). Macintyre, Burns & Jessome (2008) further indicate that learning and being immersed in a second language, especially for adolescents, can have a strong positive impact on students' concept of self, sense of identity and level of confidence. Research has also focused on the linguistic benefits of French Immersion programs, namely that students may eventually become proficient in both French and English, with no detriment to their academic achievement (Lazaruk, 2007).

CHALLENGES OF FRENCH IMMERSION SCIENCE INSTRUCTION

Despite the identified benefits of second language acquisition, research has also identified certain challenges that FI teachers face when teaching technical or content-based subjects such as mathematics, science or history. It is important, in fact, to consider the multiple roles that language plays in learning science. Most scientific topics covered in the curriculum require knowledge of technical scientific vocabulary in order to grasp the interrelated concepts. Learning this vocabulary in a second language can be challenging for students and could hinder their comprehension. The structure of FI programs in Ontario may also be a challenge for students and teachers. The provincial framework for instruction subscribes to the monolingual principle, which stipulates that instruction should occur exclusively in the students' second language, with limited use of the students' first language. Cummins (2008) suggests that other bilingual strategies that promote cross-language transfer may be further beneficial in helping students overcome the comprehension barriers that arise from learning entirely in their second language. It is also significant to mention that, as students sometimes have little to no opportunities of exposure to

the French language outside of the classroom, research has shown that they may not become as proficient in French language as their native French-speaking counterparts. Roy & Galliev (2011) further suggest that French Immersion students may struggle to become identified as bilingual, given their proficiency levels in French.

Furthermore, Rivard, Cormier & Turnbull (2012) propose that many science teachers note that textbooks and pedagogical resources in science tend to be too difficult for French Immersion students and that the curriculum is too overloaded to allow for the teaching of language arts concepts (reading and writing strategies) in content instruction of scientific concepts. Furthermore, existing resources are generally destined to first language teachers and therefore do not consider the pedagogical implications of second language teaching approaches, namely teaching complex scientific concepts in what is a second language for most learners. These could be substantial barriers to student learning, as Turnbull, Cormier & Bourque (2011) have found that students who engaged in French language literacy activities in science were more likely to utilize more complex language structures in their oral communications. They also uncovered a link between stronger literacy skills and increased academic performance in science. This underscores the importance of strengthening literacy skills in content-based subjects.

On a larger scale, some critics indicate that FI programs can be exclusive and divisive, as they are sometimes perceived as being better suited to students who are strong academically (Hutchins, 2015; Wente, 2018). Some researchers also note that students who struggle academically may begin to lose confidence in their abilities, as they have the additional encumbrance of grasping and of communication scientific concepts in their second language. Some schools, especially those in isolated communities, may also have limited resources to support students who are struggling in their FI program. For this reason, some parents may hesitate to allow their children to learn content-based subjects such as mathematics and science in their second language. To compound this issue, the province of Ontario is also currently struggling with a serious shortage of qualified FI teachers.

In light of these documented challenges, the current study addressed the state of FI science instruction in Ontario, as reported by FI science teachers currently working on the front lines in science classrooms across the province.

METHODS

RESEARCH METHODOLOGY

The study employed a qualitative approach to assess the needs of French Immersion science teachers and to evaluate the effectiveness of the science resources and workshops designed to improve the teaching of science to French as a second language learners. The Ontario Ministry of Education funded the study at the request of FI science teachers in Ontario who wished to further hone their second language teaching skills and acquire useful strategies to maximize their students' learning. School board representatives were asked to put out a call for teachers to participate in the study. Their participation involved taking part in a semi-structured interview, participating in a series of workshops developed by the research team and scientists from a local science center, as well as participating in follow-up classroom observations to observe how teachers were incorporating the workshop materials to their classrooms. The workshops were held for three full days, and all participants received extensive science kits and USB sticks that contained the workshop contents. They also participated in networking sessions during which they shared best practices, discussed challenges and shared experiences with other FI science teachers who were teaching at their grade level. Due to time and distance constraints, 20 teachers from the workshop participants were selected for follow-up classroom observations and to assist the research team in assessing project success.

PARTICIPANTS

The participants in this project were grade 7-10 French Immersion teachers who were teaching science in French. The researchers received a list of all School Boards across Ontario that offer FI science. Nine school boards submitted names of teachers and board leads in science or French Immersion education. A total of 37 FI science teachers (5 male and 32 female) were recruited from 9 school boards across Ontario to participate in the project. Thirty grade 7/8 teachers and 7 grade 9/10 teachers were successfully recruited to participate in two 2-day professional development workshops offered by Science North Educators in collaboration with the researchers. Four school board leads and a liaison from the Council of Ontario Directors of Education (CODE) also participated in the workshops.

After the potential participants were identified, the researchers followed the ethics process by contacting individual teachers via email to provide them with the project information and asked them to complete and sign a consent form to indicate their willingness to be part of the project. It was important for the researchers to ensure that the teachers were willing to participate in the needs assessment interviews as well as complete questionnaires associated with the workshops. Furthermore, teachers were asked to indicate on the consent form whether they were willing to have researchers visit their classes as follow up to the workshops. Eighteen out of 37 teachers signed up to have researchers do follow-up visits to their classrooms for observation and to collect student data.

DATA COLLECTION

As mentioned above, qualitative data was collected through interviews, document analysis, and classroom observations. Semi-structured telephone and face to face interviews were conducted to assess the needs of French Immersion science teachers. The semi-structured interviews contained ten questions, with additional prompts when required, and had an approximate duration of one hour. The interview questions are presented in Table 1. It should be noted that follow-up interview questions were asked in person by the researchers following the classroom observation sessions. Table 2 shows the debriefing interview questions (follow-up) shared during classroom observations.

Table 1

Needs Assessment Interview Questions

Needs Assessment Interview Questions

1. Are there any particular strands or areas in teaching the Science and Technology curriculum in which you would like to receive further training?
Probe: Any areas you would need further instruction? Which ones?
2. What do you consider to be your biggest challenge in your FI science classes?
3. What are the learning outcomes that you like to see in your students when teaching science?
Probe: What is indicative of student success, what tells you that your instruction was successful?
4. How do you incorporate French as a Second language teaching strategies in your science instruction?
Probe: What about assessment? Do you feel comfortable with assessment FOR, AS and OF learning?
5. Do you collect information about your students' prior knowledge in Science before beginning a new strand? How?
6. In general, do you feel that you have enough knowledge and scientific concepts and content to teach them to your students?
7. How do you adapt your science instruction to your students' needs/strengths?
8. Do you use any apps or technology tools to support your students' learning in science?
9. Do you feel that you understand well how students learn Science in a second language context?
10. Do you have any additional general comments about what you hope to gain by participating in this project?

Table 2

Debriefing Interview Questions

Reflecting on classroom discourse

1. How did the workshop discussions work for you?
2. How did you feel about the tasks in terms of stimulating the richness of discussion that help students to develop their ability to communicate mathematically?

Reflecting on student learning

3. What was the evidence that students learned the Science being taught?
4. What were the barriers to student learning and what can be modified to overcome the barriers for the next lesson?

Reflecting on the Science

5. What are the Science ideas in this lesson and how significant are they?
6. How are context, representations, connections, and applications used to enhance the science being taught?

Other topics debriefed – Reflecting on the Workshop

7. Can you share your experiences at the workshop with us? We are interested to know whether it was a beneficial experience for you, what components worked or did not work for you.
8. How will these experiences help you in your profession?

Additional support needed

9. What other supports are needed to be successful in implementation of the Instructional Design?

The following section outlines the common trends and themes in terms of benefits and challenges of FI science as identified by the participants of the study.

RESULTS

BENEFITS OF FRENCH IMMERSION SCIENCE

Pedagogical Approaches that Maximize Student Learning. The interviews yielded interesting information in regards to the second language pedagogy that is frequently utilized in FI science classes. In many cases, teachers resort to applying complex and varied teaching strategies in order to respond to the needs of their students. Some comments suggest that teachers take special care to incorporate these varied strategies because of the language challenges that some students experience:

“I do always try, especially with the French students I find they need the...the visual with it. I know there’s visual learners in other areas as well, but I find it particularly useful in French so they normally have their graphic organizer or a list of vocabulary or, uh, even something up on projectors....so something up on the projector that they can refer back to throughout a lesson.”

Many participants also indicated that they frequently utilized hands-on strategies and visual support due to the fact that they are teaching science in a second language setting, as evidenced in the following comment: “...also not only listening to me talk, but finding videos and pictures, things to support what we’re learning as well, so it not only verbal it’s also reading and that trying to get them to get an entire grasp of the concepts.” This suggests that an extra effort is made to ensure that students are grasping the concepts despite the language barriers.

Other participants suggest that they often have students work collaboratively in order to build their knowledge together, especially when introducing scientific concepts for the first time: “We do a lot of, in the early stages, working together and then in smaller groups.” and “I do a lot of hands on learning., I have a bunch of different construction projects that we’ve done so far this year... they were building different things in groups...” and also: “Oh yes, so we’ll do, uhm, often times, they’ll discuss what’s known, what they know or what they don’t know, often times we will just have conversations, and discuss...”

French Immersion science teachers also seem to frequently incorporate inquiry-based learning and experiments to provide a more interactive learning experience for students: *"I also like incorporating something that's practical as well and relatable for them, so getting them involved in their learning process and...something that they can actually physically do to understand it."* and *"...they'll do experiments, where they'll have to use, you know, predict and hypothesise, do the lab, and then write down conclusions and observations. I've done, uhm, we've done a number of inquiry projects..."*

The following participant comment summarizes a number of strategies that are frequently used for many of the participants in the current study: *"...ok, yeah so, questioning, science experiments, research assignments...textbook reading...think pair shares...I like to do a lot of diagrams...I like to give them art projects to kind of solidify some of the concepts..."*

Many teachers also utilize apps and videos to assist in teaching French material: *"I have a video, I have resources on YouTube. I summarize the information that I have. So instead of, I use the last word to be able to uh, communicate information..."* and *"... I have PowerPoint and will show visually, I'll say it, I'll draw pictures, we'll have time to discuss them in small group, they can then practice with one extent, then we do a different experiment, where they're explaining."* and also: *"Uh, well, the tech really helps... that's always been an accommodation, allowing students to use tech, so it's available to everyone now."*

These findings suggest that FI science teachers are aware of their students' struggles with the French language, and make concerted efforts to apply a variety of instructional strategies that are more likely to enhance student learning. In some cases, such as inquiry-based projects, these strategies may also foster critical and higher level thinking. As such, it can be inferred that teachers who teach a concept-based subject in a second language are aware of the linguistic challenges, and therefore often adapt their teaching accordingly, by utilizing a variety of strategically selected pedagogical approaches.

Strengthening of Literacy Skills. Another theme that frequently surfaced in the interviews was that teachers appeared to place importance on the strengthening of literacy skills to allow their students to better understand the material: *"And they have to work doubly hard to understand the Science. So they have to get through the language first to get to the Science."* In fact, most participants mentioned having targeted vocabulary building activities, and verifying their students' knowledge of scientific vocabulary: *"When we're having a class discussion, or even if they're just answering questions, or asking questions, I'll make sure and, and gently correct them to be using the proper terminology so that, it gets really solidified in their heads."*

Furthermore, the participants in this study often start a new unit by seeing what their students already know and ensuring an understanding of vocabulary, and end a new unit with review to reinforce the new material:

"And also, like often start by asking what they already know about something, and we'll do a big brainstorm and, we'll go through, like what do they already know about the topic? And then I'll tell them what we're going to learn, and then afterwards, we, we do a whole review of what we have learned."

The following statements also demonstrate this practice: *"...so pre-teaching of vocabulary, you know shorter, smaller expectations and a lot of reviews to make sure they understanding it. I tried post review, like videos and stuff like that for them to try and grasp the concept."* and the following:

"...every unit that we start or every chapter whatever, I have the students create a vocabulary list, so any of the new, specific term that they are going to have to use, I always make sure, that they have some dictionary at the beginning of the chapter of their notes, so they can refer to it later, so if we're having a discussion about a particular topic, they can have all those words in front of them and use them properly."

Some teachers also try to avoid purposefully utilizing English to help students understand the scientific vocabulary in French: *"So we will definitely have, if someone doesn't understand the vocabulary, we always go through it. I try to go away from French - English - French - English. And go more-so, French and then the definition, or alternate definition in French to give them, and then more app system more types of vocabulary."*

These findings suggest that another benefit of FI science is that concerted efforts are made to include activities in the classroom that present the vocabulary, often coupled with vocabulary building games and activities. There are also numerous whole-class discussions and the creation of dictionaries and word walls. It appears that, in a second language setting, teacher efforts to enhance vocabulary are more apt to strengthen the literacy skills of students.

This could also mean that students are more likely to be successful in other subjects due to the heightened focus on reading, writing, discussions and reading comprehension.

CHALLENGES OF FRENCH IMMERSION SCIENCE

Support in Second Language Pedagogy. Despite the benefits of learning science in French, some participants also outlined some challenges that they faced when trying to teach the material in a language that is most often a second language for students. Most of the participants had extensive educational backgrounds in science and felt they had the skills required to teach science to their students. Some participants, however, felt that they could use further instruction on optimal second language educational approaches, as evidenced in the following comment: *“trying ways, to keep them speaking French all the time, it’s challenging because, well the subject matter is a lot in itself, but not only that, you need to create an artificial French atmosphere.”* and: *“Um, I do, it’s just like I said, the structures that I was like a bit, kind of like, uh, tutor-prepped for that unit. Uh, the structures. Um, but, and then, um...teaching, so what words to use and how to guide students in creating hypothesis would be nice to know as well.”*

Furthermore, some participants indicate that grading can be a challenge, as they strive to make concerted efforts to grade students on their scientific knowledge even when their oral or written communication of the concepts is unclear: *“Oh, I would say, communication of their knowledge, so I find that the students get it, but they have a hard time writing it down on paper or putting it into words in French.”* and: *“So, they, they know a concept or they understand a concept but they cannot communicate it in French, so then how do you mark that? And that’s something that I always struggled with...”* and:

“They have a hard time communicating, in French. Because once they learn the concepts, they may understand it, so, say on a test, knowledge and understanding, they would do very well in, but if the communication part that they really struggle with, I think, uhm, because for them to elaborate on ideas, in French... struggle to find the words to be able to do that.”

Participants in this study also appear to require assistance with pedagogy in terms of advancing student’s French skills while teaching them science concepts: *“I want them to be proficient in science and in the inquiry aspect labs in theory knowledge. But I also want them to be better at French. So they should be able to read text and different text...”*

It is evident that the participants in this study sometimes experienced challenges in applying second language instructional strategies. Nonetheless, they appeared to understand the importance of drawing out students’ scientific knowledge despite their struggles with the French language.

Availability of Second Language Educational Resources. Many participants indicated that they also had difficulty finding educational resources that were geared specifically to French as a second language students. It appears as though many schools with FI streams utilize resources that are destined to French language schools, and can be too complicated for FSL students: *“French Resources in science are often aimed at French First Language students – too advanced for FSL students.”* and: *“Like, the...finding resources where the level of thinking and the depth of the subject matter is developed enough and yet the language level isn’t beyond where the students are at.”* and also: *“...I find the words in the teacher resource and even sometimes even in the book to be really complicated for the kids. So like, being able to use language that these kids would be able to understand a little bit easier. Because, I mean, it’s tough enough working in French, let alone working on science in French.”*

“(...) finding resources that are at the student’s level for French Immersion because a lot of the times the textbooks are written for Francophone students, so if they’re doing any kind of reading I usually have to do it as a class and then really break down the vocabulary, so some of the time finding resources at their level is challenging.”

Some participants also note that the vocabulary and terminology in these resources is too complicated for students to comprehend:

“I’m working more on comprehension than the science curriculum, so something more straightforward or easy to follow for FI students would be beneficial... Because some of the vocabulary that’s used, like even the textbook that I’ve been following, uhm, for, for probably, about 40% of my students the vocabulary is, is too difficult, and I need to read it through with them, and re explain it to them.”

Many participants were also looking to follow more structured resources in their teaching practice. Some felt that they could use support with creating assignments, projects and culminating tasks, as noted in the following comments: *“...a culminating task for [units] would be really helpful I think, because I find teaching the material is, is not complicated for me, but it's having assignment or projects, or accommodating tasks that they can do to summarize all that they've learned. So that would be really useful...”* and: *“I think if we had more, more guidance in what we could be giving them, as a culminating task...that would be somewhere, where it would be nice to, to figure out, ok well what has worked with other people?”*

These results highlight the fact that there is a distinct need for developing educational resources in science that are destined and adapted to students who do not speak French as a first language. This also suggests that the pedagogical approaches suggested in these resources should adhere to the needs of second language learners.

Challenges with Comprehension of Scientific Vocabulary. Most participants also felt that, given the fact that science is a concept-based subject, students are required to learn a significant amount of vocabulary in order to grasp the curriculum. This can present a challenge, as students are learning the vocabulary in French:

“Though, the concepts are hard enough on their own, but they don't have the basic vocabulary they need to understand it, so they kind of learning the, their two challenges at the same time, so trying to get them, to digest all this new, this new concept along with a hole bunch of new words for them. So they may have already heard the English term before, just out in the world, so they have a little bit of an understanding of what the English word means, but suddenly when you put it in French, they have an extra challenge.”

The amount of vocabulary that students need to learn also represents a challenge for students: *“And I find one of the biggest barriers, for my immersion student, is the vocabulary because there is so much science vocabulary.”* Some of the participants also note that varying levels of students' French language abilities is a challenge to accommodate in the classroom:

“the English strands, have so many supports where you can get three or four different reading level of the same materials, uh, in different details and you can really differentiate for what your students' needs are, where's the FI program only ever has one, and its academic highest level, it's not the, uh, the reading level that would best support them.”

and

“Uh, probably the language. The kids are coming here, uh, no longer the ... I don't know how it is up north but we're finding down here that, uh, no more is it a matter of, uh ... no matter ... no longer is there much of a distinction between immersion and core classes. It's more like immersion is a blend of ... such a blend of abilities but it's been watered down a lot in the past few years.”

Some participants also indicate that students' limited knowledge of French sometimes affects their ability to understand their science textbooks: *“uh, but when we have to ask them to acquire the knowledge, uh, from the, they used to know, they don't know as much about because they don't read enough. Or when they read text, they don't have a full understanding of the content.”*

These results suggest that there is a need to provide further support to FI science teachers in terms of vocabulary building activities that can further develop student comprehension in science.

DISCUSSION

General Observations about Second Language Pedagogy. During the classroom observations, the researchers took note of the strategies that were being utilized to teach science from a second language perspective. Some commonly recurring strategies were to speak only in French during science classes, while utilizing scientific demonstrations and visual aids. Other teachers would revert to speaking English when the subject was more complex or when they wanted to underscore important points. This was especially prominent where the teacher had identified lower levels of comfort with the French language. It was observed that students commonly speak in English amongst each other, yet more commonly address their teacher in French. It was also observed that students appeared to make a more concerted effort to speak in French when their teacher was present. As such, it became evident that the environment that the teacher created, as well as the teacher's comfort level in French, were strong

determining factors in whether the students spoke French more frequently in the classroom. Nonetheless, teachers who participated in the current study noted that they would appreciate professional development in terms of educational approaches that specifically benefit FSL learners. It is also evident that there is no panacea to address the complex and varying needs of FSL learners, and that teachers should adapt their educational interventions to the specific needs of their students.

Suggestions for Further Support. The participants in the current study also made some interesting suggestions for further support that could benefit them in their FI science classes. One suggestion was to provide more opportunities for networking between French Immersion science teachers. One teacher in particular was teaching in a remote area and was the only FI science teacher in her school. She therefore greatly appreciated the networking opportunities provided by participating in the workshops.

Another suggestion was the development or creation of resources that specifically targeted French Immersion. It was commonly noted by participants that French science resources generally tended to cater uniquely to French first language speakers and were often too complex for FI students. More specifically, some teachers noted the relevance of having their students hear other French speakers, aside from their teacher, and noted that this could be achieved through the development of short, curriculum-based, instructional videos. Furthermore, some teachers would have appreciated training on all of the strands of the science curriculum at their grade level, rather than the targeting of select strands identified as being challenging by teachers.

Another interesting suggestion that was made was to organize information sessions with parents, to reassure and reaffirm the benefits of learning content-based subjects such as science and mathematics in French. Some teachers noted that parents appeared to place a lot of importance on these two particular subjects and were sometimes reticent to have their children learn them in a second language. As such, it would be beneficial to enlighten the parents or guardians of young students about the structure of FI programs and how to informatively make a decision in regards to whether the program is a good fit for their child.

CONCLUSION

The findings show that the teacher participants generally felt that they have understanding of science and that they taught science effectively. They were continually striving to find new and innovative ways to engage their students in science classes. From the needs assessment interviews, teachers highlighted the difference in French competency among their students which poses a challenge for them in terms of teaching a subject like science that has the added challenge of difficult content and new vocabulary. This challenge could be the reason why teachers may feel that even if they are competent, their teaching may not be effective for those students that are struggling with language competency. This difference in French language competency could also be responsible for some students failing to see the value of science in their everyday life, due to lack of comprehensive understanding of the content and its application. Students who do not have good French language understanding may struggle with learning the content, which could lead to lack of confidence in their ability to perform well in science class.

Most teachers felt that their teaching was negatively impacted by factors beyond their control, such as lack of resources and the fact that some students in FI classes had limited French language competency. These results help to shed light on teacher responses to questions related to whether the teacher is generally responsible for the achievement of students in science. It seems the teachers feel that the performance of students in FI is not only influenced by the teacher, but that there are many other factors that should be taken into consideration such as availability of teaching resources as well as student support.

These findings are contrary to research that suggest that teachers' specific subject beliefs tend to be compatible with their instructional strategies (Gallagher, 1991; Laplante, 1996; Rowell & Gustafson, 1993). This difference can be explained by the fact that the current study context is different than that of prior studies which were conducted among first language learners. The teachers in this study are teaching science to second language learners, and they also have limited teaching resources compared to their counterparts who teach science to students in their first language. The teachers in this study mentioned that most resources available to them are not tailored for second language learners, hence they have to translate worksheets and teaching activities from English to French. On the other hand, French resources that are made for French first language learners are more advanced

for students in FI science. This implies that there is need for science teaching resources that are specifically tailored to the FI science learners.

REFERENCES

- Cenoz, J. & Genesee, F. (1998). Introduction. In J. Cenoz & F. Genesee (eds.). *Multilingualism and Multilingual Education* (pp. vii-x). Clevedon: Multilingual Matters.
- Chung, S., Chen, X., & Deacon, S. (2017). The relation between orthographic processing and spelling in Grade 1 French Immersion children. *Journal of Research in Reading*, 41, 290-311.
- Cummins, J. (2008). Teaching for transfer: challenging the two solitudes assumption in bilingual education. In Cummins and Hornberger (Eds.), *Encyclopedia of Language and Education* (pp. 65-75). Springer Science + Business Media LLC.
- Diamond, J. (2010). The benefits of multilingualism. *Science*, 330, 332-333.
- Gallagher, J.J. (1991). Prospective and practising secondary school science teachers' knowledge and beliefs about the philosophy of science. *Science Education*, 75, 121-133.
- Harley, B. (2008). Patterns of second language development in French Immersion. *Journal of French Language Studies*, 2, 159-183.
- Henser, D. (2005). Inquiry, science workshop style. *Science and Children*. 32-36.
- Hutchins, A. (2015). Just say 'Non': the problem with French Immersion. *Macleans*. Retrieved from: <https://www.macleans.ca/education/just-say-non-the-problem-with-french-immersion/>
- Kur, J. & Heitzmann, M. (2008). Attracting student wondering. *Science and Children*. 28-32.
- Laplanche, B. (1996). Teachers' beliefs and instructional strategies in science: pushing analysis further. *Science Education*, 81(3), 277-294.
- Lazaruk, W. (2007). Linguistic, academic and cognitive benefits of French Immersion. *The Canadian Modern Language Review*, 63, 605-627.
- Ontario Ministry of Education. (2013). *A framework for French as a second language in Ontario schools*. Toronto, ON: Queen's Printer for Ontario.
- Rivard, L., Cormier, M. & Turnbull, M. (2012). Reading strategies in French Immersion science classes: Preparing our students for tomorrow. *Canadian Journal of Science, Mathematics and Technology Education*, 12 (1), 86-102.
- Rowell, P.M. & Gustafson, B.J. (1993). Beginning to teach: Science in the elementary classroom. *Alberta Science Educational Journal*, 26, 4-10.
- Roy, S. & Gallivier, A. (2011). Discourses on bilingualism in French Immersion programs. *Canadian Modern Language Review*, 67, 351-376.
- Swain, M. (2003). French Immersion research in Canada: recent contributions to SLA and applied linguistics. *Annual Review of Applied Linguistics*, 20, 199-212.
- Turnbull, M., Cormier, M. & Bourque, J. (2011.) The first language in science class: A quasi-experimental study in late French Immersion. *The Modern Language Journal*, 95, 182-198.
- Velayutham, S., Aldridge, J. & Fraser, B. (2011). Development and validation of an instrument to measure students' motivation and self-regulation in science learning. *International Journal of Science Education*, 33(15), 2159-2179.
- Wente, M. (2018). There's just one problem with French Immersion... well, several, actually. *The Globe and Mail*. Retrieved from: <https://www.theglobeandmail.com/opinion/the-follies-of-french-immersion/article30259804/>

CAMPUS VIOLENCE AND WOMEN'S ACADEMIC PERFORMANCE

Lana Stermac, PhD., Jenna Cripps, MA
Department of Applied Psychology and Human Development
University of Toronto, Toronto, Canada

Abstract

Sexual violence on university and college campuses represents a significant problem for students and has been associated with negative personal and health impacts for women (Fisher, Cullen, & Turner, 2000). Until recently, little attention has been devoted to examining broader impacts of sexual violence on university campuses, particularly the effects of these behaviours on women's education. Previous work in this area (Stermac, Horowitz, & Bance, 2013) found that university students experiencing sexual violence while attending university reported negative educational experiences and reduced campus engagement (Stermac, Wane, Horowitz & Bance, 2012). Current research (e.g., Jordan, Combs, & Smith, 2014) has focused more attention on this significant problem and revealed the negative impact of sexual violence on some academic performance variables such as grade point averages. The present study extended this important work and examined a broader range of indicators of performance and persistence among women reporting experiences of sexual violence including aspects of institutional identification for students as well as their commitment to aspiring to and obtaining education.

Introduction

Sexual violence can be defined as any sexual act or act targeting a person's sexuality, gender identity or gender expression that is committed, threatened or attempted against a person without their consent. It may be physical or psychological in nature and includes sexual assault, sexual harassment, stalking, indecent exposure, voyeurism, and sexual exploitation. Research on sexual violence has shown not only the varied behaviours that constitute sexual violence but also who is at risk for being targeted by perpetrators of these behaviours. A large body of research has indicated that not all persons are at equal risk for experiencing sexual violence. For instance, data from the National Crime Victimization Survey found that women aged 18-24 are at a particularly high risk of sexual violence, with women attending college being at three times the risk for experiencing sexual violence compared to the general population (Bureau of Justice Statistics, 2014). Similarly, an early survey of individuals attending American postsecondary institutions found that over half of surveyed women had experienced some form sexual victimization since the age of 14 and a 6-month incidence rate of 83 per 1000 women for rape or attempted rape (Koss, Gidycz, & Wisniewski, 1987). Another large study of undergraduate women attending postsecondary institution in the United States revealed a one year incidence rate of 35.3 per 1000 women for rape or attempted rape (Fisher, Cullen, & Turner, 2000). More recently, the Association of American Universities Campus Climate Survey sampled students from postsecondary institutions in the United States and found that 23.1 % of female students had experienced non-consensual sexual contact by physical force, threat of physical force, or incapacitation since enrolling in universities (Cantor, et al., 2015). Data reported for Canadian postsecondary institutions also has revealed high and similar rates of sexual violence (Student Voices on Sexual Violence Survey, 2017).

The increased risk for sexual violence among women attending post-secondary institutions is not limited to institutions in North America. The National Union of Students in the United Kingdom surveyed a large number of undergraduate students enrolled in postsecondary institutions and found that one in seven students experienced a serious physical or sexual assault, while 16% experienced unwanted kissing, touching or molesting during their time as students (National Union of Students, 2010). Similarly, the Union of Students in Ireland found that 16% of students enrolled in postsecondary institutions in Ireland indicated having an unwanted sexual experience while enrolled in their current educational institution (Union of Students in Ireland, 2013). The International Dating Violence Study, which surveyed students attending universities worldwide, reported that rates of sexual coercion among female university students ranged from 9% in the Netherlands to 42% in Greece (Straus, 2011). In general, these results point to high but somewhat varying estimates of victimization that may be accounted for by differing definitions of sexual violence used by researchers.

National Student Survey

Rasbash, J., Steele, F., Browne, W., & Prosser, B. (2005). A user's guide to MLwiN version 2.0. University of Bristol.

Richardson, J. (2005). National student survey: Interim assessment of the 2005 questionnaire. A report to the Higher Education Funding Council, 1 – 31

In addition to research investigating the prevalence of sexual violence among women attending postsecondary institutions around the world, research has also been conducted on the impact these experiences have on women. While the mental and physical health sequelae of sexual violence, including depression, anxiety, posttraumatic stress, somatization, physical injuries and others are well-documented (e.g., Amar & Gennaro, 2005; Campbell, Dworkin, & Cabral, 2009; Fisher, Cullen, Turner, 2000; Jordan, Campbell, & Follingstad, 2010; Ross et al., 2011), the impact of sexual violence on the educational and career trajectories of postsecondary students has only recently been addressed in research. Studies on student academic performance and other educational outcomes document the negative and interfering aspects of sexual violence on student educational experiences (e.g., Stermac, 2017; Stermac, Horowitz, & Bance, 2013). One study reported that among individuals who experienced health-related sequelae following an unwanted sexual experience, 91% of them attributed these problems to the difficulties they faced in their attainment of their education and career goals (Potter, Howard, Murphy, & Moynihan, 2018). Similarly, students who experienced sexual violence were more likely to report lower GPA (Jordan, Combs & Smith, 2014) and overall health (Sorokas, 2018). Another recent study found that undergraduates who experienced intimate partner violence were more likely to have lower GPAs and increased academic difficulties, with this relationship being mediated by health such that intimate partner violence reduced health, which negatively affected academic performance (Brewer, Thomas, & Higdon, 2018). A recent survey of Canadian undergraduate women found that unwanted sexual experiences were associated with negative impacts in multiple areas of women's education including decreased school involvement and drop in grades (Stermac, Bance, Cripps, & Horowitz, 2018).

Based on this emerging research it is evident that sexual violence negatively impacts some aspects of postsecondary women's education including, grades, career trajectory, and school involvement. However, it remains unknown what other components and areas of women's education are impacted by experiences of sexual violence and what contributes to these changes. It is also unclear how these constructs may be operationalized and whether there are common dimensions/constructs that may underly these educational changes.

The Present Study

The present study contributed to this expanding area of investigation on sexual violence impacts on undergraduate women's education in Ontario, Canada. Specifically, this study focused on aspects of students' engagement in university life including their attitudes towards school and their institution, their commitment to education as well as academic performance and investigated whether the experiences of sexual violence changed students' university engagement and performance.

Participants

As part of a large study on sexual violence on campus, participants in this study were undergraduate students attending university in Canada. A total of 934 female students were included in the dataset for this study. Of these, 741 students reported at least one incident of sexual violence victimization while attending school. A sample of 182 women undergraduates who did not report experiencing sexual violence while attending school served as a comparison groups for this dataset. Students reporting sexual violence were similar in demographic characteristics and academic profiles with the exception of sexual orientation. Students who identified as sexual minorities were more likely to report experiences of sexual violence (see Table 1).

Measures

A survey of measures including information on participant background, sexual victimization and attitudes and behaviours related to academic and social involvement with school were accessed and completed online to volunteer student participants.

Background & Demographic Information. Information was collected on participant demographics and academic profile including age, relationship status, ethno-cultural membership, sexual orientation, year and academic program.

Sexual Victimization. Participants were asked about unwanted sexual experiences and coercion occurring while they were students using a revised measure of the *Sexual Experiences Survey* (Testa, Hoffman, & Livingston, 2010). Responses included both the method of coercion as well as the type of sexual violence behaviours experienced.

Academic Variables.

Grades. Academic performance consisted of items related to a student's grades in the past 12 months or since the experience of sexual violence. This variable had five levels; 1 = A+, 2 = A, 3 = B, 4 = C, 5 = D.

Institutional (School) Identification. A composite variable of changes in students' institutional identification was constructed. This variable included individual items related to changes in how proud students felt to be at their school, and how 'at home' they felt on campus and students' identification with their present school. The response options were transformed from 1 = increase, 2 = decrease, 3 = no change into 1 = increase, -1 = decrease, and 0 = no change and included the previous 12 months or since the sexual violence experience.

Education Commitment. This composite variable was construct to assess changes in students' commitment to education. Items consisted of asking students how much education they wanted to obtain, how much education they felt able to obtain, how important school felt to them, and their interest in school. The response options were transformed from 1 = increase, 2 = decrease, 3 = no change into 1 = increase, -1 = decrease, and 0 = no change and included the previous 12 months or since the sexual violence experience.

Procedures

The study received approval from the university ethics review board. Volunteers were invited to participate in the study through advertisements throughout universities in Ontario as well as through online postings. Those interested in the study were given information and a consent form. All participants received a list of support services and resources which they could copy or print for their use.

RESULTS

Grades. Grades were assessed at five levels (1 = A+, 2 = A, 3 = B, 4 = C, 5 = D). Multinomial logistic regression examined the probability of obtaining a higher GPA. A test of full mode versus null was statistically significant ($\chi^2(2, N = 880) = 13.338, p = .01$). As reported previously (Stermac, Cripps, & Amiri, submitted), the groups differed on the highest grade category of obtaining an A+. Accordingly, students with experiences of sexual violence were over 3 times ($1/.317 = 3.15$) less likely than non-victimized student to obtain an A+. The odds ratio for victimized students is .317 with 95% C.I. [.112 - .903].

Institutional (School) Identification. An independent t-test, $t(852) = 8.81, p < .001$ revealed that the mean Institutional Identification composite variable score for students reporting sexual violence ($M = -.67, SD = 1.74, n = 688$) was lower than students with no victimization ($M = .65, SD = 1.85, n = 175$) with a mean difference of 1.32 points. Levene's test for equality of variance was non-significant. Given the large between group differences in sample size, effect size index was computed using the larger standard deviation from the victimized group (instead of pooled standard deviation). The effect size index ($d = .71, SD = 1.85$) indicated that Institutional Identification was lower for students reporting sexual violence with the mean about three quarters of a standard deviation lower than their peers who did not report sexual violence (see Table 2).

The individual item related to school changes in school identification is illustrated in Figure 1. Students with experience of sexual violence showed more decreases and less increase in school identification than students who did not report sexual violence.

Education Commitment. An independent samples t test evaluating the effect of sexual victimization on Education Commitment was significant, $t(858) = 6.19, p < .001$. The mean Education Commitment composite variable score for students reporting sexual violence ($M = -.43, SD = 2.24, n = 683$) was lower than students with no victimization ($M = .73, SD = 2.20, n = 177$) with a mean difference of 1.16 points. Levene's test for equality of variance was non-significant. Due to large group differences in sample size, effect size index was computed using the larger standard deviation from the victimized group (instead of pooled standard deviation). Effect size index ($d = .52, SD = 2.20$) indicated lower mean Education Commitment for students reporting sexual violence (half a standard deviation) than their non-victimized peers (see Table 2).

The individual item related to students' interest in school is seen in Figure 2. Students who experienced sexual violence reported more decreases and less increase in their school interest in comparison to students who did into report sexual violence.

DISCUSSION

For women attending postsecondary institutions across the globe, sexual violence represents a significant problem with associated negative mental and physical health sequelae (Fisher, Cullen, & Turner, 2000). Although the negative mental and physical health consequences of sexual violence are well known and documented, it has only been recently that research has begun to emerge that investigates the educational and career impacts incurred by women students. Much of this work has focused on measures of academic performance and academic persistence (Brewer, Thomas, & Higdon, 2018; Jordan et al., 2014; Stermac, Cripps, & Amiri, submitted), and to date these variables have largely been operationalized by grade point average and drop-out rates respectively.

The present study extended this important work and examined other potential indicators of performance and persistence among women reporting experiences of sexual violence that included institutional identification and educational commitment as well as grades. Results of this study found negative impacts of sexual violence on all examined aspects of women students' academic and educational experiences. In particular, students endorsing experiences of sexual violence reported significantly lower scores on both institutional identification and educational commitment compared to students not endorsing experiences of sexual violence. That is, following experiences of sexual violence women students identified less with their school, were less proud to be at their school, and felt less 'at home' on campus compared to women students' without experiences of sexual violence. As well, these students reported that they wanted to obtain less education, felt less able to obtain education, felt that school was less important to them, and were less interested in school following their experience of sexual violence. Additionally, women students with experiences of sexual violence were also found to be 3 times less likely to obtain an A+ grade following their experience compared to women students who did not experience sexual violence. Thus, the results of this study indicated women students who experience sexual violence report educational and potentially career related impacts that extend beyond academic performance and persistence and include dimensions of institutional identification and education commitment.

This research suggests that students' attitudes and feelings about their schools and education may be affected by the experiences of sexual violence. These findings indicate that students can become alienated from their schools in several respects through less involvement which may lead to not being proud to be affiliated with a particular institution. In addition, it is possible that the educational trajectories of students who experience sexual violence are changed in that these students do not see themselves as interested and able to continue with their education and see education as less important in their lives. These findings present significant and important issues for postsecondary institutions as they commit to increased student retention and involvement.

With research indicating that one in five women attending post-secondary institutions will experience sexual violence while enrolled as a student (e.g., Krebs, Lindquist, Warner, Fisher, & Martin, 2007) and further research indicating that a large portion of individuals who experience sexual violence will be negatively impacted (Khadr, 2018) including mental and physical health, as well as academic performance, persistence, and engagement, the burden placed on campus health resources and academic services to support these students is enormous.

This is particularly important given research indicating that access to services for mental and physical health following a traumatic incident significantly increases postsecondary students' likelihood of remaining in school and recovering from the trauma (Mengo & Black, 2015; Sabina & Ho, 2014). Moreover, postsecondary institutions are obligated to offer trauma-informed resources to survivors of sexual violence, and must ensure that all faculty and staff are aware of how to support survivors, including how to refer them to services and which services are available to them (Munro-Kramer, Dulin, Gaither, 2017). Additionally, postsecondary institutions must have policies in place to ensure that there is due process in conducting hearings for campus sexual violence perpetration. Postsecondary institutions are also faced with financial consequences of campus sexual violence through reduced applications and alumni donations. Therefore, the cost of campus sexual violence is not limited to those individuals who directly experience it but represents a significant financial concern to the public. Thus, in expanding our knowledge of campus sexual violence and its impacts, the results of this study hold important implications for survivors of sexual violence, individuals providing services to them, as well as academic institutions as a whole and all those employed by or attending them. Although the results of this study represent an important step in expanding the body of knowledge on sexual violence sequelae to include aspects of education, much still remains to be investigated. For instance, future research would benefit from investigating the process through which the negative impacts of sexual violence lead to academic and institutional disengagement. In a study of college women with experiences of sexual violence, Potter and colleagues (2018) reported that the majority of students who experienced health-related impacts following an experience of sexual violence cited these impacts as the reason for the difficulties they faced in attaining their education and career goals. Thus, there is some evidence to suggest that the mental and physical health impacts of sexual violence may serve to mediate the relationship between sexual violence and negative educational impacts. This potential avenue of research may provide valuable information that could help postsecondary institutions to provide campus-based services geared towards supporting and improving the present and future lives of a large portion of the student body. Similarly, this research may also support postsecondary institutions in their efforts to educate students and prevent sexual violence on campus.

Overall, the results of this study indicate that the negative sequelae associated with experiences of sexual violence are not limited to the well-known dimensions of physical and mental health but extend to aspects of students' academic and educational experiences. Impacts include compromised performance in grades and progress and disengagement from school.

REFERENCES

- Amar, A. F., & Gennaro, S. (2005). Dating violence in college women: Associated physical injury, health care usage, and mental health symptoms. *Nursing Research*, 54(4), 235–242.
- Brewer, N., Thomas, K. A., & Higdon, J. (2018). Intimate partner violence, health, sexuality, and academic performance among a national sample of undergraduate. *Journal of American College Health*, 66(7), 683–692.
- Bureau of Justice Statistics. (2014). *Rape and sexual assault victimization among college-age females, 1995-2013*. (National Crime Justice Report No. 248471). Washington, DC: U.S. Department of Justice.
- Campbell, R., Dworkin, E., & Cabral, G. (2009). An ecological model of the impact of sexual assault on women's mental health. *Trauma, Violence, & Abuse*, 10, 225–246.
- Cantor, D., Fisher, B., Chibnall, S., Townsend, R., Lee, H., Bruce, C., & Thomas, G. (2015). *Report on the AAU Campus Climate Survey on Sexual Assault and Sexual Misconduct*. The Association of American Universities. Retrieved from https://www.aau.edu/sites/default/files/%40%20Files/Climate%20Survey/AAU_Campus_Climate_Survey_12_14_15.pdf
- Fisher, B. S., Cullen, F. T., & Turner, M. G. (2000). *The sexual victimization of college women*. Washington DC: National Institute of Justice.
- Jordan, C. E., Campbell, R., & Follingstad, D. (2010). Violence and women's mental health: The impact of physical, sexual, and psychological aggression. *Annual Review of Clinical Psychology*, 6, 607–628.
- Jordan, C. E., Combs, J. L. & Smith, G. T. (2014). An exploration of sexual victimization and academic performance among college women. *Trauma, Violence & Abuse*, 15, 191–200.
- Khadr, S. (2018). Mental and sexual health outcomes following sexual assault in adolescents: A prospective cohort study. *The Lancet Child & Adolescent Health*, 2(9), 654–665.
- Koss, M. P., Gidycz, C. A., & Wisniewski, N. (1987). The scope of rape: Incidence and prevalence of sexual aggression and victimization in a national sample of higher education students. *Journal of Consulting and Clinical Psychology*, 55(2), 162–170.
- Krebs, C. P., Lindquist, C. H., Warner, T., Fisher, B. S., & Martin, S. (2007). *Campus sexual assault (CSA) Study*. Washington, DC: National Institute of Justice.
- Mengo, C., & Black, B. (2015). Violence victimization on a college campus: Impact on GPA and school dropout. *Journal of College Student Retention*, 18(2), 234–248.
- Munro-Kramer, M., Dulin, A., & Gaither, C. (2017). What survivors want: Understanding the needs of sexual assault survivors. *Journal of American College Health*, 65(5), 297–305. doi:10.1080/07448481.2017.1312409.
- National Union of Students. (2010). *Hidden marks: A study of women student's experiences of harassment, stalking, violence and sexual assault*. Retrieved from https://www.nus.org.uk/Global/NUS_hidden_marks_report_2nd_edition_web.pdf
- Potter, S., Howard, R., Murphy, S., & Moynihan, M. M. (2018). Long-term impacts of college sexual assaults on women survivors' educational and career attainments. *Journal of American College Health*, 66(6), 496–507. doi:10.1080/07448481.2018.1440574
- Ross, L. T., Kolars, C. L. K., Krahn, D. D., Gomberg, E. S. L., Clark, G., & Niehaus, A. (2011). Nonconsensual sexual experiences and alcohol consumption among women entering college. *Journal of Interpersonal Violence*, 26, 399–413.
- Sabina, C., & Ho, L. Y. (2014). Campus and college victim responses to sexual assault and dating violence: Disclosure, service utilization, and service provision. *Trauma, Violence, & Abuse*, 15(3), 201–226. doi:10.1177/15248308014521322.
- Sorokas, K. (2018). *Sexual violence on college campuses: An analysis of the relationship between sexual violence and the academic performance, alcohol consumption, and mental health of college women* (Order No. 10597732). Available from ProQuest Dissertations & Theses Global. (1900202301). Retrieved from <http://myaccess.library.utoronto.ca/login?url=https://search-proquest-com.myaccess.library.utoronto.ca/docview/1900202301?accountid=14771>
- Stermac, L., Bance, S., Cripps, J., & Horowitz, S. (2018). Sexual coercion and women's education: A pilot study. *Violence and Gender*, 5(2), 110–118.
- Stermac, L., *Cripps, J. & Amiri, T. (submitted). Sexual Violence and Women's Education: Impacts on Academic Performance. *The Canadian Journal of Higher Education*.
- Stermac, L., Horowitz, S., & Bance, S. (2013). Sexually Coercive Behaviours Among University Students: Is Disclosure Helpful? Presented at the *Canadian Psychological Association Annual Meeting*, Quebec City, June, 2013.

Stermac, L. Wane, N., Horowitz, S., & Bance, S. (2012). Sexual Coercive Behaviours on Campus. Presented at the *Canadian Psychological Association Annual Meeting*, Halifax, 2012.
Ministry of Training, Colleges and Universities (2019). Student Voices on Sexual Violence Survey, 2017). Retrieved from <https://www.ontario.ca/page/student-voices-sexual-violence#section-0>.

Straus, M. (2011). *International Dating Violence Study, 2001-2006*. Ann Arbor, MI: Inter-university Consortium for Political and Social Research. <https://doi.org/10.3886/ICPSR29583.v1>
Testa M., Hoffman J. H., & Livingston J. A. (2010). Alcohol and sexual risk behaviors as mediators of the sexual victimization–revictimization relationship. *Journal of Consulting and Clinical Psychology*, 78, 249-259.
Union of Students in Ireland. (2013). *Say something: A study of students' experiences of harassment, stalking, violence & sexual assault*. Retrieved from https://www.womensaid.ie/download/pdf/say_something_final_version_for_online.pdf

Attachments:

Table 1
Participant Demographic Characteristics as a Percentage

Characteristics	Experienced Violence (n = 741)	Sexual No Sexual Violence (n = 182)	p Value
Age	M = 20.79 SD = 2.18	M = 20.59 SD = 3.64	
Full-time students	92.2	94.0	
Program			
Arts & Science	72.4	70.9	
Commerce, Business, & Management	8.6	8.2	
Living situation			
Off campus	82.3	79.7	
On campus	17.7	20.3	
Sexual Orientation			<.001
Heterosexual	77.5	90.1	
LGBQ	20.4	7.1	
Other	2.1	2.2	
Ethno-cultural background			
European	40.5	27.5	
East Asian	16.5	22.5	
South Asian	12.6	13.2	
Mixed	6.7	4.9	
Asian/Southeast Asia	9.4	10.9	
Other	11.2	15.8	
Relationship status			
Single	44.0	47.3	
Non-single	55.8	52.7	

Table 2

Institutional Identification and Commitment to Education

	Experienced Sexual Violence	Mean	SD	t	df	P	Cohen's D
Institutional Identification	Yes	-.67	1.74	8.81	852	<.001	0.71
	No	.65	1.85				
Education Commitment	Yes	-.43	2.24	6.19	858	<.001	0.52
	No	.73	2.20				

Note: Response options coded as 1 = increase, -1 = decrease, and 0 = no change

Figure 1.

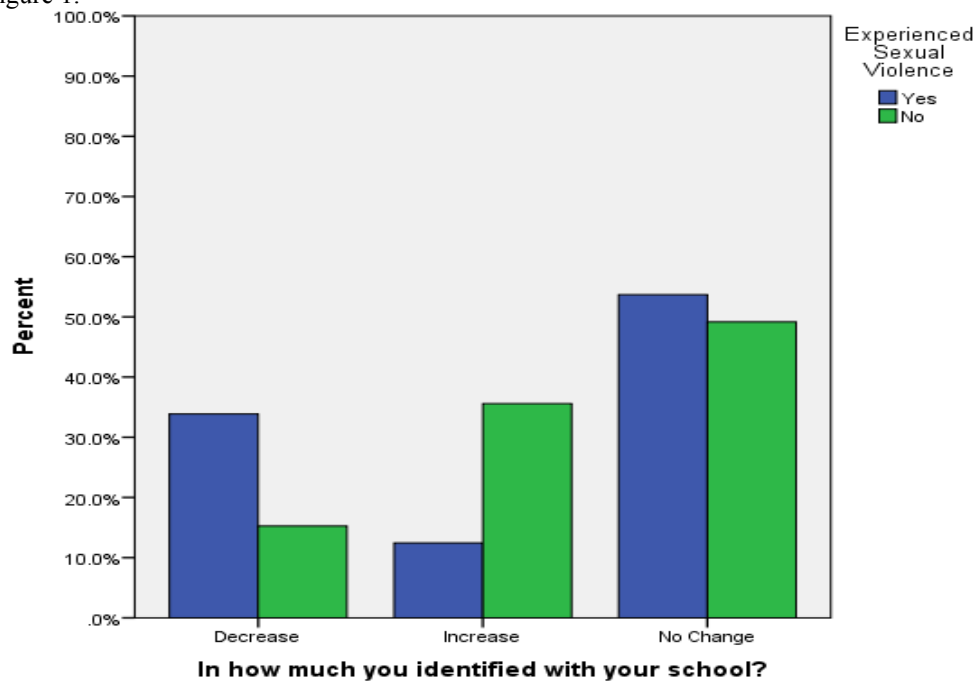
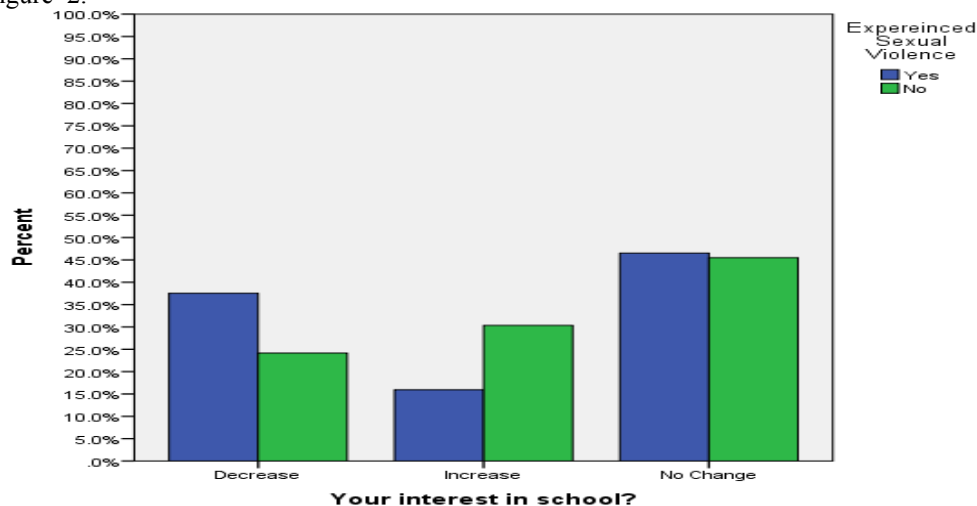


Figure 2.



CONTEXT-BASED PRACTICES IN SCIENCE COURSE BOOKS

Murat GENÇ

Faculty of Education, Düzce University, Turkey

muratgenc@duzce.edu.tr

ABSTRACT

The aim of this study is to examine the examples of context-based applications in course books used in science education. The research covers the 3rd and 4th class books of the science course books that are used by the Ministry of National Education with the purpose of determining the examples of context -based practice. The course books used at primary level in the 2018-2019 academic year were analysed by document analysis. Within the scope of the research, the examples used in context -based learning approach in the books were examined. During the investigations, applications in accordance with REACT and 4-Stage Model of context-based learning and only the contexts taken from daily life were examined. According to the results of the research, in the 3rd and 4th class course books, the contexts were generally established. It was determined that the applications suitable for REACT and the 4-stage model were not used very often. In order to support students' permanent learning, more context-based practices should be used and these should be planned in accordance with a model.

Keywords: Context-Based Learning, Science Education, Course books, REACT, 4-Stage Model.

INTRODUCTION

In the education systems of countries such as America, England, Germany, Belgium, New Zealand, Netherlands, Scotland, Israel, context-based learning approach is widely used (Yaman, 2009). Curriculum-based learning approach to life in the new Turkey has been given a new place (Sözbilir et al, 2007).

Context-based learning approach is described as case studies based on the solution of problems encountered in daily life (Acar and Yaman, 2011). In the light of these studies, students develop their working, thinking and communication skills while trying to solve the problems they encounter in daily life (Coştu, Ayas and Ünal, 2007). Context-based learning approach helps learning to be permanent and meaningful by associating the concepts learned with the experiences gained. Therefore, it involves a process in which the student is active (Güven and Uzun, 2014). Furthermore, considering that Context-based learning approach comes from the types of constructivist approach, it adopts student-centered approach (Crawford and Witte, 1999).

In the Context-based learning approach;

- Making associations that provide understanding,
- Individual learning,
- Doing permanent works,
- Cooperation,
- Critical and creative thinking,
- Self-cultivation,
- Achieving high standards,
- Realistic measurement and evaluation,

8 basic components are mentioned. Using these eight basic elements together makes it easier for students to connect with their daily lives. As the connections established with this daily life increase, permanent learning can be realized (Potter and Overton, 2006).

Using the previous experiences and prior knowledge of the students, they understand the new situations and assimilate the environment; On the other hand, various models are used for the application of Context-based learning approach in science education, which advocates that the teacher takes the role of expert seeking different ways to establish a relationship between daily life problems and student learning (Akpınar, 2011). The REACT Model, which is one of these models, is one of the most widely used models that emerge based on context-based approach in structuring activities (Demircioğlu, Vural and Demircioğlu, 2012; Crawford, 2001).

The stages of the REACT model, whose initials are named after the English names of each stage:

* Relating; At this stage, it is aimed to facilitate learning by establishing a relationship between students' prior knowledge and life experiences. In addition, attention is drawn to the relationship between the new information and daily life and the benefits of the information. Teachers use this associative stage when they activate the students' experiences and knowledge and create environments related to these experiences (Crowford, 2001).

* Experiencing; At this stage, studies are carried out which will enable students to model abstract concepts and to think analytically. This is also the stage where students' problem solving activities and laboratory experiences take place. The most important point of this stage is that the teacher undertakes the guiding task and the student understands and understands the essence of the information by revealing his/her own thoughts about the information to be acquired individually or in groups (Crowford, 2001).

* Applying; At this stage, students can use their knowledge applications are made. In other words, after experiencing the relationship, the rationale of the student to learn the information and the need to learn the

information emerge at this stage (Kirman et al., 2017). The main objective is to help the student to assimilate the information and increase the level of understanding instead of memorizing the information to be gained at this stage (Ingram, 2003).

* Cooperating; At this stage, it is ensured that students learn to create context by communicating with others. Thus, students have the opportunity to communicate with each other, share the acquired knowledge and express their own thoughts. As a result of this, students get away from the fear of making mistakes, they come to a common conclusion about problems and activities, they listen to the thoughts of their friends and express their own ideas. Therefore, with this stage, students' motivation and self-confidence is increased by experiencing success (Ingram, 2003).

* Transferring; At this stage, new information is associated with Context-based learning and made available. So this stage is defined as using information in new contexts. This stage is carried out by teachers in the classroom by enabling students to transfer the information they have acquired to this new situation with a problem or activity that the students have never experienced before (Crowford, 2001).

When the lesson plan is prepared considering these steps, REACT model emerges as Context-based learning (Çepni and Özmen, 2014).

THE STUDY

Electronic discourse within computer mediated virtual courses supports conversations of practice and learning. The research covers the 3rd and 4th class books of the science course books that are used by the Ministry of National Education with the purpose of determining the examples of context -based practice. The course books used at primary level in the 2018-2019 academic year were analysed by document analysis. Within the scope of the research, the examples used in context -based learning approach in the books were examined. During the investigations, applications in accordance with REACT and 4-Stage Model of context-based learning and only the contexts taken from daily life were examined.

FINDINGS

According to the results of the research, in the 3rd and 4th grade books, contexts from daily life are generally established; It has been determined that the applications according to REACT and 4-stage model are not used much. In order to support students' permanent learning, it is necessary to use more life-based practices and plan them in accordance with a model.

Figure 1. 3rd grade context based learning example



The visual and story about the structure of the earth's crust that can be encountered in daily life is given in accordance with the entry stage of Stage 4. Students are given with examples and questions in accordance with curiosity and planning stage.

Figure 2. 3rd grade context based learning example

Maden ocaklarında taş ve topraktan karışık olarak çıkarılan madenler, ekonomik değeri olmayan taş ve topraktan arındırılır. Daha sonra bu madenler teknoloji ve sanayide ayrıca birçok eşyanın yapımında ham madde olarak kullanılır. Evlerimizde kullandığımız tencere, tava, çatal vb. mutfak eşyalarının yapımında madenlerden yararlanılır. Aşağıda bir evin mutfağına ait görsel verilmiştir. Görseldeki eşyalar hangi madenlerden yapılmış olabilir? Tahmin edelim. Tahminlerimizi arkadaşlarımızla paylaşalım.



In the example given in figure 2, the connection of the mines to the kitchen utensils used in the houses is given.

Figure 3. 3rd grade context based learning example



Babası, Ezgi'ye Güneş'in doğuşunu birlikte izleme sözü verdi. Söz verdiği gibi ertesi gün Ezgi ile beraber yola çıktılar. Bir tepenin üstünde Güneş'in doğuşunu izlemeye başladılar.

Ezgi, "Baba, Güneş yavaş yavaş hareket ederek yükseliyor. Yükseldikçe ortalık daha iyi aydınlanıyor." dedi.

Babası Ezgi'ye "Sabah doğudan doğan Güneş'in öğlen tepede olduğunu akşam ise batıdan battığını gözlemleyebiliriz." dedi. "Gün içinde Güneş'in farklı konumlarda olması Dünya'nın hareketiyle ilgilidir." dedi. Bunun üzerine, Ezgi Dünya'nın hareketiyle ilgili aşağıdaki soruları merak etti.

- Sizce Dünya'mız nasıl hareket etmektedir?
- Dünya'nın kaç çeşit hareketi olabilir?
- Bu hareketlerinin sonuçları nelerdir?

In the example given in Figure 3, the visual and story that can be encountered in daily life related to the movements of our Earth are given in accordance with the introduction stage of Stage 4. Students are given with examples and questions in accordance with curiosity and planning stage.

Figure 4. 3rd grade context based learning example



In the example given in figure 4, the rotation of the Earth is given the context with the adjacent images. React relating is a context appropriate to the step.

Figure 5. 3rd grade context based learning example



In the example given in figure 5, the context of the world's entanglement movement with the visuals on the side is given. React relating stage is a context appropriate to the step.

Figure 6. 3rd grade context based learning example

Deney Yapalım

Gündüz ve Gece

- Karanlık bir ortam oluşturalım.
- Dünya modelini masanın üzerine yerleştirelim. El fenerini, ışığı Dünya modelinin üzerine gelecek şekilde sabitleyelim.
- Dünya modelindeki aydınlık ve karanlık yüzeyleri gözlemleyelim.
- Bir arkadaşımızdan modeli döndürmesini isteyelim.
- Dünya modeli döndükçe aydınlık ve karanlık yüzeylerin değişip değişmediğini gözlemleyelim.

Neler Gerekli?

- Dünya modeli
- El feneri
- Destek çubuğu

Neler Oldu?

- El feneri, dünya modelinin hangi yüzünü aydınlattı? Dünya modeli döndükçe aydınlanan yüzeyler değişti mi?

Cevabım:

- Dünya modeli ve el feneri hangi gök cisimlerinin yerine kullanılmıştır?

Cevabım:

In the example given in figure 6, it is a context that corresponds to the React-experiencing step because the students learn by doing and exploring.

Figure 7. 3rd grade context based learning example

Fen Bilimleri Öğretmeni Ayşe Hanım, haftaya işlenecek konuyla ilgili olarak:

– Çocuklar, önümüzdeki derse hepinizin birer kahvaltı tabağı hazırlamanızı ve sınıfa getirmenizi istiyorum, dedi.

Ders günü geldiğinde herkes birer kahvaltı tabağı hazırlayıp sınıfa getirdi. Ayşe Hanım çocuklara kahvaltı için hangi tabağı tercih etmek istediklerini sordu. Tüm sınıf 3 tabağı diğer tabaklara tercih edeceklerini söyledi. Bu tabaklar Ahmet, Ali ve Aslı'ya aitti.

Ahmet'in tabağında börek, meyve suyu ve çikolata

Ali'nin tabağında patates kızartması, ekmek ve su

Aslı'nın tabağında ise peynir, zeytin, yumurta, ekmek ve taze sıkılmış portakal suyu vardı.

Ayşe Hanım bu üç tabağı masasına koyarak sınıftaki öğrencilere bu kez şu soruları sordu:

- Hangi tabaktaki besinler sağlıklı bir beslenme için daha uygundur?
- Neden beslenmemiz gerekir?
- Sağlıklı bir yaşam için hangi kahvaltı tabağındaki besinleri tercih etmeliyiz?

In the example given in Figure 7, the story about the food and its properties can be encountered in daily life. In addition, students are given in accordance with the curiosity and planning stage with examples and questions.

Figure 8. 3rd grade context based learning example



In the example given in figure 8, visual and speech about the importance of food for living things is presented. this section corresponds to the Input step of the 4-stage model. it is also suitable for the Curiosity and Planning stage of the REACT model due to the visual questioning.

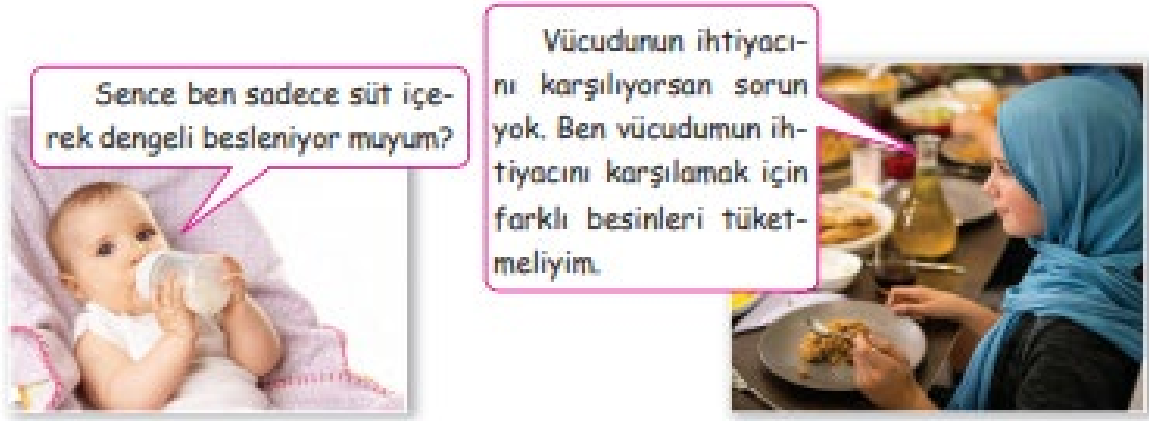
Figure 9. 3rd grade context based learning example



Yukarıda hamile olan bir bayan ile doktoru arasında geçen konuşma verilmiştir. Konuşmada proteinin görevlerinin birinden bahsedilmektedir. Acaba proteinlerin vücudumuzda başka görevleri var mıdır? Proteinler hangi besinlerde bol miktarda bulunur?

In the example given in figure 9, it is suitable for the Introduction step of the 4-stage model as it provides a visual representation of the importance of proteins. In addition, the React model is suitable for Curiosity and planning, since it encourages students to ask questions by asking questions.

Figure 10. 3rd grade context based learning example



Sizce dengeli beslenme ne demektir? Dengeli beslenmenin önemi nedir? Dengeli beslenmediğimizde hangi olumsuz durumlarla karşılaşabiliriz?

In the example given in figure 10, the visual activity related to balanced nutrition is given according to the input step of the 4-stage model. In addition, students are encouraged to ask questions by asking questions to the students in the React model Curiosity and planning stage.

CONCLUSIONS

Contexts used in context-based learning approach are designed to attract students' interest in the lessons. It also provides the formation of mental schemas and meaningful transfer of knowledge in students. As in this study, the application of context-based learning approach to the whole curriculum; will help students gain more permanent knowledge. Similarly, in the study conducted by Demircioğlu (2008), it was stated that the use of materials suitable for life-based learning approach on hall states of matter increased students' motivation.

The lesson plans used in accordance with the context -based learning approach enable the students to establish a relationship between science lesson and daily life. This approach facilitates the course, increases the quality of education and increases the motivation of the students. The literature supports this situation (Choi and Johnson, 2005; Genç, Ulugöl and Ünsal, 2017; Genç, and Büyük Kuloğlu, 2018). It can be said that lesson plans prepared according to REACT model used in this study are effective in increasing students' motivation towards science learning.

According to the results of the research, in the 3rd and 4th class course books, the contexts were generally established. It was determined that the applications suitable for REACT and the 4-stage model were not used very often. In order to support students' permanent learning, more context-based practices should be used and these should be planned in accordance with a model..

REFERENCES

- Akpınar M. (2011). *The effect of the conceptual change texts on student achievement gain at physics education carried out with context based approach*. Unpublished Doctoral Thesis. Gazi University, Ankara.
- Acar, B. ve Yaman, M. (2011). Bağlam temelli öğrenmenin öğrencilerin ilgi ve bilgi düzeylerine etkisi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 40(40), 1-10.
- Choi, H. J. & Johnson, S. D. (2005). The effect of context-based video instruction on learning and motivation in online courses. *The American Journal of Distance Education*, 19(4), 215-227.
- Coştu, B., Ünal, S. ve Ayas, A. (2007). Günlük yaşamdaki olayların fen bilimleri öğretiminde kullanılması. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 8(1), 197-207.
- Crawford, M. L. (2001). *Teaching contextually: research, rationale and techniques for improving student motivation and achievement in mathematics and science*. Texas: CCI Publishing.
- Crawford, M. ve Witte, M. (1999). Strategies for Mathematics: Teaching in Context. *Educational Leadership*, 57(3), 34-38.
- Çepni, S. ve Özmen, H. (2014). Yaşam temelli ve beyin temelli öğrenme kuramları ve fen bilimleri öğretimindeki uygulamaları. S.Çepni (Ed). *Kuramdan uygulamaya fen ve teknoloji öğretimi içinde* (ss.121-171). Ankara: PegemA Yayıncılık.
- Demircioğlu, H. (2008). *Sınıf öğretmeni adaylarına yönelik maddenin halleri konusuyla ilgili bağlam temelli*

- materyal geliştirilmesi ve etkililiğinin araştırılması*. Yayınlanmamış Doktora Tezi. KTÜ Fen Bilimleri Enstitüsü, Trabzon.
- Demircioğlu, H., Vural, S. & Demircioğlu, G. (2012). The effect of a teaching material developed based on “REACT” strategy on gifted students’ achievement. *On Dokuz Mayıs University Journal of Education Faculty*, 31(2), 101-144.
- Genç, M., Ulugöl, S., & Ünsal, S. (2017). Ortaokul öğrencilerinin yaşam temelli öğrenme hakkındaki görüşleri. *Researcher: Social Science Studies*, 5(9), 244-255.
- Genç, M. & Büyük Kuloğlu, Z.(2018) Yaşam temelli öğrenme yaklaşımının 6.sınıf öğrencilerin fen öğrenimine yönelik motivasyonuna etkisi, UEYAK 2018 - 1. Uluslararası Eğitimde Yeni Arayışlar Kongresi, İstanbul, Turkey.
- Güven, İ. & Uzun, F. (2014). The effects of context-based physics experiments to scientific process skills of prospective science teachers. *International Journal of Physical and Social Sciences*, 4(4), 663-675.
- Ingram, S. J. (2003). *The effects of contextual learning instruction on science achievement of male and female tenth grade students*. Unpublished Doctoral Thesis. University of South Alabama, Instructional Design and Development, ABD.
- Kirman Bilgin, A., Demircioğlu Yürükel, F. N. & Yiğit, N. (2017). The effect of a developed REACT strategy on the conceptual understanding of students: "particulate nature of matter". *Journal of Turkish Science Education (TUSED)*, 14(2), 65-81.
- Potter, N. M. & Overton, T. L. (2006). Chemistry in sport: Context-based e-learning in chemistry. *Chemistry Education Research and Practice*, 7, 195-202.
- Sözbilir, M., Sadi, S., Kutu, H. & Yıldırım, A. (2007). *Kimya eğitiminde içeriğe/bağlama dayalı (context-based) öğretim yaklaşımı ve dünyadaki uygulamaları*. I. Ulusal Kimya Eğitimi Kongresinde sunulan sözlü bildiri, İstanbul.
- Yaman, M. (2009). Context and methods on respiration and energy acquisition interesting for students. *Hacettepe University Journal of Education*, 37, 215-228.

CONTRADICTIONS BETWEEN PUBLIC SPENDING AND EMPLOYMENT IN GRADUATES OF HIGHER EDUCATION IN MEXICO

Dr. Rubén Macías Acosta*

*Doctor in Government and Public Administration. Head of the Economics Department, Universidad Autónoma de Aguascalientes, México. Member of The National System of Researchers.

Dr. Manuel Díaz Flores**

**Doctor in Social Sciences, Professor Researcher of the Economics Department, Universidad Autónoma de Aguascalientes, México. Member of The National System of Researchers.

Dr. Roberto González Acolt***

***Doctor in Economy, Professor Researcher of the Economics Department, Universidad Autónoma de Aguascalientes, México. Member of The National System of Researchers.

ABSTRACT

The welfare of the population is a commitment of the government that is accentuated in Mexico due to the great inequality in the country, so the government relies on education as a way to redistribute wealth generating equity in the population. The higher education level allows graduates to obtain higher income than the rest of the population due to their professionalism, it's a topic of analysis of the government's agenda. This document examines higher education with the objective of analyzing the educational subject results of the National Development Plan (NDP) 2013-2018 specifically the "Objective 2: Strengthen the quality and relevance of higher secondary education, higher education and training for work so that they contribute to the development of Mexico. " In the methodology, a quantitative study of descriptive scope is proposed due to the analysis of the educational indicators generated by the National Institute of Education Evaluation (INEE) in Mexico. The results show the noncompliance with the objective of the NDP, it presents a reduction in the employment rate of the graduates of higher education while public spending per student and federal spending on education has increased. It concludes by commenting on the disarticulation of higher education with the labor sector, mainly in relation to the plans and programs that should train skills in students so that they can be inserted into a workplace when they graduate, as well as the need to link public spending with the creation of positions for professionals, establishing a commitment with companies.

Keywords: employment, budget, education policy, public expenditure.

INTRODUCTION

The welfare of the population is a commitment of the government in Mexico due to the great inequality in the country, so the government relies on education as a way to redistribute wealth generating equity in the population. The higher education level allows graduates to obtain higher income than the rest of the population due to their professionalism, it's a topic of analysis of the government's agenda. This document examines higher education with the objective of analyzing the educational subject results of the National Development Plan (NDP) 2013-2018 specifically in the "Objective 2: Strengthen the quality and relevance of higher secondary education, higher education and training for work so that they contribute to the development of Mexico". It is important to consider the relevance of bachelor's degrees in the workplace, since higher education must focus on meeting the needs of the productive sector so that professionals can meet the demands of the company for making high-quality work. In this way, when graduating professionals have opportunities to join to the productive sector covering the needs of specialized workers in organizations that increase the productivity of the companies implementing innovative strategies that allow improving the performance of productive systems. Likewise, it is necessary to link the curriculum that is held in higher education so that an effective link is achieved between the school and the company, attracting higher level graduates for organizations and covering the vacancies requested. Some of the problems are saturation in the labor market, with many graduates applying to get the same job, this situation leaves a lot of graduates waiting for job opportunities. Another situation is the change of paradigm in the companies in which there are new needs of professionals derived from the scientific and technological advance, reason why traditional careers are lagging behind, being an obstacle to finding a job. In addition to the change in social needs in which, with the change in the population distribution, different needs of knowledge are needed to serve the elderly population. There are also changes derived from nature, in which, through the destruction of natural resources and the need for the use of clean energies, need professionals, among others. It is very important to analyze the relevance of the curriculum because in addition to the attention of social needs, the government allocates resources to public schools in which there is an expense for students that has the purpose of improving the living conditions of the population through the redistribution of wealth. It generates an increase in the income of graduates because they are making productive activities with a high degree of specialization

that allow them to reach higher salaries. Analyze the results of public spending and its relationship with employment to change their way in order to generate welfare in citizens its a need and responsibility of the government. Since higher education institutions must conceive the relevance in the inscription of their objectives in the partnership project (Leite Ramalho & Beltrán Llavador, 2012). Considering the university relevance as the measure of congruence of higher education institutions related to their environment, in which each actor exposes their actions related to the context (Sosa Castillo, Íñigo Bajos & Martín Sabina, 2016). Highlighting the role of relevance in higher education institutions by having the commitment to increase it in the future by developing a knowledge society that allows universities to be producers of scientific knowledge that meets social demands, generating solutions for national problems (Coronado- García & Estévez-Nenninger, 2016). Since no country will be able to preserve its sustainable development if higher education institutions lack quality criteria that allow the integral training of professionals who meet social needs and have human formation (Vera -Noriega, Rodríguez-Carvajal & Bustamante-Castro, 2017). Therefore, the relevance demands results of the actions carried out by higher education institutions because society contributes financially and demands accountability of this support for education (Méndez Fregozo, 2005), since the financing of higher education is a combination of government resources originated in tax collection, through the payment of families in tuition and others, in credit to students and institutional donations (Mendoza Rojas, Javier, 2017).

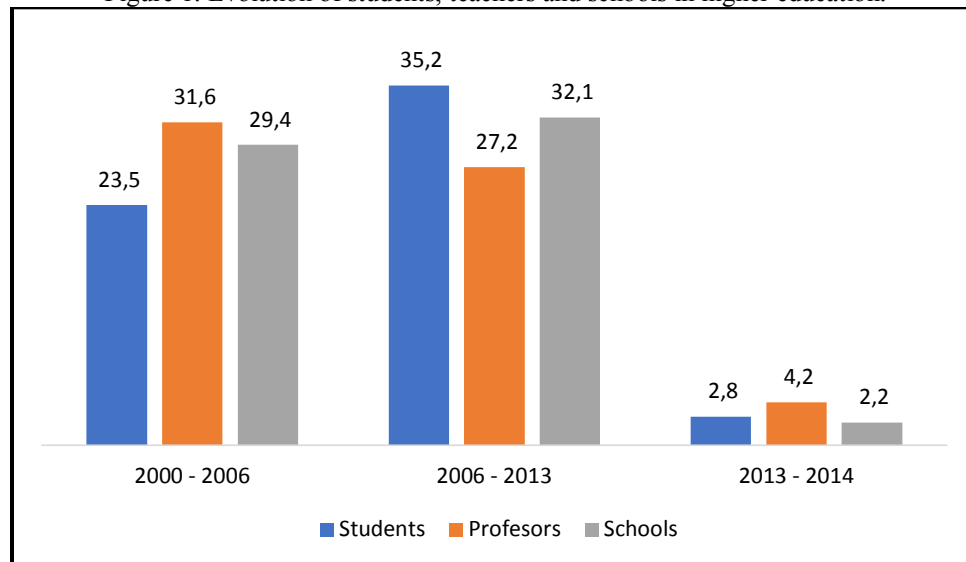
METHODOLOGY

In the methodology, a quantitative study of descriptive scope is proposed due to the analysis of the educational indicators generated by the National Institute of Education Evaluation (INEE) in Mexico.

RESULTS

It is observed that the number of students began with an increase in the period 2000 to 2006 to 23.5%, the period from 2006 to 2013 increased to 35.2.2% and fell sharply in the period from 2013 to 2014 to 2.8%. The number of professors increased in the period from 2000 to 2006 to 31.6%, decreasing in the period from 2006 to 2013 to 27.2% and drastically fell in the period from 2013 to 2014 to 4.2%. The number of schools increased in the period 2000 to 2006 to 29.4%, increasing in the period 2006 to 2013 to 32.1% and drastically fell in the period 2013 to 2014 to 2.2%. This situation shows the strengthening of higher education in Mexico, which has been gradually decreasing in respect to its student population, teachers and schools, which shows any change in the redistribution of income because it depends on equality in education (Figure 1).

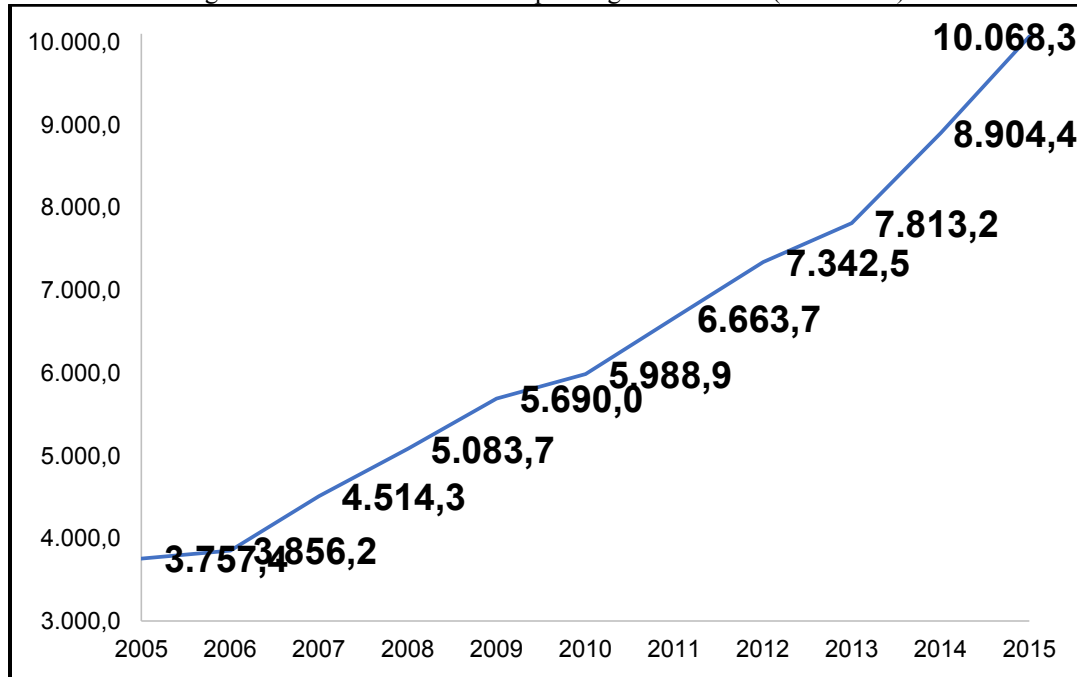
Figure 1. Evolution of students, teachers and schools in higher education.



Source: own elaboration with information from INEE (2018).

The public expenditure has an important growth beginning in the year 2005 that was of 3,757 dollars growing to the amount of 10,068.3 dollars in the year 2015, it was an important increase that really reflects the support of the educational System that has been created in Mexico more than the investment in higher education (Figure 2).

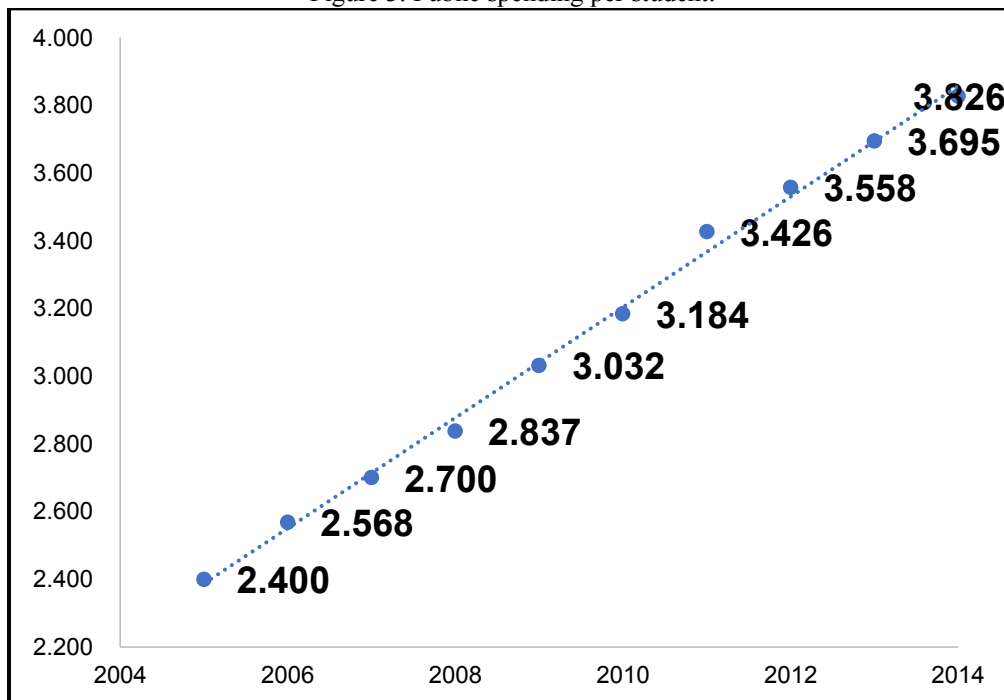
Figure 2. Destination of federal spending on education (2005-2015).



Source: own elaboration with information from INEE (2018).

The public expenditure per student shows that in 2005, 2,400 dollars were allocated for each student and in 2014, 3,826 dollars, this fact reflects a significant increase due to the new requirements of careers that require more infrastructure for class delivery, its necessary more investment on this topic (Figure 3).

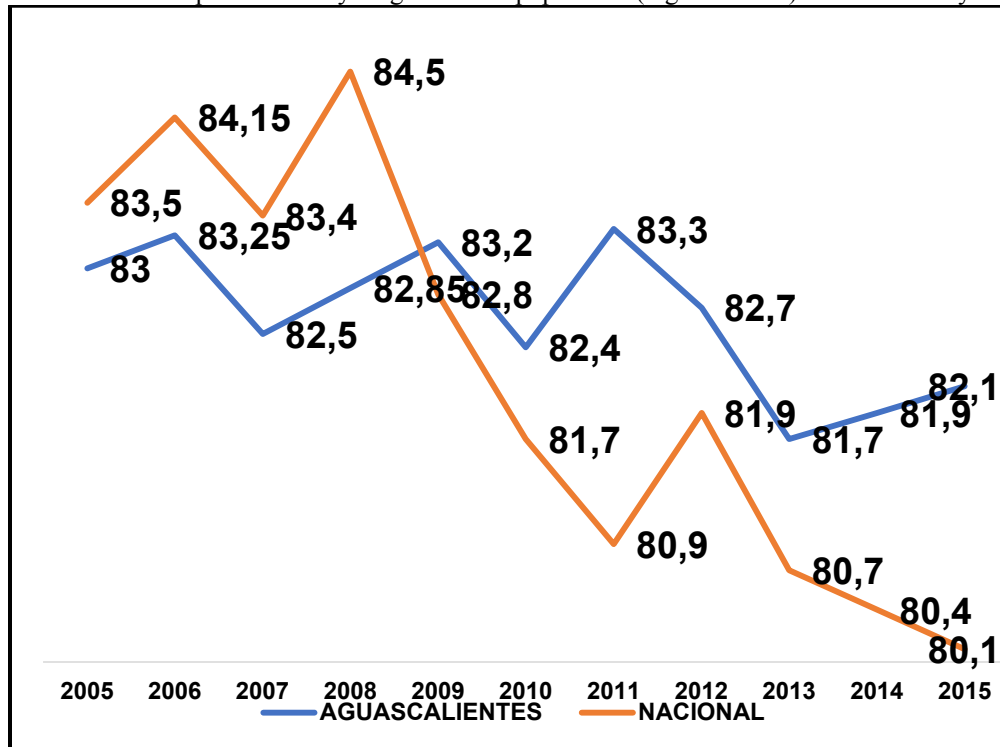
Figure 3. Public spending per student.



Source: own elaboration with information from INEE (2018).

The employment rate in higher education shows 83% in 2005 with its highest level in 2008, which presented a percentage of 84.5, but from 2009 it fell to 80.1% in 2015, which shows that many of the professionals with higher education are unemployed or they are doing activities that are not part of their career, it is a complex situation for the achievement of increased resources of people with this type of job training, because they are not enough for the vacancies (Figure 4).

Figure 4. Rate of occupation of the young and adult population (higher school) from 25 to 64 years old.



Source: own elaboration with information from INEE (2018).

The results show the noncompliance with the objective of the NDP, it presents a reduction in the employment rate of the graduates of higher education while public spending per student and federal spending on education has increased.

CONCLUSION

It concludes showing the disarticulation of higher education with the labor sector, mainly in relation to the plans and programs that should train skills in students so that they can be inserted into a workplace when they graduate, as well as the need to link public spending with the creation of positions for professionals, establishing a commitment with companies. Due to this situation, it is considered important to carry out an analysis of the relevance of the careers because the national needs are in constant change, and the needs of the companies must be attended so that employment sources need the integration of higher education with the productive sector. It is also necessary to articulate the relevance of the careers with the demands of the productive sector so that when the students become graduates could be occupied by the companies. It is clear that higher education is inertial and some careers offered are not required by the productive sector, so investment in other professions that are trends or that are lacking in professionals should be analyzed and assigned public expenditure efforts through public policies that strengthen the orientation of students towards these issues to be addressed, because the current world orientation requires the training of enough professionals to meet social demands. Likewise, it is necessary to consider the educational offer of the institutions of higher education in Mexico, since the investing in programs that have no vacancies in their labor field professionals are generated, this fact should be analyzed in order to change the destination of public spending towards future professions, as well as a national policy that allows to rethink the careers needed for the productive sector. This situation consider a change in the basic and upper secondary educational model because from the initial education the orientation must be generated to study sciences, in order to encourage the students to have interest in new careers. It should also analyze the issues that are preventing the transit of students in the careers of the future considering an important element the numerical skills in which the subject of mathematics is a subject that complicates many students by preventing them from

completing these programs or generating fear in their study because they can fail, being a subject of great importance the rethinking of the basic knowledge and the guarantee that they have the right competences for educational success. In addition to the need to analyze emotional intelligence as a key element so that students have resilience and can conclude their educational level without fear of situations of commitment and total commitment in the realization of their jobs that demand higher education.

REFERENCES

- Coronado-García, Manuel-Arturo, & Estévez-Nenninger, Etty-Haydeé. (2016). Pertinencia social de una universidad pública en México, desde la visión de estudiantes, empleadores y docentes. *Revista iberoamericana de educación superior*, 7(20), 172-189.
- INEE (2028). *Instituto Nacional para la Evaluación de la Educación*. Retrieved from <https://www.inee.edu.mx/>
- Leite Ramalho, B., & Beltrán Llavador, J. (2012). Universidad y sociedad: la pertinencia de educación superior para una ciudadanía plena. *Revista Lusófona de Educação*, (21), 33-52.
- Méndez Fregozo, E. (2005). La pertinencia como requisito para la calidad en educación superior. La planeación institucional y el compromiso como condición esencial para el desarrollo del posgrado. *Revista Iberoamericana De Educación*, 36(3), 1-21.
- Mendoza Rojas, Javier. (2017). Financiamiento de la educación superior en la primera mitad del gobierno de Enrique Peña Nieto: ¿fin del periodo de expansión?. *Perfiles educativos*, 39(156), 119-140.
- Sosa Castillo, Ana Margarita, Íñigo Bajos, Enrique, & Martín Sabina, Elvira. (2016). La dimensión social de la pertinencia como complemento sustancial en el logro de la equidad en la educación superior. *Revista Cubana de Educación Superior*, 35(1), 30-40.
- Vera-Noriega, J.A., Rodríguez-Carvajal, C.K., Bustamante-Castro, I.A. (2017). Pertinencia social de universidades públicas y privadas: perspectiva de los docentes. *Rastros Rostros*, 18(33), 39-49.

DEVELOPING THE ALGORITHMIC SKILLS OF FOREIGN STUDENTS

Piroska BIRÓ

Faculty of Informatics, University of Debrecen, Hungary

biro.piroska@inf.unideb.hu

ABSTRACT

Statistical data show that the number of foreign students studying at the Faculty of Informatics of the University of Debrecen is increasing year by year due to the popularity of the major and the various international scholarship programs. The growing number of students, the varying levels of students' knowledge, their language skills and their cultures, all pose many challenges for teachers. It is also a great challenge for students to adapt to a new educational environment, to comply with a new set of rules, and to learn a new way of life.

I meet foreign students in the Introduction to Programming course during the first semester of the university year. The aim of the course is to improve their programming skills and the most important task of this period is to help students to integrate and to present the most important requirements and information.

In this paper, I would like to present the current state of student mobility at the University of Debrecen, taking into account national headcount data, as well as the results and experiences of my first year foreign students studying programming.

INTERNATIONAL STUDENT MOBILITY IN HUNGARY

International student mobility in Hungary is increasing year by year, as evidenced by the statistics of recent years (Derényi, 2014; Rédei, 2009), according to which more than 30000 (30276) foreign students started the academic year 2017/2018 in our country, who come from 162 different countries. In case of gender distribution, they arrive in Hungary in almost equal proportions, with no difference between women and men (14905 women, 15371 men) (Data Hungary, 2017; Figure 1).

The growth of student number is also encouraged by higher education and government-sponsored international recruitment and scholarship programs, such as Erasmus+ or the Stipendium Hungaricum (SH) excellence scholarship program introduced in 2013 (Derényi, 2014; Rédei, 2009).

If we consider the data of the last ten years, the number of foreign students doubled, while the number of Hungarian students decreased year by year (Figure 1).

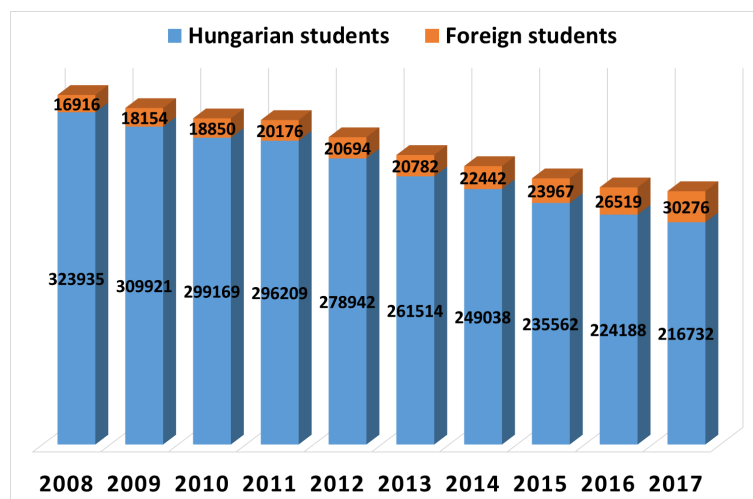


Figure 1: Number of Hungarian and foreign students studying in Hungarian higher education (Data Hungary, 2017)

The table below shows that the ratio of Hungarian and foreign students exceeds 12%, which means that it has more than doubled in the last ten years (Table 1).

Table 1: The number of Hungarian and foreign students in the last 10 years (Data Hungary, 2017)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Hungarian students	323935	309921	299169	296209	278942	261514	249038	235562	224188	216732
Foreign students	16916	18154	18850	20176	20694	20782	22442	23967	26519	30276
Student ratio	5,0%	5,5%	5,9%	6,4%	6,9%	7,4%	8,3%	9,2%	10,6%	12,3%

The question arises as to why foreign students leave their homeland and what motivates them to study at a foreign university, what are the criteria for choosing the destination country, including the city and university, and what motivation and expectations they arrive with in Hungary. Tamás Wusching (2017) also deals with these questions. According to his research, individual institutions have developed different international catchment areas over the past decades, and personal motivations for learning mobility vary from country to country, with students choosing different aspects of their university, and their post-graduate plans (Wusching, 2017).

Let us first look at the criteria for international choice of institutions by foreign students, which influence them in their pursuit of international studies.

Once they have decided to pursue their studies abroad, students first choose the destination country and then look for a higher education institution in the destination country (Wusching, 2017).

The decision is influenced by several factors, such as higher education qualification, prestige, the quality of education, the reputation of the degree and the amount of tuition fees.

In addition, the choice of campus, past opinions, feedback, geographical distance and cultural similarity may be important factors (Wusching, 2017).

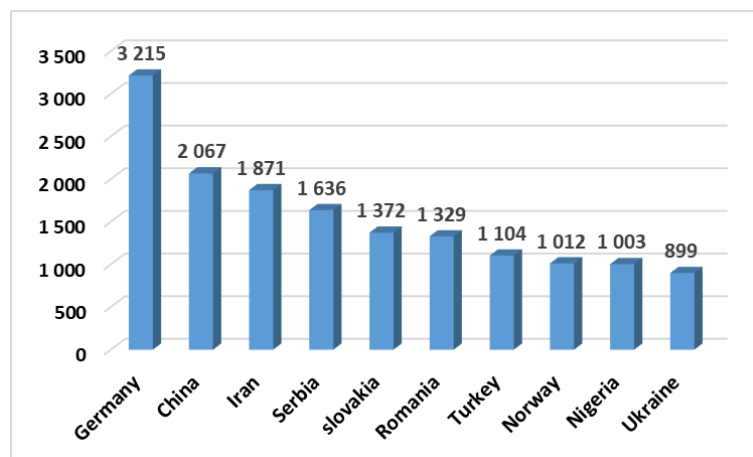


Figure 2: The number of foreign students in Hungary in academic year 2017/2018 - TOP 10 (Data Hungary, 2017)

Looking at the distribution of foreign students by country in the 2017/2018 academic year (Figure 2), we are surprised to find that most students (3215 - 10.6%) come from Germany, followed by China (2067 - 6.8%) and then Iran (1871 - 6.2%).

On the other hand, differences can be found between the catchment areas of individual universities as for example, most people come to Debrecen from Nigeria, unlike the national average (Figure 5).

University of Debrecen

The national tendency can also be observed in Debrecen, taking into account the last ten years, the statistical data show that the number of foreign students enrolled at the University of Debrecen also doubled, from 2800 to 5664 students (Figure 3).

In 2009 students came from only 64 countries, but today they come from 113 countries (2018), so the number has doubled.

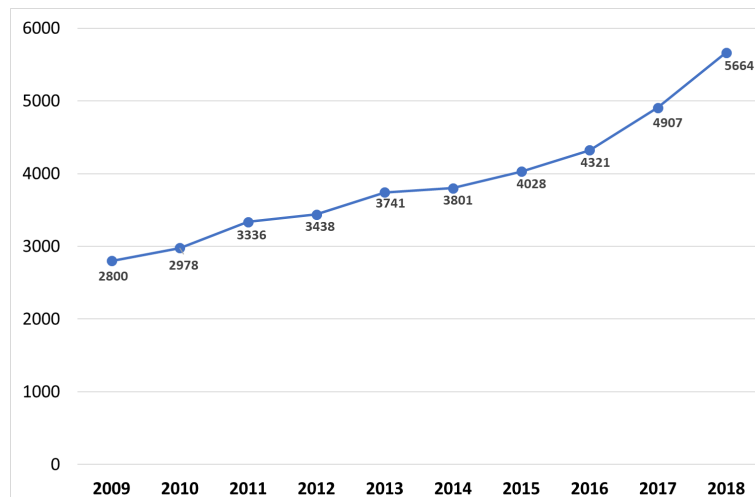


Figure 3: The number of foreign students at the University of Debrecen in the last ten years (2009-2018) (Data Debrecen, 2018)

The most popular faculty at the University of Debrecen is the Faculty of Medicine (AJK) and the Faculty of Dentistry (FOK), but in recent years there has been a dynamic increase in the Faculties of Engineering (MK), Economics and Business (GTK), Informatics (IK), Sciences and Technology (TTK) (Figure 4).

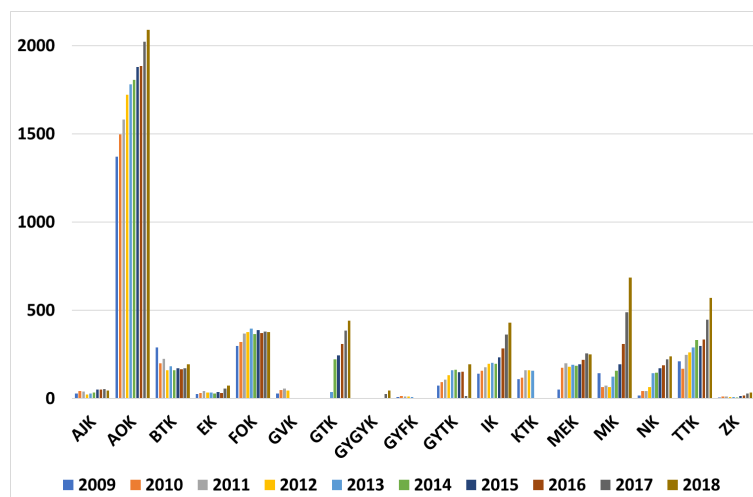


Figure 4: The distribution of students by faculties of the University of Debrecen (2009-2018) (Data Debrecen, 2018)

If we look at the countries from which students come from, it is interesting to see that Nigeria ranks high, followed by Romania, which is justified by its geographical proximity and Hungarian mother tongue, as they come mainly from Transylvania, followed by Iran, China, etc. (Figure 5, Table 2).

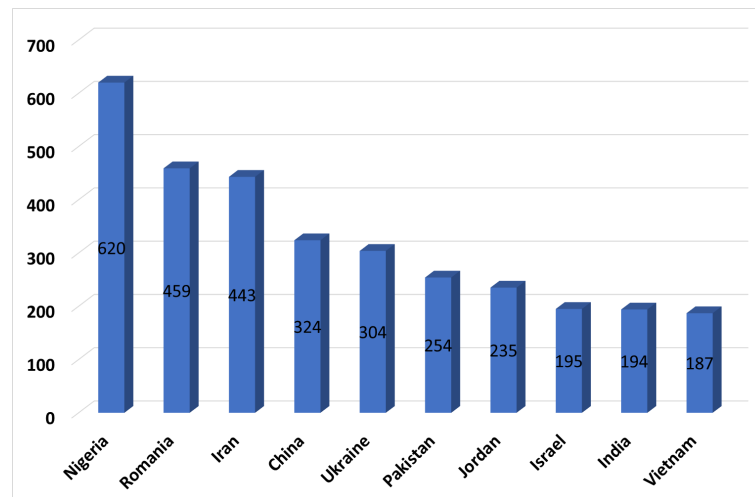


Figure 5: The number of foreign students at the University of Debrecen in 2018 (Data Debrecen, 2018)

There are also surprises in the distribution of student population by nationality over the last ten years, while data for Nigeria, Pakistan, China show an increase, whereas for Romania, Israel, and Ukraine, there is a complete decline (Figure 5, Table 2).

Table 2: Change in the distribution of students arriving at the University of Debrecen by nationality (Data Debrecen, 2018)

	Nigeria	Romania	Iran	China	Ukraine	Pakistan	Jordan	Israel	India	Vietnam
2009	6,3%	18,3%	6,8%	1,8%	10,5%	0,2%	0,4%	11,4%	0,4%	2,6%
2018	10,9%	8,1%	7,8%	5,7%	5,4%	4,5%	4,1%	3,4%	3,4%	3,3%
Increase	+4,6%	-10,2%	+1,0%	+4,0%	-5,1%	+4,3%	+3,8%	-7,9%	+3,0%	+0,7%

Faculty of Informatics

The number of students arriving at the Faculty of Informatics has grown more dynamically than the national average over the last ten years, having tripled, while in 2009 141 students and in 2018 429 students chose the Faculty, we can observe that after 2014 there is a strong increase (Figure 6).

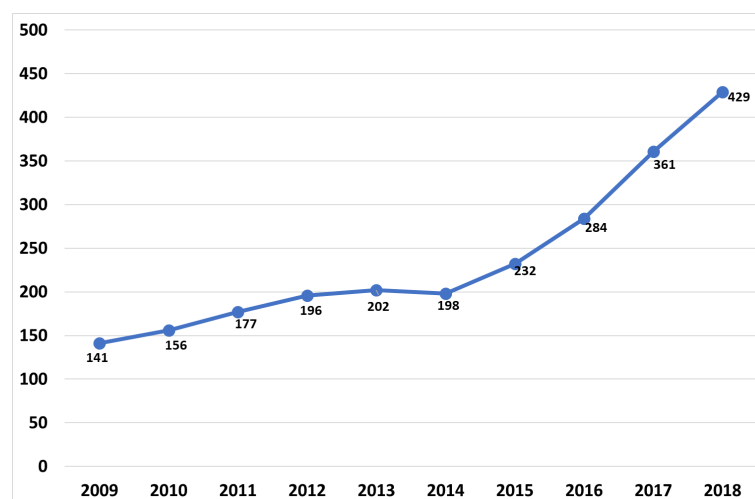


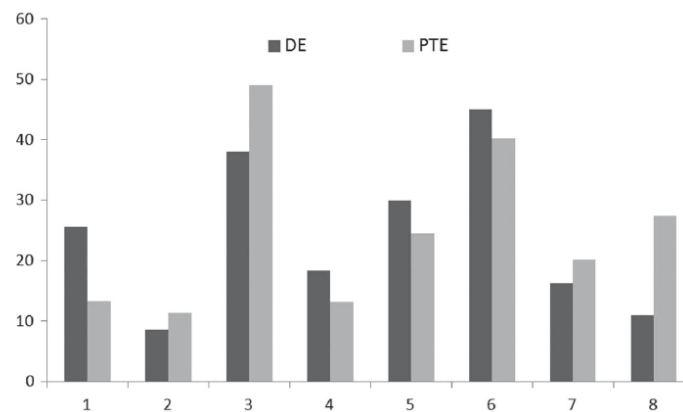
Figure 6: The number of foreign students at the Faculty of Informatics – (2009-2018) (Data Debrecen, 2018)

MOTIVATION AND FUTURE PLANS FOR STUDENT MOBILITY

Student motivation

I would like to highlight two results from the research of Tamás Wusching conducted in 2017, which compared

the motivations of students arriving at the universities of Debrecen and Pécs. The research was carried out in the spring of 2015, 546 students from the University of Pécs and 500 students from the University of Debrecen.



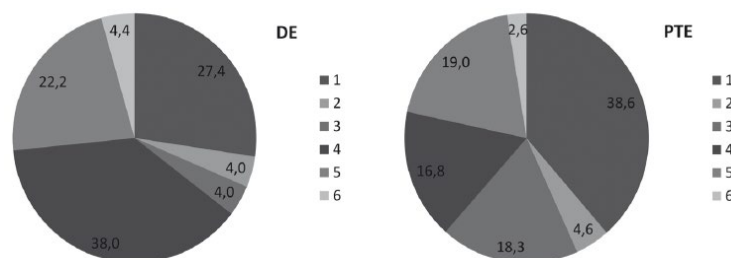
Notation: 1: higher education at home is not good enough; 2: here is the same level of education for less; 3: getting to know new cultures and languages; 4: networking, getting to know each other; 5: independence from home and parents; 6: building the future, good jobs in the future; 7: adventure; 8: other.

Figure 7: Student motivation (Wusching, 2017)

In terms of motivation for student mobility, the University of Debrecen students gave the highest answer rate to "building the future, good jobs in the future", while the students of the University of Pécs gave the highest answer rate to "getting to know new cultures and languages". The biggest difference between the two universities is that "higher education at home is not good enough" and "other" response options, which is due to the fact that significantly more people come to Debrecen from countries (such as Nigeria) where the standard of higher education lags behind Europe, while the majority of students coming to University of Pécs are from Europe (coming from Germany) and have been driven to Hungary for other reasons (such as more cost-effective education) (Figure 7; Wusching, 2017).

Student plans

Tamás Wusching examined the students' plans and concepts after graduation. According to his research (2017), the biggest difference between students in Pécs and Debrecen is in the ratio of those planning to continue their studies.



Notation: 1: going home to work; 2: staying here for work; 3: moving to a third country to work; 4: continuing studies here or elsewhere; 5: not knowing yet; 6: no answer.

Figure 8: Post-graduate plans of foreign students (Wusching, 2017)

Somewhat surprisingly, the result at Debrecen, as most of them receive undivided medical training. Perhaps the key is that many Asian and African students would go on to another, typically Western, university during their studies to complete their studies there. It is possible that many people would go abroad (King, Ruiz-Gelices 2003) to obtain a PhD degree, be a resident or become a medical specialist before working (Figure 8). At the same time, it is surprising that in Debrecen the ratio of those who would move to work in a third country is low, as it would be expected that those from more developed countries would not want to move home after graduation, but would not stay in Hungary either (Wusching, 2017).

STUDENT AND TEACHER CHALLENGES

Student Challenges

Foreign students face a lot of challenges when coming to a foreign environment. When studying, one of the biggest challenges for students is the varying levels of knowledge they have gained in the field, and the university is trying

to offer different solutions, such as starting year 0 or introducing preparatory courses.

The second biggest problem is the language skills of foreign students, as previous surveys have shown that English and the language of the destination country are a problem for almost two thirds of foreign students (Wusching, 2017).

While in university administration, data management, contact with teachers and students, they will certainly understand English, but in the city, in day-to-day tasks (living, transport, shopping, leisure), they are likely to encounter linguistic problems, as unfortunately knowledge of foreign languages in Hungary is worse than the EU average. Integration into the city and residential environment also poses a problem, presumably because more students come from non-European cultures, and most Hungarians are likely to find it harder to accept an Asian or an African than a German or Norway. Local bureaucracy was found to be problematic by about one in four students, while the proportion of those who did not encounter any difficulties was rather low (Wusching, 2017).

Teacher Challenges

The biggest challenge for the teachers is the students' different levels of knowledge and language problems, as well the students' adoption of new rules and knowledge of the education system.

The increasing number of students also causes difficulties, and less time is spent on each student. We can experience students being unmotivated, so various tricks must be applied to encourage them to learn.

Further problems arise from the behavioral habits of different cultures in case of insufficient marks, they try to beg in many ways to get a better mark, including using emotional influence.

As an advantage, I would note that more student feedback is received by the teacher from foreign students than from Hungarian students.

THE CHALLENGES OF PROGRAMMING EDUCATION

Introduction to Programming

Teachers and students evenly face a number of challenges when teaching and learning programming.

First I meet the students in the Introduction to Programming course, where we begin with laying down the fundamental rules.

By understanding the requirements and signing the syllabus they acknowledge the rules.

There are also many differences in communication with students, both on a skill level and on a cultural level.

Coming from Asian countries, such as the Chinese, the Indians are very respectful, "silent" students, there are situations where the questions posed by the teachers are rarely answered, despite the fact that they know the answer. However, students from the Middle East and Africa sometimes like to violate the boundaries of the rules. In the first semester of the 2018/2019 academic year, 57 students began their major in software engineering, where I tried to get students into regular learning with a small test at the beginning of the lesson. Experience and results show that week by week, they took the preparation more seriously and strived to achieve the best possible results.

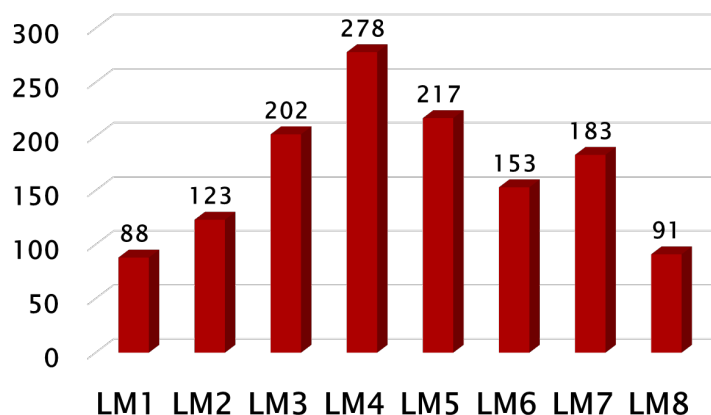


Figure 9: The results of the small tests

I used the small tests at the beginning of the class as one of the tools for evoking the students' activity, motivation and interest. With this I was able to persuade them to prepare from week to week, to study, and to arrive on time, because if someone was late for class, they missed the small test at the beginning of the class (Figure 9).

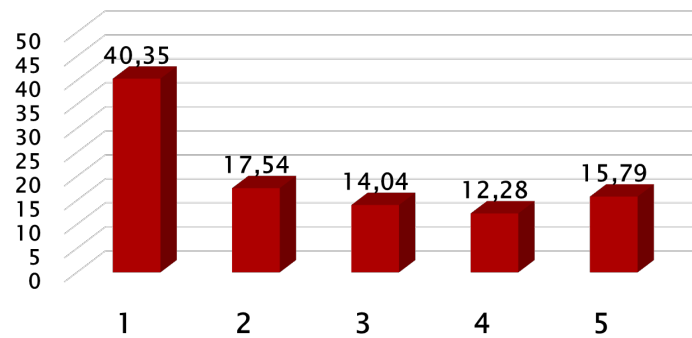


Figure 10: Student performance (%)

Considering the end of semester results, the distribution of grades is fairly even, but the proportion of non-performers stands out (40.35%, Figure 10).

Programming Languages 1

In the spring semester of the 2018/2019 academic year, 54 students continued, including those who successfully completed the Introduction to Programming course and failed the Programming Languages I course in the previous year.

Problems encountered in programming education fall into three major groups:

- Lack of basic knowledge
 - Mathematical concepts
 - IT basics
 - Lack of algorithmic thinking
- Reading comprehension skills
 - Reading problems
- Language difficulties

Lack of basic knowledge and comprehension problems cause the biggest challenge, and I would emphasize the lack of algorithmic thinking, which can only be learned through a lot of practice.

CONCLUSIONS

The dynamic increase in the mobility of foreign students poses increasing challenges for academics and staff. More resources would be needed to support students in their early years.

We consider it important to help students after the initial cultural shock, to bring their knowledge to the same level, to provide information, to motivate them, to arouse and maintain interest in the subject.

In addition, student-teacher relationships should be improved, including student groups, so that they can help each other and organize different student programs.

REFERENCES

- Data Hungary (2017). *Felsőoktatási statisztikai adatok, letölthető kimutatók* (2017.)
https://www.oktatas.hu/felsooktatasi/kozerdeku_adatok/felsooktatasi_adatok_kozzetetele/felsooktatasi_statistikak (Download: 2019.05.15.)
- Data Debrecen (2018). *Debreceni Egyetem külföldi hallgatóinak létszámadatai 2004-2018*. Hallgatói Statisztikák. <https://unideb.hu/hu/node/896> (Download: 2019.05.18.)
- Derényi A. (2014). *A felsőoktatás nemzetköziesítése: globális pillanatkép*. In: Csekő K. (ed.): *A mozgás tere: A magyar felsőoktatás és a nemzetközi mobilitási folyamatok*. Balassi Intézet, (pp. 11–52), Budapest.
- King, R., Ruiz-Gelices, M. (2003). International student migration and the European „Year abroad”: Effects on European identity and subsequent migration behaviour. *International Journal of Population Geography*, 3., (pp. 229–252). <http://doi.org/dqwczzg>
- Rédei M. (2009). *A tanulmányi célú mozgás*. Reg-Info, Budapest.
- Wusching, T. (2017). A nemzetközi hallgatók tanulmányi célú mobilitásának jellegzetességei Pécs és Debrecen példáján, *Tér és Társadalom*, 31(2), (pp. 69-82). doi: 10.17649/TET.31.2.2828.

DIFFUSION OF YOUTUBE IN TURKEY

Prof. Dr. Aytekin ISMAN
Sakarya Üniversitesi, İletişim Fakültesi
Kübra GÜZELSOY

ABSTRACT

With the development of internet technologies, the development of communication technologies has become inevitable and has reached unpredictable dimensions. Individuals have begun to use the virtual world as an alternative socializing tool as having significant importance in interpersonal communication and interaction. YouTube is not just a video sharing site; it is becoming a prevalent trend throughout the world. This trend, especially under the influence of young and children groups, has diffused rapidly in countries with a young population therewith Turkey has become one of the leading countries YouTube has diffused.

The study was carried out to perceive the process of YouTube diffusion in the case of Turkey in detail. YouTube is considered as innovation and based on Rogers's diffusion of innovations theory by investigating under its four main elements in detail which are the innovation, communication channels, time and social systems. Also, YouTubers, who known as YouTube content creators, examined as opinion leaders in this diffusion process.

It was determined that behind the successful diffusion of YouTube in Turkey may be many several reasons. Some basic reasons include that Turkey has the high rate of young population who accepts the innovations faster than any other social system groups, YouTube fits the norms of Turkish social system especially after the language support in 2012 and thanks to developed communication technologies it is easy to access throughout the country. By basing on these reasons, it is bearable to say that YouTube successfully diffused in Turkey.

Keywords: YouTube, Turkey, Social Media, Diffusion, Web 2.0

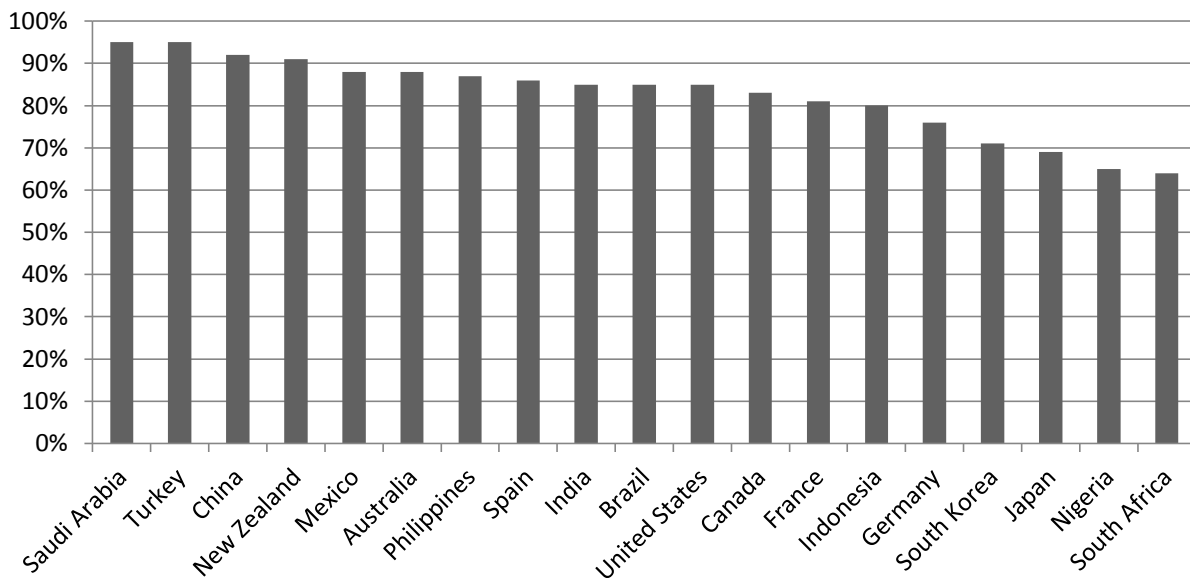
1. INTRODUCTION

Social networking sites (SNS) websites that encourage social interaction through profile-based user accounts which are commonly defined as Web 2.0 and mean that they mimic desktop applications (Keenan & Shiri, 2009). Social media is may be defined as "highly interactive platforms via which individuals and communities share, co-create, discuss, and modify user-generated content (Kietzmann, Hermkens, McCarthy, & Silvestre, 2011)."

Social media has a strong and effective position when it is used correctly because of it is a platform where users do not have any restrictions and everyone has a right to speak. Social media which gained a great seat in our lives with technology has already replaced with other traditional media. Web 2.0 stream that transforms the Internet into a sharing environment, and social networks and social media which are becoming more and more widespread are an incredible potential power with a high level of communication and interaction (Büyüksener, 2009).

After the expansion of communication technologies, hybrid media has arisen at first on the different traditional platforms such as radio, television and newspaper, and then on the Internet. Even though internet connection speed was not perfect at first, users wanted to share big and bigger data and this worldwide paved the way of the image, audio and video sharing platforms. Still when today's people spoken about social media, what the first thing comes to mind is "to share" as it represents the extent to which users exchange, distribute, and receive content. On the online platforms, the term "sociality" is about the interactions between people by meeting online and associating with each other, this is exactly what users want(Kietzmann et al., 2011; Kuyucu, 2019).

Figure 1: *Percentage of internet users who watch online video content on any device as of January 2018, by country percentage (Statista, 2018)*



With the rapid developments, the problems such as connection speed left well behind and new platforms emerged which are engaged in video-based internet broadcasting. Together with all changes in communication technologies, new media having a new identity found itself in the lives of individuals with various software applications. Eventually, today expansion of video sharing social network sites accomplishments is undeniable. As seen clearly in Figure 1 which is show the statistics of the percentage of internet users who watch online video content on any device, Turkey is sharing the first seat with Saudi Arabia. Particularly YouTube which emerged in 2005 is the most prominent video sharing social network site as it diffuses throughout the world rapidly (Kuyucu, 2019; ‘Online video penetration in selected countries 2018 | Statistic’, 2018; Ugurlu & Ozutku, 2014).

“YouTube lies at the intersection of media creation and social networking, providing young people a participatory culture in which to create and share original content while making new social connections (Chau, 2010, pp. 65)”. Almost more than 4 times as many people prefer watching video on YouTube as on social platforms that are less video-centric (‘The Latest YouTube Stats on When, Where, and What People Watch’, 2016).

There are hundreds of SNSs, with various technological affordances, supporting a wide range of interests, practices and this becomes more of an issue in Turkey both for users and firms. While SNSs key technological features are fairly consistent, the cultures that emerge around SNSs may be varied as seen in Turkey case (Boyd & Ellison, 2007). Susarla and others (2012) identified three distinct mechanisms of social influence on YouTube;

- 1) Local networks of friends,
- 2) Nonlocal or long ties of friends,
- 3) Networks of subscribers based on shared interests.

As Büyükşener (2009) said the most suitable social networking model to Turkey is the ones that used to make a circle of friends, these distinct of YouTube gives to Turkish users fertile space to be actively online and diffuse both easily and rapidly. In other words, these distinctions are given a deeper understanding of the reason why YouTube diffused in Turkey. Also, the statistics made in the 3rd and 4th quarter 2017 prove that YouTube with a 55 per cent penetration rate has begun to overtake Facebook which was the most widely used social media platform in Turkey for years. As seen clearly, nowadays YouTube shows up as one of the most popular social network sites in Turkey (‘Turkey: social network penetration 2017 | Statistic’, 2017).

In this study, YouTube is taken into account as an innovation which is diffusing successfully throughout the world, particularly in Turkey. Analysis of YouTube diffusion in Turkey based on the Rogers *Diffusion of Innovations Theory* and investigated under the 4 main element of diffusion which is the *Innovation, Communication Channels, Time, and Social System* (Rogers, 2003).

2. AIM

Although the theory of diffusion, which introduced by Rogers in 1962, is attracted later on to the interest of the different disciplines such as in the fields of economics and business, it would not be wrong to say that the theory was initially started specifically in the field of communication (Rogers, 2003).

In the study, video sharing platform YouTube as one of the most actively used social media in Turkey is examined. In addition, YouTube, which is diffused rapidly to the Turkish society especially after the Turkish language support, is emphasized to figure out the reasons for successful diffusion by basing on the Rogers innovation of diffusion theory. When taken into consideration the high young and active population ratio in the country, YouTube is one of the most important social media should be examined in the case of Turkey. Another important goal of the study is to examine the opinion leaders of the so-called Influencer or YouTuber in detail and to examine their effects on this diffusion process.

While analyzing YouTube diffusion in Turkey by dwelling on the Rogers' innovation of diffusion theory will be examined in a detailed manner under the four main elements of which is headed as *Time*, *Social System*, *Innovation*, and *Communication Tools* (Rogers, 2003). Under the head of *Time* is examined how long YouTube diffusion took time as adopted by the Turkish users and began to use in a widespread manner. Under the head of *Social System*, Turkey's social, cultural characteristics are evaluated and the suitability of YouTube in the case of Turkey is discussed. Also, the effect of the Turkish language support of YouTube accelerated the diffusion on the Turkish social system as it eased the usage of it.

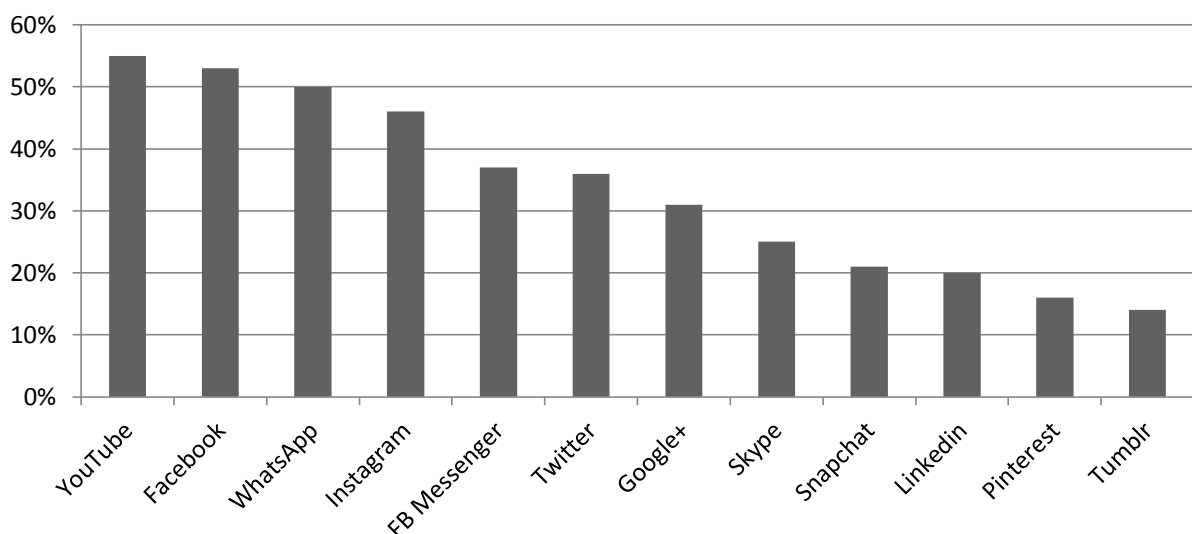
One of the four main elements of Rogers' innovation of diffusion theory is the *Innovation* (Rogers, 2003). Under the heading of innovation, YouTube is considered a new innovation coming to Turkey. Especially the lack of video sharing platform and with together progressively usage of communication and internet technologies throughout the world including Turkey, users increasingly desired to share the large and larger data. Another important head of the diffusion of innovation theory is; *Communication Tools*. It would not be wrong to say that mobile technology systems and internet technologies are one of the main reasons behind the successful diffusion of YouTube, not only in Turkey but also all over the world. For this reason, it is impossible to ignore the development of communication technologies while examining the diffusion of YouTube. Today in Turkey, the main reason for the adoption of YouTube particularly by the youth and children is thanks to mobile technology in their pockets.

In this manner, YouTube has become one of the main medium for Turkish users as they have whenever would like to entertain (Çiçek, 2018), educate (Ata & Atik, 2016; Isman & Dabaj, 2015), or to socialize (Keenan & Shiri, 2009), etc. only by having mobile phones in their pockets.

3. IMPORTANCE

YouTube is not just a video sharing site; it is becoming a prevalent trend throughout the world. This trend, especially under the influence of youth and kids, has diffused rapidly in countries with a young population. When we consider Turkey's large share of the young population, it has become one of the leading countries that YouTube diffused. As seen in Figure 2, according to We Are Social current statistics, YouTube has become the most active social media platform in Turkey with 57% of usage rate (We Are Social, 2018).

Figure 2: Most Active Social Media Platforms in Turkey in January 2018
(We Are Social, 2018)



With the changes in the implication of technology; learning styles, marketing, interest etc. are changed too. The reason lying behind the successful diffusion of YouTube is the awareness of this circumstance. YouTube knows what people are seeking for. In addition to needs such as entertainment, interaction, sharing to YouTube users; EDU has been implemented in order to meet the educational expectations. With YouTube, people may enjoy the fast, accountable, home atmosphere knowledge learning instead of classical learning in

classrooms. This channel of YouTube serves as the official video sharing network of many educational institutions (Ata & Atik, 2016; Isman & Dabaj, 2015).

According to 2016 YouTube Turkey user profile research, 71% of its users say they have a chance to relax and have fun, but YouTube is also a frequently used platform as a source of information. 69% of users say they use it for learning and information from YouTube, and 25% of them use it for researching products and offers. 63% of people who buy a product say they watched a video on YouTube that was useful in the decision process before they bought the product. For this purpose, 45% of the viewers buy the product. On YouTube, where impact and interaction is high, 67% of users share content with their loved ones ('YouTube'un Türkiye kullanıcı profili araştırması', 2016).

One of the newest and most effective trends in YouTube videos is the YouTuber videos. Especially with the development of the concept YouTuber, many people in Turkey are belonging to the Z and Y generations by creating their own channel to share their own content through YouTube and began to earn revenue on videos. One of the most effective tools in social media is YouTuber videos (Arklan & Kartal, 2018; Çiçek, 2018; Susarla et al., 2012). The increasing potential of YouTube also offers significant opportunities for marketers (Çalaplı & Şimşek, 2018; Güler, 2018). Thus, YouTube has turned into a revenue-generating marketing channel, as well as a channel with entertaining or educational videos. YouTube is having a large spectrum of interests from education to market, from youth to children. That's the reason why the investigation of YouTube diffusion is having crucial importance, particularly for Turkey as it rapidly increasing among Turkish users.

4. THEORETICAL BACKGROUND

In 1962, Everett Rogers, a Professor of Rural Sociology, established a theory of "Innovation of Diffusion" (Rogers, 2003) by synthesizing about the acceptance of innovation among individuals and in society with over 500 case studies. The first studies on this subject began in the field of communication with the thesis that a social system is spread over certain channels among the members. Later on, with the interest in the economy and business fields, different disciplines have been involved in. Four main elements of the theory is the *Innovation*, *Communication channel*, *Time* and *Social system*.

The first element of the innovation of diffusion theory is the *Innovation*. According to Rogers, innovation is an idea, an application, or an object that is adopted by the individual or community groups and is perceived as new (Rogers, 2003). As the related advantage of innovation by the individual increases, the adaptation rate also increases. Considering that the innovation is better than before then it is perceived as useful by the target group.

Through *Communication channel* which is the second essential element of the diffusion process, innovation messages pass from one individual to another. Interpersonal communication channels are more effective than formal communication channels in shaping and changing the attitude to innovation, thus accepting or rejecting innovation. While most people decide to adapt to innovation, they consider the evaluations of individuals around them instead of experts' research and recommendations.

Another important element in the diffusion of innovations is *Time*. According to Rogers, there are differences in the rate of adaptation of individuals to innovation. This difference is due to the time of acceptance of innovation. The admission time is the length of time between the user's first recognition of innovation and the point of acceptance or rejection of it. If the individual's acceptance time is short, then it is thought that the diffusion of innovation may be faster. In addition, the time of acceptance is the *Innovation-Decision Process*. The innovation-decision process is a mental process that lasts from the first knowledge of the individual to innovation, to shape his/ her attitude towards innovation, to the decision of cohesion or rejection and to the implementation of innovations and to the realization of this decision.

The last main element of the diffusion process is the *Social system*. According to Rogers, social system is a cluster of inter-related community units that have come together for a common goal and have developed a common problem-solving ability (Rogers, 2003). It is a series of unrelated units that come together to achieve a common goal. There are norms of all structured social systems. These norms form behavior models for members of the social system. The norms show the members of the social system how to behave. Generally, norms act as an obstacle to the spread of innovation.

In the *Decision-making process* of the diffusion of innovation, it is very important whether the decision is given independent and whether the innovation is voluntarily adopted or not. In the *Optional Innovation-Decision*, the decision of innovation is given by the individual herself/ himself. In the *Collective Innovation-Decision*, the individual expresses an innovation recognized by the self- determination of all individuals in a society. In this manner, the adoption of innovation is a collective process. In the *Authority Innovation-Decision*, innovation has spread to all members of society and has been adopted; however, the decision of innovation is taken by the authority, a minority who has influence and power in society.

Innovation- decision process is divided into 5 stages by Rogers (Rogers, 2003). The first phase is the *Knowledge* phase. At this stage, the individual is faced with innovation and generally, there is a lack of information about this innovation. The next stage is the *Persuasion* phase. The individual has become interested in innovation and has begun to research the innovation by trying to gather information about it. Then, in

Decision phase, the individual is in the stage of judging innovation, to understand the advantages and disadvantages that will be gained and to accept or reject the innovation. If the individual decides to implement the innovation at this stage, then the innovation starts to be implemented in the next stage, the *Implementation* phase. The effort to obtain more information about innovation and the integration of it with the current system are studied at this stage. In a *Confirmation* phase that usually comes after each innovation, the individual judges how successful the innovation is what it gains or losses. After this stage, the final decision regarding the continuation of innovation shall be made. In this confirmation phase, it depends both on the individual's own inner world judgment which is *intrapersonal* and on the individual's comments from other individuals which is *interpersonal*.

In any of the innovation-decision steps, the individual may be deviated from the process leading to adopting innovation. This deviation may mean that the innovation is never adopted, as well as the delay of the innovation or the suspension of the related step for a while. According to Rogers, there are 5 forces that are effective for the individual to adopt an innovation(Rogers, 2003). The first is the *Relative advantage*. Here, is important how much the innovation developed over the course of time. *Compatibility* is the second power of innovation-decision. Compatibility is the degree of conformity whether the innovation to be adopted by the individual after entering his/ her life or not. The *Simplicity* is the third power. If innovation is difficult to use on an individual basis then this may adversely affect the innovation-decision process, or vice versa, if the individual is easy to use, it may have a positive effect on it. The *Trailability* is the fourth power of the innovation-decision process. Whether the individual has the opportunity to try before adopting innovation or not has a deterrent or attracting effect. The *Observability* of innovation, which is the fifth and latest power in the decision-making process, is also one of the forces affecting the spread of innovation. Innovations observed by individuals will stimulate the communication and interaction of these individuals about innovation with their environment.

According to Everett Rogers' diffusion of innovation theory, an innovation needs to be appropriately owned to *self-sustain*. There is a critical point which is called *critical mass* for the size of the mass reached and it may be said that after reaching this point, innovation has reached a sustainable level. According to Rogers, those who owned and adapted to the innovation are categorized under 5 main groups which are *innovators*, *early adopters*, *early majority*, *late majority* and *laggards*(Rogers, 2003).

Innovators are the first to adopt an innovation. Innovators are people who are willing to take risks, young, belong to the upper social class, have low financial concerns, have access to scientific resources, and interact with social and other innovators. *Early adopters* are the first to encounter innovation and play a critical role in the spread of innovation to society. The *Early Majority* is the critical majority that innovation has reached and has incorporated this innovation into its life and culture for a variety of reasons. The period of acceptance of innovation is significantly longer than that of innovators and early adopters. The *Late Majority* is the majority formed by the expansion of innovation into other parts of the society after maturity. In other words, the individuals of this category accept innovation after the average individual of society. They approach innovation with high suspicion. The *laggards* are the ones who continue to use the innovation, which is still obsolete, despite the fact that innovation is abandoned or replaced by new technology. This group accepts the innovation latest. They hardly make any leadership and are advanced in age. They feel antipathy to the change agents(Rogers, 2003).

5. LITERATURE REVIEW

As being the most successful website, the YouTube, has attracted attention by researchers since its establishment. According to Cheng and others (2008), YouTube has a huge impact on Internet traffic and paying attention throughout the world but unfortunately, YouTube itself is suffering from a severe problem of scalability which is quite important in the network traffic engineering to support their sustainable improvements. In this paper in order to figure out the statistics of the YouTube videos, Cheng and others analyzed YouTube videos for 4 months and collected more than 3 million YouTube videos' data by presenting a systematic and in-depth measurement study.

As a conclusion, they found out that YouTube has quite different statistics than traditional streaming videos. These differences may vary from the length and access pattern to their growth trend and active life span. The success of YouTube is hidden behind the reason to be a social network. The videos which are uploading by YouTube users to the site have strong correlations with each other thus this pave the way of developed service quality(Cheng et al., 2008).

Behind the successful diffusion of YouTube in Turkey in a study investigating the causes, surely, is very important to include the statistics of the YouTube videos and the comparisons with traditional video streams, which revealed differences. Thus, it is not possible to ignore the study of Cheng and his friends 'statistics(2008) of YouTube videos while reviewing the reasons behind the users' acceptance of YouTube as an innovation so quickly.

Büyüksener(2009)examined in his conference paper that the place of existing social network sites in 2009 in Turkey and the point of Turkish society' view to the social media. For this purpose, he categorized the social

networks currently used in the research period in 5 groups and considered YouTube as a social network. He evaluated the role of social networks and social media in communication in terms of corporate communication as well as bilateral communication.

According to the study (Büyüksener, 2009), YouTube, one of the social networks, is a part of social media that is the basis of its success. The existence of social networks in many areas of Turkey is important for both companies and users. Büyüksener also claims that the most suitable social networking model to Turkey, friendship and social networks are the models used to make a circle of friends. The most important factor shaping the density ranking of social networks in Turkey is the internet usage habits of Turkish people.

Büyüksener research which is evaluated the Turkey internet usage profile is critically important for this research when considering the scope of research as a Turkey. In this way, the research helps to explain the successful diffusion of YouTube in Turkey by synthesizing with the internet usage habits of Turkish.

Arklan and Kartal research(2018) investigated YouTube, a video-sharing network, particularly addressed by targeting the y generation. As the content generator of the Y generation, it aims to reveal the intended use, usage levels and content of the YouTube environment. In this context, a field study was carried out on 600 subjects selected by Süleyman Demirel University students according to the cluster sampling method.

According to the results of the research(Arklan & Kartal, 2018), when the video content is being viewed on the internet, YouTube ranks first for the Y generation. While students are watching the content, they have different reasons, from having fun to get knowledge, from interaction to following the popular one. In addition, according to the results of the research, students showed interest in most music videos on YouTube, followed by minimum play videos and live broadcasts. While YouTube may be used very useful such as facilitating daily life and providing self-improvement in accordance with the usage circumstances, it may also cause wasting time in a reverse situation.

YouTube has been welcomed with interest from all ages and all around the world as innovation; however, especially young people are the main building blocks that play a very important role in the diffusion of YouTube. In this study of the YouTube diffusion in Turkey, early adopters who are potential users with innovations, such as y generation, is crucially important for this research to understand the causes and reasons of adapting to YouTube.

Social networks sites (SNSs), as well as social media applications, have attracted great attention from researchers. Boyd and Ellison research (2007) investigated social network sites in order to understand the practices, implications, culture, and meaning of the sites, as well as users' engagement with them. In the research, they explained the futures of social networking sites and discussed key changes and developments. In addition to these; they presented a historical perspective and comprehensive definition of such sites.

Even though the Boyd and Ellison study(2007) explained the importance of social network sites both for practitioners and researchers, still there is a vast lack of information waiting to be explored. Unfortunately, methodologically social network researchers can make limited casual claims as there is a lack of experimental or longitudinal studies. Although this circumstance is changing with developments, scholars still have a limited understanding of who is and who is not using these sites, why, and for what purposes, especially outside the U.S.

In order to understand the diffusion of the social media platform YouTube, which is rapidly and successfully integrated into societies, the functioning of social networking sites should be examined first. In this direction, the research(Boyd & Ellison, 2007)in which explained social networking sites cultures, implications, meanings, practices is having critical importance for this study.

According to Güler research(2018), new concepts such as YouTube and Youtuber and new economic areas have emerged through the new media. The aim of the study is to show how the audiences are surrounded by marketing as consumers on YouTube, which seems to be an individual medium rather than a market. In order to analyze how the Youtubers became as capitalist marketing mediums, Güler chose Enes Batur and Danla Biliç as a sample as they are in the first two ranks of the *How to & style* channel type and analyzed the content of their five videos in the *Last Uploaded* category(Güler, 2018).

According to the results of Güler research(2018), digitalizing capitalism has led to the emergence of new actors on YouTube, so that the capitalist relations of production, which include different forms of exploitation, have also changed the way labor has been transformed. This area, which seems to be an individual medium by integrating new media technologies into capitalism, is surrounded by the advertising industry and turned into an economic area. Güler also concluded that this was done with the help of targeted advertising, which was tailored to YouTube's individual user data and behavior.

As a result of the ever-evolving and changing communication technologies, YouTube has become a critical tool that can touch many areas from education to economy in a very short time. YouTube users are consciously or unconsciously involved in advertisements made by the Youtubers and influencing the economy. In this manner, when YouTube is examining, the economy carried out through Youtubers is also quite important.

In the research of the Uğurlu and Özutku (2014) is investigated the use, developments and dissemination of social media in the case of Turkey. The aim of the study is to demonstrate that the development process with statistical data and examine the historical background and development of the internet which has been used since

the 1990s throughout the world as well as in Turkey. In addition to these, the effects of this development process on our daily life and how it shapes our lives are discussed also in the research(Ugurlu & Ozutku, 2014).

In the frame of statistics collected by Ugurlu and Özutku(2014), generally, individuals, particularly the young generations' interest in computers, the internet and new media networks has increased substantially in the last six years. This rapid increase will be increasing parallel to improvements in technology such as connection types. As the ease of access to the Internet and social media applications increases, it is accelerating also its diffusion into the social system.

The development of the Internet, Web 2.0 technologies, social media tools, and strong interactions are all joined together in a chain to bring together today's widespread use of social media. When examining YouTube as a social media, the research(Ugurlu & Ozutku, 2014) is especially important literature because of the examination of Turkey sample and the Internet's historical developments with reliable important statistical data.

With respect to Chau(2010); the main reason behind the boom of social media, such as YouTube, and the successful diffusion among young people, in particular, is that young people need a media that offers such an original content and media sharing. YouTube, especially new and personal meaningful media sharing allows young people to attract attention. New media platforms such as YouTube offer a participatory culture in which they will be developed, interacted and learned.

Chau concluded (2010)that the youth are attracted to YouTube as the barriers for them to participate are low, their creation is easily circulated and shared, informal mentorship and instructions facilitate their developing identity, their levels of contribution matter, and they feel socially connected to peers within the community. The implications on YouTube paw the way of participatory culture. Additionally attracts invites and motivates youth media creators. New media platforms such as YouTube offer a participatory culture in which they will be developed, interacted and learned.

Although the diffusion of YouTube is an indisputable fact, the study of Chau (2010)is important in order to examine the reasons behind successful diffusion. Chau claimed that the reason why YouTube is densely used by young people is not only the social media culture but also the participatory culture. In this study, which investigated the diffusion of YouTube, the research brought a different perspective to the situation and enriched the subject.

Although YouTuber videos have become one of the most effective tools in social media, there are a very limited number of studies on this subject. In Çiçek research(2018) examined the videos of YouTuber, who by whom, when, for what purpose, and also on the day which the videos were watched more, the number of followers, the effect of Youtubers' sex on the number of watches.

The results of the research (Çiçek, 2018) concluded that the users prefer the most information and entertainment videos, the YouTuber videos are watched more on the weekends, the number of followers and the number of viewers of YouTuber gender. As a result of the analysis, approximately 96% of the participants found that they watched YouTuber videos. This situation shows how important YouTuber videos are for marketing managers and advertisers to reach consumers.

YouTube is rapidly continuing its rise. At first glance, it is thought that young people are in demand, but they have a user profile from every age and segment. Çiçek research(2018)allowed examining the potential of YouTube viewers from many different perspectives. For this research which is trying to reveal the reasons behind the diffusion of YouTube in Turkey, the research(Çiçek, 2018) is important literature to be considered.

Yaylagül research(2017)investigated the importance of connectedness to social media influencers in marketing by identifying the levels of social media users' attitudes. In line with this, by conducting a questionnaire study with university students studying at Adnan Menderes University, he examined the levels of attachment to the phenomena followed in social media under different sub-headings.

According to the results of the research (Yaylagül, 2017), significant differences were determined in terms of the connectedness to social media influencers. With the increase in the average time spent on social media, it is seen that the connectedness to social media influencers also increases. In addition, women are more connected to social media influencers than men.

If the maximum number of participants in the survey is considered, it is seen that the members of Instagram, YouTube and Facebook were the majority; therefore, the results of the survey are important for this research. Also according to Yaylagül, there is not any study about connectedness to social media influencers which is new emerged advertisement medium in Turkey(2017). In particular, social media users' habits, preferred social media, social media phenomenon is very important in terms of determining how they affect their level of connectedness to social media influencers.

Active use of social network sites is quite common in Turkey so draws attention from researchers. Kurtuluş et al. examined the social network users in Turkey specifically and aimed to observe if there is any difference or usage habits between them. For this purpose, 530 Turkish social media users' specific activities were analyzed with a cluster analysis method (Kurtuluş, Özkan, & Öztürk, 2015).

According to the results of the study (Kurtuluş et al., 2015), although an intensive use of social media in Turkey is common, Turkish users generally followed the others to learn and interact with. Participating in the social media world as a content producer among Turkish users is not yet widespread.

The diffusion process of YouTube takes place within the social system, that is, without a social system, a process of diffusion cannot be mentioned. Therefore, when examining this diffusion process, it is very important to examine the individuals' usage habits and preferences in social media platforms.

6. METHOD

This research is a case study in which the case of YouTube diffusion examined in the scope of Turkey. Case studies are a qualitative research method that seeks answers to questions, how, what and why. The aim of the method is describing the case studies in detail in order to illuminate some general theories just like the examination of the diffusion of YouTube in turkey in order to illuminate the diffusion of innovations theory. Such studies often focus on cause and effect relations and give the researcher an opportunity to focus on a very specific subject or situation (Perceman & Curran, 2006). The research aimed to examine the diffusion process of YouTube in turkey specifically hence choosing the case study as a research method is important to investigate the case in detail.

6.1. Problem Statement.

Problem statement of the research is how and why the innovation of YouTube has successfully diffused in Turkey? Additionally, what are the main factors affecting the diffusion process of YouTube in Turkey?

6.2. Statistical Hypothesis (H1).

The statistical hypothesis of this research is that YouTube diffused successfully throughout Turkey particularly among young and children groups.

6.3. Scope and Limitations.

Research is restricted to YouTube which is one of the most used social networks in Turkey. Also the research is restricted with the sample of Turkey.

6.4. Sample.

The sample of the research is YouTube in case of Turkey and its users.

6.5. Data Collection.

The data collected from the YouTube official statistical page, American research center *PEW*, internet and social media statistics prepared every year by *We are social* and *Hootsuite*, statistic portal *Statista* and Turkish Statistical Institute *TUIK*.

6.6. Data Analysis.

The collected data from the statistical portals analyzed in the frame of Turkey social system. Turkish related statistics collected and tabulated in order to make it clearly understandable.

6.7. Definition of Terms.

Diffusion: In the scope of the study, diffusion not only means the spread of innovation usage in general but also involves much deeper meanings. When analyzing the diffusion of innovations, it means not only the use of innovations but also combine of the pre- and post-process such as whether the society needs to the innovation or whether the society continued to use the innovation even after diffusion of it.

Innovation: Innovation is more of an innovation than an invention by focusing on resolving the problems of society or finding solutions to problems that disturb society. What is important here is that innovation should be effective and useful to society.

Diffusion of innovation: A theoretical model that aims to diffuse new ideas and technologies within a culture or social system.

7. FINDINGS

At this stage of the research, as the Rogers is based diffusion of innovation theory on the 4 main elements, this study in which investigated the YouTube in turkey and its diffusion process is also based on the four main elements(Rogers, 2003). These are as follows;

1. The innovation
2. Communication channels
3. Time
4. Social system

7.1. The Innovation of YouTube.

According to Rogers, innovation is an idea, an application, or an object that is adopted by the individual or community groups and is perceived as new (Rogers, 2003). In this sense, YouTube observed the concept of innovation properly as YouTube is not only through the world but also in Turkey filled the gap of video sharing sites. According to Rogers, innovation may emerge as a solution to a need or a problem of the social system. Hereunder, YouTube satisfied the need for video-sharing sites in Turkey and emerged as a solution to lack of these kinds of social media platforms. As the perceived relative advantages of innovation by the individual increases, the adaptation rate also increases.

Innovation can have many different characteristics that are perceived by the individual, but Rogers categorizes these characteristics under several headings. The individual may stop accepting the innovation at any time and may interrupt the process of diffusion hence understanding the importance of the characteristics of innovation is critically important in the diffusion process (Rogers, 2003). Above all, it is safe to say that the reason for the diffusion of YouTube into Turkish social system as innovation is that it has a super easy and simple interface. Even though it was seen as an innovation that initially appealed to the young population, the age of use decreased until the children were used thanks to this simple use (Arklan & Kartal, 2018; Burroughs, 2017). The fact that YouTube can be used without any purchase or without any subscription requirement confirms Rogers's trialability characteristic of innovation. YouTube users can also interact with different users and have the opportunity to review YouTube which is really important as observability characteristics of innovation. With all these characteristics, YouTube has emerged as innovation and now it has become the most widely used social media platform and video sharing site in Turkey (We Are Social, 2018).

7.2. Communication Channels for YouTube's Diffusion

According to Rogers in order to diffuse innovation into the social system, communication technologies should be used as a medium to create and share information with one another in order to reach a mutual understanding (Rogers, 2003). The main task of communication technologies is to inform the social system as much as possible from innovation by this means pave the way of diffusion. Mass media channels are all those means of transmitting messages that involve a mass medium, such as radio, television, newspapers, and so on, which enable a source of one or a few individuals to reach an audience of many (Isman & Dabaj, 2015).

Mass media played a major role in the diffusion of YouTube in Turkey. For the transfer of information in the 21st century, visual/ video sharing rather than writing is very paying attention and preferred. Mass media, especially the television, has played a considerable role in the diffusion of YouTube in Turkey (Kuyucu, 2019). Thanks to the official YouTube channels of the television channels in Turkey such as TV8 (<https://www.youtube.com/user/TV8Beraberiz> - accessed on 04.05.2019), Show TV (<https://www.youtube.com/user/ShowTVShowTV> - accessed on 04.05.2019) etc., viewers can watch and follow the TV series or the shows they miss. In this way, YouTube has become a tool that can replace the television in a short time. The audiences who do not want to watch the shows/series on the determined hours by TV channels, thanks to advances in communication technologies they can watch through their mobile phone whenever and wherever. YouTube has not only replaced the traditional mass media tools, but has also started to behave like them with similarities to the economic concerns used in YouTube videos (Güler, 2018; Kim, 2012).

Although communication technologies and the internet were not enough developed at the time that YouTube was introducing in Turkey, YouTube diffusion gained increasing momentum, especially with the developments of mobile phones and internet technologies (Keenan & Shiri, 2009; Kurtuluş, Özkan, & Öztürk, 2015). Instead of much different professional equipment, individuals can easily take video with just one mobile device. In addition, individuals can take images with a phone or tablet, edit them without the need to transfer them to any computer and share them online on YouTube. Thus, with the developments in computer and mobile technologies, the number of videos uploaded to YouTube is considerably increased, in this line; the interaction of the users is increased too which has affected the diffusion of YouTube in a positive way (Büyüksenar, 2009).

In the diffusion of innovation, Rogers argues that interpersonal communication has crucial importance as much as mass communication technologies (Rogers, 2003). With YouTube enabling individuals in the social system to create and share content on an interactive basis, individuals can interact with shared videos, though not entirely face-to-face.

7.3. Time for YouTube's Diffusion

According to Rogers, Time is one of the four main elements that are often ignored during the diffusion of innovations. The fact that innovation can be diffused into the social system is not an event that happens suddenly. The individual should recognize and use innovation, understand the related advantages and disadvantages of innovation, and decide whether or not to adopt innovation in his/ her daily life and this takes time. The innovation-decision process is a mental process that lasts from the first knowledge of the individual to

innovation, to shape his/ her attitude towards innovation, to the decision of cohesion or rejection and to the implementation of innovations and to the realization of this decision(Rogers, 2003).

Although innovation of YouTube first emerged in 2005, the diffusion process did not occur immediately and spread over a long period of time. With the support of the Turkish language to YouTube in 2012, it has made a positive impact on Turkish users and made it easier to use. This situation increased the triability of YouTube innovation. Although YouTube has begun to show interest among young people at the beginning who are open to innovations, the fact that YouTube is widespread to every age and every sector nowadays(Arklan & Kartal, 2018; Burroughs, 2017). In addition, as users observe the rise of Youtubers, which has increased day by day with the observability feature of YouTube innovation, they have broken down their prejudices about it and become an active user(Chau, 2010). The content on YouTube has a lot of variety, but in time, Turkish content has become even richer. Nowadays, users are interested in YouTube videos on everything from education to entertainment. With the increase in time-related advantages of YouTube, it has accelerated the process of diffusion in Turkey. Therefore, YouTube as an innovation, in particular, has become an indispensable social media in Turkey by time.

7.4. Social System for YouTube's Diffusion

The last main element of the diffusion process is the Social system. According to Rogers, a social system is a cluster of inter-related community units that have come together for a common goal and have developed a common problem-solving ability(Rogers, 2003).

Every social system has its own norms these are may be cultural and ethical, religious, social etc. values of that society. In order for an innovation to have healthy and successful diffusion in that social system, it must comply with the norms of society; otherwise, the diffusion will fail and be rejected by the social system. In this manner, the most important progress for the diffusion of YouTube was after the Turkish language support in 2012. In this way, it has become a video sharing site particularly appeal to the Turkish users. Change agents and opinion leaders are critical in the diffusion of innovation into the social system. When Rogers explains the change agents as professionals with university degrees in technical fields, he explains the opinion leader as a type of informal leadership, rather than a function of the individual's formal position or status in the system(Rogers, 2003).

Rogers states that people prefer recommendations of their peers or the people around them instead of experts or professionals. It is exactly the same in the marketing world. YouTube has become an important marketing area nowadays especially through Youtubers(Güler, 2018). When people would like to gain information about any product they want to learn from someone who has really experienced the product and has the credibility as a person(Eru, Çelik, Çelik, & Cop, 2018). People who become opinion leaders by using various tools in line with their interests and opportunities also respond to these needs that are called as a Youtubers. YouTube acts as a search engine with its video database. Those who have become opinion leaders, namely Youtubers have become a more attractive option for companies (Çiçek, 2018). Youtubers who have the number of thousands of subscribers are cooperating with companies to integrate their products into their own videos. Youtubers have a significant impact on consumer behavior(Güler, 2018). Especially in Turkey is possible to say that to be a YouTuber is became kind of an area of profession.

8. SUMMARY

In this research, YouTube diffusion process in the case of Turkey was examined in detail. In the examination, Rogers's diffusion of innovation theory is an excellent theoretical basement in order to investigate the process of YouTube diffusion in Turkey. In the research, YouTube is considered as innovation and based on the Rogers diffusion of innovations theory by investigating in detail under its four main elements which are the innovation, communication channels, time and social systems.

Developed communication technologies and social networking sites with high internet traffic attract attention all over the world as well as in Turkey. As a result, data shared on social media has also grown and has paved the way for video sharing sites just like YouTube. Turkey was examined specifically and the sample strengthened with the statistics. According to statistics, today is the most preferred social media platform YouTube in Turkey hence is important to investigate. Relevant studies have been revised and related links have been examined.

The research concluded that behind the successful diffusion of YouTube in Turkey may be many several reasons. These reasons are considered firstly having the high rate of young population in the turkey social system which may be called as innovators who accept the innovations at first; as a second it's fitting the norms of Turkish social system especially after the language support and thanks to developed communication technologies it's easy to access throughout the country and having the easy interface to use and the user does not have to pay any fees.

9. DISCUSSION

In many studies that have been studied with different sub-factors, the diffusion of YouTube has been investigated. Based on the findings investigated with the diffusion of innovations theory' 4 main elements, it is possible to say that YouTube diffused into the Turkish social system successfully. The results of previous researches have largely supported this finding (Arklan & Kartal, 2018; Büyükşener, 2009; Chau, 2010; Cheng et al., 2008; Çiçek, 2018; Ugurlu & Ozutku, 2014).

Büyükşener claimed that YouTube is fitting the norms of the Turkish social system because they use social network sites with the purpose of make a circle of friends (Büyükşener, 2009). Cheng also considered YouTube as a having the highly social interactiveness which is the Turkish users want from (Cheng et al., 2008). Those features of YouTube are considered in this research in the part of the social system. This research also related to the Arklan and Kartal research (2018) which is supported the idea of young generation significantly affect the diffusion process. Young and children may be considered as innovators as being open to the innovations, new horizons. Ugurlu and Ozutku research (2014) also supported the idea that Turkey social system particularly young generation accepted developed communication technologies instantly and adopted instantly and continuing rapidly throughout Turkey day by day.

Chau claims that the reason YouTube adopted by the young generation instantly is they needed it (Chau, 2010). This research also confirmed the Chau research that YouTube is attracted attention mostly by young ones in Turkey as they want to create contents and participate in it. With the rapidly increasing in the use of YouTube in Turkey, it has almost replaced the traditional media with it and even with the advertisements and marketing purposes through Youtubers, YouTube is pretending as a traditional media. With this direction, the study agrees with the results of the Çiçek research (2018).

10. CONCLUSIONS AND RECOMMENDATIONS

With the development of Internet technology, the development of communication technologies has become inevitable and has reached unpredictable dimensions. With developing communication technologies, individuals have begun to use the virtual world as an alternative socializing tool. Social media platforms are having significant importance nowadays in interpersonal communication and interaction. Even though initially social media platforms such as Facebook and Twitter in which users are used to share photos or writings as a post attracted attention, with the accelerating access to the internet the users wanted to share bigger data and participate this participation circle actively. YouTube has emerged as a social medium that meets these demands and successfully diffused throughout the world. YouTube, as shown in Figure 1, has rapidly diffused in countries such as Turkey and Saudi Arabia which are having the highly young population, and additionally as seen in Figure 2 it is on the first rank of the most preferred social media platform in Turkey. For this reason, it is important to investigate the main reasons for YouTube diffusion, particularly in Turkey. Hence, it was analyzed in detail, based on the four main elements of Rogers's diffusion of innovations theory.

According to the results of research, YouTube has become an important innovation by filling the gap of video sharing sites in Turkey because it has significant characteristics such as having an easy interface, easy access, being free of charge, having genuine contents, etc. In the research also examined the effect of communication channels in the diffusion process of YouTube. Although the Turkish social system is generally used television as a mass media, YouTube has replaced with it in terms of its usage purposes. Additionally, as being a user-generated platform, YouTube is preferred more and more day by day. People may use YouTube as radio, newspaper or television at the same time which is also attracting attention by the audiences and accelerating its diffusion by increasing related advantages of YouTube innovation. Thanks to developing communication technologies, it is possible to say that there is an also parallel increase in the rate of YouTube usage via mobile phones as it eased to access it. Thus, YouTube became more accessible and so diffusion in Turkish social system expedited. By having the Turkish language support in 2012, YouTube has become appropriate for Turkish users so much so that YouTube usage ages have been reduced to children. YouTube as having much more rich content, compared to other mass media and social media platform has almost turned into a search engine in Turkey. Especially Youtubers, who create helpful, funny, informative etc. various contents for YouTube, are playing a crucial role in the diffusion process. Youtubers have appealed to such a wide range of audiences that they become used as a medium between consumers and marketers. They have become an opinion leader about any topic and product. Thanks to these opinion leaders called Youtubers, consumers have adopted to them, who seems to be someone from the social system itself, rather than the suggestions of professionals.

YouTube has become one of the most preferred social media platforms in the Turkish social system on account of such these various reasons. However, there is not sufficient research about YouTube in the case of Turkey so YouTube and its processes of diffusion is quite important need to be investigated from the different theoretical perspectives for the future studies.

REFERENCES

- Arklan, Ü., & Kartal, N. Z. (2018). Y kuşağının içerik tüketicisi olarak Youtube kullanımı: kullanım amaçları, kullanım düzeyleri ve takip edilen içerikler üzerine bir araştırma. *Gümüşhane Üniversitesi İletişim Fakültesi Elektronik Dergisi*, 6(2), 929–965. <https://doi.org/10.19145/e-gifder.443959>
- Ata, A., & Atik, A. (2016). Video-sharing websites as an alternative educational environment: youtube practices in universities. *e-Journal of New World Sciences Academy*, 11(4), 312–325. <https://doi.org/10.12739/NWSA.2016.11.4.3C0152>
- Boyd, D. M., & Ellison, N. B. (2007). Social Network Sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1), 210–230. <https://doi.org/10.1111/j.1083-6101.2007.00393.x>
- Burroughs, B. (2017). YouTube Kids: The App Economy and Mobile Parenting. *Social Media + Society*, 3(2), 205630511770718. <https://doi.org/10.1177/2056305117707189>
- Büyüksenar, E. (2009). Türkiye’de sosyal ağların yeri ve sosyal medyaya bakış. *XIV. Türkiye’de İnternet Konferansı Bildirileri, Bilgi Üniversitesi, İstanbul*.
- Çalapkulu, Ç., & Şimşek, R. (2018). Sosyal medyanın reklam aracı olarak kullanılmasında Youtube: Sakarya Üniversitesi İletişim Fakültesinde bir araştırma. *Uluslararası Sosyal Bilimler Dergisi*, 1(2), 269–278.
- Chau, C. (2010). YouTube as a participatory culture. *New Directions for Youth Development*, 2010(128), 65–74. <https://doi.org/10.1002/yd.376>
- Cheng, X., Dale, C., & Liu, J. (2008). Statistics and social network of YouTube videos. *2008 16th International Workshop on Quality of Service*, 229–238. <https://doi.org/10.1109/IWQOS.2008.32>
- Çiçek, M. (2018). Youtuber videoları: Kim, nerede, ne zaman, nasıl, neden izler. *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi*, 5(7), 151–162.
- Eru, O., Çelik, I. K., Çelik, S., & Cop, R. (2018). Kaynak Olarak Youtuber’a güvenilirliğin ve marka güveninin gençlerin satın alma niyetine etkisi. *Ekonomik ve Sosyal Araştırmalar Dergisi*, 14(2), 219–238.
- Güler, M. (2018). Dijitalleşen kapitalizmin yeni aktörleri: Youtuberlar. *Intermedia International e-Journal ISSN:2149-3669*, 5(9), 145–183.
- Isman, A., & Dabaj, F. (2015). Diffusion of distance education in North Cyprus. *Turkish Online Journal of Distance Education-TOJDE*, 6(4), 59–65.
- Keenan, A., & Shiri, A. (2009). Sociability and social interaction on social networking websites. *Library Review*, 58(6), 438–450. <https://doi.org/10.1108/00242530910969794>
- Kietzmann, J. H., Hermkens, K., McCarthy, I. P., & Silvestre, B. S. (2011). Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons*, 54(3), 241–251. <https://doi.org/10.1016/j.bushor.2011.01.005>
- Kim, J. (2012). The institutionalization of YouTube: From user-generated content to professionally generated content. *Media, Culture & Society*, 34(1), 53–67. <https://doi.org/10.1177/0163443711427199>
- Kurtuluş, S., Özkan, E., & Öztürk, S. (2015). How do social media users in Turkey differ in terms of their use habits and preferences? *International Journal of Business and Information*, 10(3), 28.
- Kuyucu, M. (2019). The transformation of Traditional TV to YouTube with Social Media and its Reflections in Turkey. *Archives of Business Research*, 7(1), 190–202. <https://doi.org/10.14738/abr.11.5968>
- Online video penetration in selected countries 2018 | Statistic. (2018). Retrieved 6 April 2019, from Statista website: <https://www.statista.com/statistics/272835/share-of-internet-users-who-watch-online-videos/>
- Perecman, E., & Curran, S. R. (2006). *A handbook for social science field research: essays & bibliographic sources on research design and methods*. Retrieved from <https://books.google.com.tr/books?id=q47OAwAAQBAJ>
- Rogers, E. M. (2003). *Diffusion of Innovations*, 5th Edition. Simon and Schuster.
- Susarla, A., Oh, J.-H., & Tan, Y. (2012). Social networks and the diffusion of user-generated content: Evidence from YouTube. *Information Systems Research*, 23(1), 23–41. <https://doi.org/10.1287/isre.1100.0339>
- The Latest YouTube Stats on when, where, and what People Watch. (2016). Retrieved 6 April 2019, from Think with Google website: <https://www.thinkwithgoogle.com/data-collections/youtube-stats-video-consumption-trends/>
- Turkey: social network penetration 2017 | Statistic. (2017). Retrieved 4 March 2019, from Statista website: <https://www.statista.com/statistics/284503/turkey-social-network-penetration/>
- Ugurlu, H., & Ozutku, F. (2014). An evaluation on the use of social media in Turkey. *Procedia - Social and Behavioral Sciences*, 147, 453–457. <https://doi.org/10.1016/j.sbspro.2014.07.137>
- We Are Social. (2018). *Digital in 2018 in Western Asia Part 1 - North-West*. Internet. Retrieved from <https://www.slideshare.net/wearesocial/digital-in-2018-in-western-asia-part-1-northwest-86865983>
- Yaylagül, Ş. (2017). Sosyal medya fenomenlerine bağlanmışlığın belirlenmesi: yükseköğretim öğrencileri üzerine bir uygulama. *Adnan Menderes Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 4(3), 219–235. <https://doi.org/10.30803/adusobed.349934>

YouTube'un Türkiye kullanıcı profili araştırması. (2016, October 5). Retrieved 4 March 2019, from Webrazzi website: <https://webrazzi.com/2016/10/05/youtubeun-turkiye-kullanici-profil-arastirmasi/>

DIGITALIZATION OF THE STUDY PROCESS: CASE STUDY OF LATVIA PUBLIC UNIVERSITIES

Gunta GRINBERGA-ZALITE

Andra ZVIRBULE

Baiba RIVZA

Tatjana LEJAVA

Latvia University of Life Sciences and Technologies, Latvia

gunta.grinberga@llu.lv

ABSTRACT

Digitalisation is rapidly overtaking our daily life and is seen as an economic, technological and social development phenomenon. Higher education plays a decisive role in preparing future generations to deal with challenges of the digital economy, therefore it is important that higher education institutions are aware of the necessity to participate in the digitalization processes both in their internal and external communication, which requires to improve daily routine operations and to be ready to offer contemporary and exciting study process that complies with today's students' preferences. The aim of the current research was to present an overview of the digitalization topicalities in Latvia higher education. The specific research tasks were: 1) to analyse the need to enhance advanced skills of young generation in the European Union focusing on the Digital Economy and Society Index achievements; 2) to evaluate the current digital environment of Latvia public universities.

The research results reveal that students expect universities to increase the amount of digital content in internal communication (e-services, e-study materials, interactive tasks, tests, games etc.), which suggests that teachers need to adjust to changes in the "always on technology" way of learning and teaching. Consequently, universities should be aware of the fact that technology has already disrupted the generally accepted norms and anticipate re-training of teachers and technical staff to be able to tackle problems connected with rapid integration of new technologies to provide efficient and secure study process.

INTRODUCTION

Today not only primary and secondary schools but also universities need to adapt to the changes caused by digitalisation and the development of new technologies. The behaviour and expectations of the Millennial generation require fundamental changes in the study environment, study programmes and curriculum. Moreover, there is a growing need to acquire new skills and knowledge not only for technology implementation, but also for safe and meaningful use of technology. Nevertheless, higher education and professions need to adapt to future labour market needs. In order to motivate today's students to use opportunities offered by digitization in the future, it is necessary to develop and improve existing ones. Digitalisation offers to universities a wide range of opportunities for performance improvement, organization of information systems, make more efficient study environment and process, communication with students, faculty and staff, marketing activities via website, social media. The introduction of electronic enrolment and other services in the digital environment simplifies administration processes, enables them to be electronically administrated and managed remotely. Also library collections and databases are becoming digital. Thus, thanks to digitalisation, higher education institutions have more opportunities and ways how to achieve their goals through internal and external communication with their target groups (Tihankova, 2019).

For several years now, one of the most important goals of Latvian education policy makers has been the entry of Latvian universities into the top 500 of the world's top universities. In the field of higher education, significant commitment of each newly established government for years has been to continue a gradual increase funding for higher education studies, as well as to support students by strengthening the social dimension in higher education. In the last decade, efforts have also been made on the increase of government funding for the effective operation of the three-pillar model (the first pillar provides funding for budgetary positions and the science base, the second pillar provides funds for performance improvement, while the third pillar is intended for improving and modernizing university infrastructure and curricula) for internationally competitive excellence in higher education by, among other activities, promoting digitalisation in higher education, which today is a boosting factor of international cooperation and competitiveness.

The current research is a continuation of the authors' research works conducted in February-May 2019 within the initial phase of the National Research programme "Latvian Heritage and Future Challenges for the Sustainability of the State" and its project "Challenges for the Latvian State Society and Solutions in the International Context (INTERFRAME-LV)", which is now clarified and supplemented by the latest data obtained within the desk study and comparative analysis in June 2019. The aim of the research was to present an overview of the digitalization topicalities in Latvia higher education. The specific research tasks were: 1) to analyse the need to enhance advanced skills of young generation in the European Union focusing on the Digital Economy and Society Index

achievements; 2) to evaluate the current digital environment of Latvia public universities.

ENHANCING DEVELOPMENT OF SKILLED HUMAN CAPITAL IN THE EUROPEAN UNION

According to Schwab (2017), today the world is at crossroads due to the fact that more often society expresses its disappointment with national policies and global economics that are incapable to tackle the negative externalities of global economy future development, which places technological progress as a priority to people's needs and wishes. Although Europe has the most educated workforce in all its history, it is important to assess challenges and readiness of the European Union to use its capacity to ensure that technologies benefit people and bring them towards more inclusive societies enhancing opportunities to use artificial intellect for making health, education, agriculture, services and manufacturing industries more efficient and people-friendly. Accordingly, the future competitiveness of the EU depends on its human capital's ability to master new skills and thus seize opportunities in digital environment to be able to contribute to the overall social welfare and development of future economic sectors (Schwab, 2017; Harari, 2018).

Lately, the digitalization enhancement is one of the EU's priorities at the forefront of the European Commission that is promoting various initiatives aimed at increasing training in digital skills for the workforce and for consumers. Therefore, EU aims to modernise its education across all the Member States thus harnessing digital technologies for learning and for the recognition and validation of skills; and anticipating and analysing skills needs. According the European Commission, a strong digital economy is vital for innovation, growth, employment and overall European competitiveness. The spread of digital is having a massive impact on the labour market and the type of skills needed in the economy and society.

The Digital Economy and Society Index (DESI), which was invented in 2014, is a composite index that summarises relevant indicators on Europe's digital performance and tracks the evolution of the EU Member States in digital competitiveness (DESI, c.a.). The latest results of Digital Performance Economy and Society Index (DESI) indicators of the European Union (EU) countries suggest that despite EU Member States' commitment to jointly build a strong and competitive Digital Single Market five years ago, in 2019 the digitalization performance gap in five DESI dimensions (Connectivity, Human Capital, Use of Internet Services, Integration of Digital Technology and Digital Public Services) between the EU wealthier Member States and less wealthy ones still remains large (Figure 1).

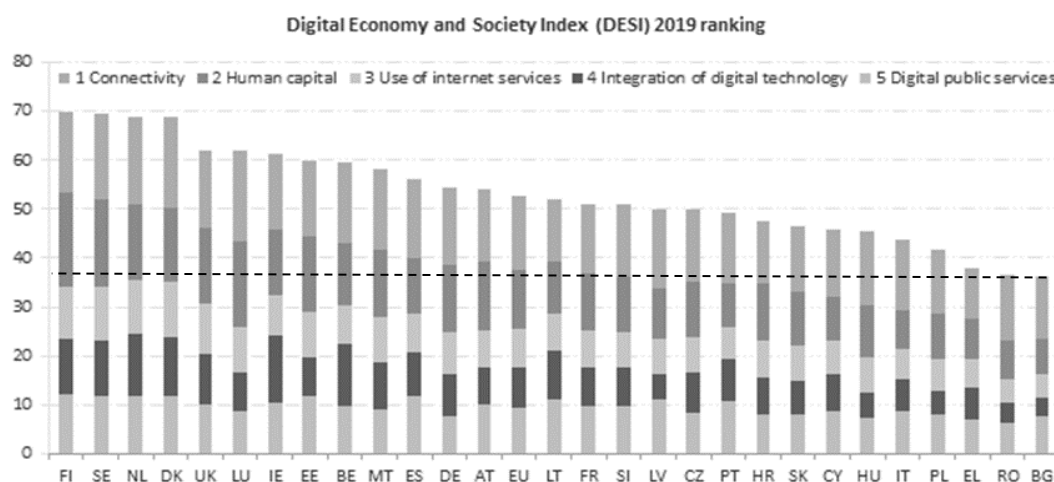


Fig. 1. Digital performance of the European Union Member States, 2019

Source: Digital Economy and Society Index, 2019

Such situation gives evidence of the growing need of the lagging behind EU Member States to revise the efficiency of their education system, which is responsible for preparing such labour force that can use advantages of digital economy challenges. A closer insight into the Human Capital dimension of DESI helps to obtain a comparative overview of the Member States' human capital readiness to integrate in the EU digital market and measures the skills needed to deal with challenges offered by digital economy. The full potential for improving education through ICT in Europe remains yet to be discovered, however some countries already today show that they can fit for 21st century life and work. The data aggregated in Figure 2 convincingly demonstrate that Nordic countries – Finland, Sweden, Denmark, Estonia and Ireland and the Netherlands have reached significantly higher digital performance results than Southern Europe countries. At the same time, it is worth to mention that R&D expenditures of GDP in 2018 in Sweden were – 3.3%, in Finland – 2.9% and Estonia – 1.5%, which is considerably

higher compared with Romania, Cyprus (0.5% of GDP) and also Latvia (0.6%). Therefore, it seems quite obvious that Latvia shows quite moderate development level of advanced skills (Figure 2). Consequently, the education policy makers in Latvia have to make efforts to revise and enhance development of skills, especially digital skills, which are necessary almost in all economic sector jobs.

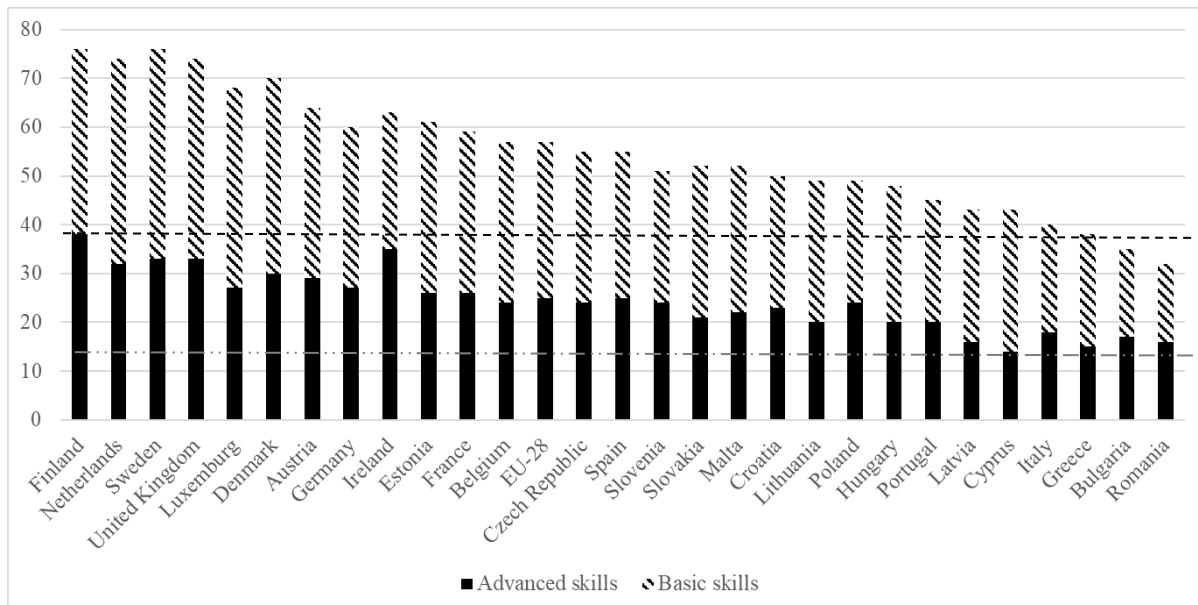


Fig. 2. Potential of the European Union Member States' human capital: skills, 2019

Source: The Digital Economy and Society Index, 2019

A competitive national economy requires a competitive higher education system. The Development Guidelines of Education in 2014-2020 developed by the Ministry of Education and Science of the Republic of Latvia among other measures aimed at improving the quality of education has emphasized the necessity to modernize Latvia's higher education. Therefore, the authors have focused their current research on exploring digital environment of Latvia higher education institutions limiting their research subject to six public universities of Latvia and their digital communication environment.

ENHANCING DIGITALIZATION IN THE HIGHER EDUCATION STUDIES AT LATVIA PUBLIC UNIVERSITIES

The research subject of the current study was all public universities in the Republic of Latvia: Latvia University of Life Sciences and Technologies (LLU), the University of Latvia (LU), the University of Daugavpils (DU), Liepaja University (LiePU), Riga Technical University (RTU) and Riga Stradins University (RSU). The research object was digital environment of public universities. External communication is what is communicated by universities to public (marketing activities, public relations). For internal communication, the Latvian University Information System (LAIS) is used, which includes student and staff register, it also includes part of the functionality of the University of Latvia Information System (LUIS) and is tailored to the needs of universities. This system is also used in DU, LLU, LU and LIEPU. It stores students and employees' data, and can be accessed with a username and password.

The indicator that can be used to evaluate the external activity of a business is the number of followers in social networks (Praude, Salkovska, 2018). The authors used this indicator in the current research to reveal the external communication activity of Latvia universities. Social networks use interactive websites, the content of which is created by both the users themselves and the institutions to exchange information. In order to provide communication and marketing visibility, it is necessary to target a specific audience by offering valuable and interesting content and information (Ryan, 2017), using links that lead to the university website and other useful pages. It is important to encourage the target audience to engage and communicate, thus it is important to respond to each message. The in-depth analysis of the six universities' social networking profiles gives evidence that all universities are active in preparing externally targeted material to provide their target groups with meaningful digital content that timely informs about activities of the study environment and tools to address potential students and also helps to maintain communication with alumni, business partners and society. For Latvia scale, the number of public universities' followers in social networks is sufficient (Table 1) and with a growing trend.

University	Number of followers in social networks on 01.03.2019				
	Facebook	Instagram	Twitter	Youtube	Linkedin
DU	2937	840	787	58	n.d.
LLU	4958	2104	3728	218	1988
LU	18419	3316	7596	1465	32844
LIEPU	3001	781	2110	41	n.d.
RSU	15224	2389	3380	1563	7812
RTU	13154	2569	4279	804	23063

Table 1. Number of Latvia public universities' followers in social networks, 2019
Source: Tihankova, 2019

Nowadays, websites need to be not only attractive but also secure and efficient. The “Website Grader” is a free online tool that grades websites against key metrics: performance, mobile readiness, SEO, and security (Website Grader, c.a.). The insight into the parameters of the six analysed universities' websites evaluation according to Website Grader methodology reveals that within the 100-point grading system, Latvia public universities' ratings range from 67 (DU) to 79 (RSU) points. Such evaluations give evidence that all Latvia public universities' websites are safe and in addition to desktop versions they are also customized for mobile devices. The website parameters that currently most of all need to be improved are page loading speed and SEO - use of headlines and specific keywords (Tihankova, 2019).

An online survey of 120 students (conducted by LLU in 2019) on their expectations regarding the university's digital study environment (Fig.3) revealed that most often (25%) students wanted to combine their class work (direct contact with groupmates and teacher) with independent, individual work in e-studies environment (no direct contact with groupmates and teachers). The second students' most exciting wish (18%) was to have more digital gaming approaches in the study process. Such replies lead to the conclusion that today students are so much used to their electronic devices, which calm them down in stressful situations and empower their self-confidence, which suggests that the cognition of Millennial generation students is developing differently - they prefer video images and visual learning, their expectations and reality are quite different from their teachers' expectations and reality.

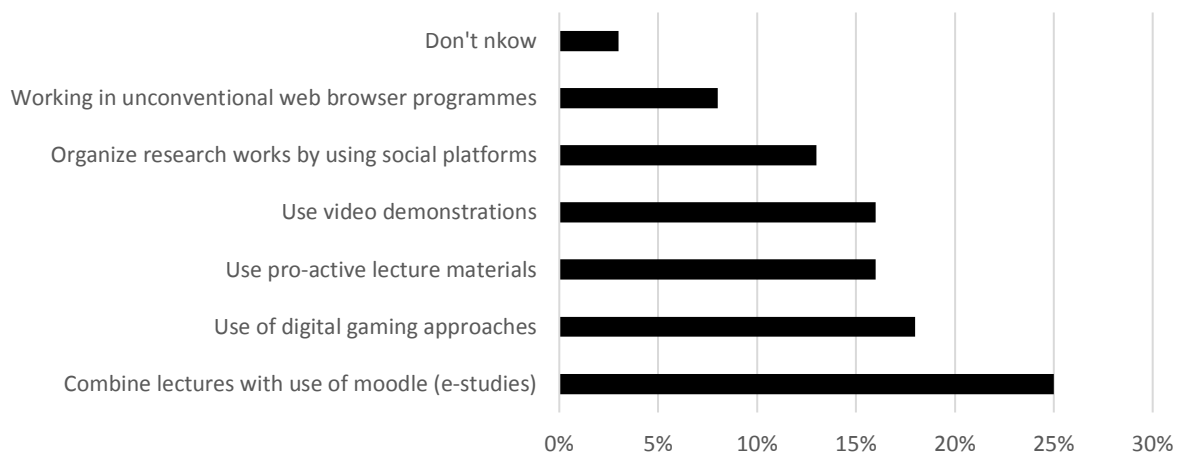


Fig. 3. Online survey on students' expectations regarding the university's digital study environment (n=120)
Source: Tihankova, 2019

The general evaluation of the accessibility of the current study environment was conducted as a case-study of Latvia University of Life Sciences and Technologies (LLU). The survey results of LLU revealed that in 5-point grading system (5 – excellent, 1 – very poor) 49% of respondents claimed LLU studies' digital environment as “good” (4 points), which can be regarded positively. However, only 3% of respondents claimed it as “excellent”, which means that LLU have some minor problem areas that lag behind students' expectations. Most often students mentioned that the content of the website and e-studies is not updated as often as students expected, the materials for many study courses are not available electronically. However, the conducted in-depth interviews with e-studies department specialists at LLU suggest that the reason for these complaints most often is not neglecting of students' needs and interests, but rather limited availability, capability of university's human resources with advanced digital skills as well as their increasing workload due to internationalization of universities, which results in increasing

numbers of international students and need to solve their problems. Nevertheless, students also admitted that LLU digital environment has many good points: it is user-friendly and already today integrates many cutting-edge technologies with active students' involvement in creating digital content, brainstorming new ideas and ways to practically adopt them to make studies at LLU more exciting, efficient and secure at the same time.

CONCLUSIONS

Digital skills' development of human capital among the European Union Member States significantly differs. In 2018, the Digital Economy and Society Index results revealed that North European Member States' performance (with Finland in a leading position) was significantly better than the one of the South European Member States. Currently, Latvia lags behind the other Baltic States and needs to enhance its human capital's digital skills and modernize its education system.

The evaluation of Latvia public universities' digital environment revealed that external communication performance generally complies with contemporary digital marketing requirements. With regard to internal communication, the survey replies of the current users of university's digital environment suggest that students would like to increase the amount of digital content (study materials, tasks, tests, games etc.), which is necessary for their "always on technology" and extreme risk aversion learning style. At the same time, it means that changes in the way of learning and teaching should be already today re-structured at universities with anticipating re-training of teachers and technical staff to be able to tackle problems connected with rapid integration of new technologies to provide efficient and secure study process.

ACKNOWLEDGEMENTS

The paper was supported by the NATIONAL RESEARCH PROGRAMME "LATVIAN HERITAGE AND FUTURE CHALLENGES FOR THE SUSTAINABILITY OF THE STATE" project "CHALLENGES FOR THE LATVIAN STATE AND SOCIETY AND THE SOLUTIONS IN INTERNATIONAL CONTEXT (INTERFRAME-LV)".

REFERENCES

- Harari, Y.N. (2018). *21 Lessons for the 21st Century* (p.372). Spiegel & Grau, Jonathan Cape.
- Praude, V., Salkovska, J. (2018) *Satura marketings interneta (Content Marketing in Internet)* (p.244). Burtene, Riga.
- Ryan, D. (2017). *Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation* (p.424). 4th edition. Kogan Page.
- Schwab, K. (2017). *The Fourth Industrial Revolution* (p.198). Published on January 11th 2016 by the World Economic Forum. Kindle Edition.
- The European Commission. *Digital Economy and Society Index. Digital Single Market. Digital Economy and Society*. Available: <https://ec.europa.eu/digital-single-market/en/desi>. Retrieved: 13.08.2019.
- The Global Competitiveness Report* 2018. The World Economic Forum. Available: <https://www.weforum.org/reports/the-global-competitiveness-report-2018>. Retrieved: 20.08.2019.
- Tihankova, T. (2019). *Assessment of Digitalisation at Universities in Latvia* (p.74). Master Thesis for acquiring of academic master degree in social sciences (mg.oec) at Latvia University of Life Sciences and Technologies. Latvia, Jelgava.
- Website Grader. *How strong is your website?* Available: <https://website.grader.com/>. Retrieved: 18.08.2019.

DISSEMINATION AND TRAINING EFFORTS IN THE FRAME OF EUROPEAN RESEARCH PROJECTS

W. Brenner

TU Wien, Institute of Sensor and Actuator Systems, Austria
werner.brenner@tuwien.ac.at

N. Adamovic

TU Wien, Institute of Sensor and Actuator Systems, Austria

ABSTRACT

The primary purpose of dissemination within European research projects is to inform the stakeholders about the conducted project and its outcome. The target groups of dissemination include not only private large companies and SMEs who act as manufacturers, application developers, systems integrators, tools and methodology providers, and so forth, but also standardization bodies, universities, training and teaching institutions, public bodies, end users, associations, knowledge exchange platforms, etc. It can be achieved through the development and application of an awareness and dissemination plan which specifies messages, target audiences and dissemination tools.

METHODS

The foundational elements of projects' ecosystems are developed and put in action as part of the project to bootstrap its dissemination, communication and training efforts.

DISSEMINATION:

The primary aim of the dissemination is to create awareness among interest groups about the project (CABRISS, 2019). For this purpose, an awareness and dissemination plan is to be developed. Such an awareness and dissemination plan specifies messages, target stakeholder groups and dissemination instruments. A project's ecosystem brings together the different affected stakeholders who can draw benefits from cooperating on the same project. The primary target audiences of dissemination include:

- certification bodies: they give the users confidence that the elements of the project conform with the according standards and practices.
- large companies and SME (in the private sector) who act as suppliers, installers, service providers, manufacturers, application developers, systems integrators, tools and methodology providers, etc.
- providers of training and instruction: they provide developers and other specialists with the necessary training and knowledge for working with the results of the CABRISS project. They include universities, RTD and specialized training organizations.
- local authorities & national/regional public bodies who act in the relevant fields of policy-making. Public entities who are responsible in building legislation are interested in creating well working legal frameworks. As owners and promoters of their own buildings, public entities are interested in cooperative working systems or applications. For example, European Housing Ministries are a relevant target audience.
- European and national clusters represented by their cluster managements serve as knowledge hubs and knowledge exchange networks and can distribute information to relevant audiences in the PV sector.
- consumer users: when provided with information, training, and tools about the project's outcome, they can consider integrating it in their products.
- clients and users (citizens): key actors interested in cooperative working systems or applications providing their perspectives in the formulation and assessment of the project results in aspects such as, design for all, adaptability for the future and value procurement.
- further associated research projects and technology platforms.

The key elements of a project's ecosystem are established and applied as part of the project to facilitate its dissemination and utilization. This task is primarily relevant to define the dissemination strategy and its realization during the project. Dissemination can be achieved through a variety of channels such as publication of papers and articles as well as through participation in conferences, workshops and exhibitions. Awareness among the wider public can be obtained with the help of local press networks, newspaper articles, the relevant social media channels and participation in public exhibitions and fairs. Making use of connections to preestablished networks is recommendable. The internet web site of the project shall include:

- presentation of the aims of the project and the applied methodology, emphasizing the significance and effect of scientific, conceptual and technological innovation;

- workshop participation, progress and advances, achieved accomplishments and public deliverables, to be updated ongoingly;
- the current status of key indicators such total numbers of papers, and European geographic localizations affected by the consortium.

Presentations during the project should be clarified and the project's outcomes are to be presented and analysed. A dissemination and communication plan usually is established at the start of the project and is held up-to-date by a dissemination & communication manager. It is to be used throughout the project's duration and beyond. In each project meeting held by the consortium, this dissemination plan is to be discussed and reassessed. During the project's lifetime, open public workshops can potentially be organized to disseminate the project's outcome to a wider audience.

The aim of the dissemination is to foster the project's expected commercial effect and success. It is advisable to consult an expert in the field of marketing who takes a leading role in the dissemination activities. Demonstrations of the prototypes and technologies by the marketing expert will allow both professionals and laymen to gain insight in and understanding of the project's findings. Consortia often use an open dissemination policy that keeps a balance between public and confidential deliverables. Proper dissemination management is a tool for fostering exploitation during and after the project. It enhances awareness of the project and facilitates the formation of cooperation with technology providers, system integrators and key influencers.

The consortium continuously analyzes the results of the project and classifies them with regard to their commercial potential, as an initial step towards the commercial utilization of the project findings. The following aspects are to be considered by the consortium:

- comparison of the products, processes or services that are brought forth by the project with the preestablished solutions that already are available
- relevance and prospective impact of the yielded innovation (novelty in its sector and on the national and international level)
- technical and economic advantages in comparison with already available solutions
- expected final development (prototypes, demonstration cases) for each project results (product, services and processes)
- potential impediments for the economic exploitation and knowledge sharing.

A typical channel for dissemination is scientific publication. However, dissemination in this form has to be consistent with all aspects of intellectual property, confidentiality and potential publication provisions established in the consortium agreement. After the co-authors have attained a permission to publish by the project partners, the editor for the scientific publication can be chosen. Potential editors must respect the authors' interests and be willing to publish in an open access channel (with or without embargo period). The partners shall employ an open access repository which is linked to the tools proposed by the European Commission (open AIRE or similar). This way, the publication is accessible with bibliographic metadata in a standardized format.

Ecosystem and networking activities: These subtasks of European projects serve the purpose to incorporate regional innovation projects in Europe (technology suppliers, final users, industries and promoters) into the project's environment to obtain a sustainable project ecosystem. Such an ecosystem brings together the different affected stakeholders who can draw benefits from cooperating on the same project. These stakeholders include not only private large companies and SMEs who act as manufacturers, application developers, systems integrators, tools and methodology providers, and so forth, but also standardization bodies, universities, training and teaching institutions, public bodies, end users, associations, knowledge exchange platforms, etc. It is advisable to continuously analyze the public opinion (end-consumer groups and stakeholders, with regard to gender aspects). One experienced project partner is responsible for the gender plan of the project. A gender action plan is to be established and to be ongoingly held up-to-date throughout the duration of the project.

Standardisation efforts on European level: It is necessary for an open project that it follows the framework of existing and newly proposed standards throughout all steps of its developments and evolutions (Brenner, W., Adamovic, N., 2017; Final Report Summary, 2019). Usually, a special standards task is in charge of providing inputs. By fostering innovation and commercial exploitation through dissemination of novel ideas and best practice, standardization within European projects serves the purpose of creating close ties between research and industry. Connecting all interest groups such as manufacturers, researchers, designers and regulators concerning products, raw materials, processes or services will bring forth new measurement and evaluation methods and stimulate the implementation of new processes and procedures. Standards can lead to increased commercial value of research and innovation projects. Europe is not only increasingly focusing on innovation project but also on the

commercialization of research results. In the last years, cooperation between researchers and standardization bodies has been amplified to increase Europe's competitiveness through innovation (Penny, S. (ed.), 2011). Newly implemented standards may even stimulate further research activity, for example when adequate methods are required for testing and measuring. Raising awareness about standardisation and its significance becomes more and more crucial in giving new technologies and research findings increased economic value and access to the market. The integration of recent research discoveries and technological innovations into new standards can serve as a base for following research and development. Thus, a prolific circle of knowledge and stimulation of standards and research is set into motion. Since the start of European Framework Program 6, standardization has been acting as a crucial booster of research and innovation and has been of great importance during Horizon 2020. The EC encourages researchers to put a focus on topics in their projects, starting at the writing of proposals. In addition, the EC encourages researchers to participate in Technical Committees (TCs). Through involvement in research activity, national Standardization Bodies and national Electrotechnical Committees can act as a connector and exchange platform between researchers and industry and as a distributor of research findings. When standards are being developed, it is important to assure close cooperation and communication between the involved parties.

The following benefits can be obtained by fostering cooperation, communication and exchange between researchers and standardization bodies:

- network, dialogue and exchange between other communities grow and intensify,
- new standardization fields and new markets for commercialization and application of research results can be found,
- more competent researchers will be found in Technical Committees and other technical bodies
- competence arises from participation in research projects.

Policymakers and stakeholders will be more aware about standardization bodies and their influence on innovation processes. Social aspects play an important role in the international standardization activities. This field involves specialists, detailed observation of the written standardization process, and a clear strategic agenda. International standardization is mainly an organisation-driven activity, but in many cases the creation of standards is highly influenced by certain individual peers. To achieve consensus, the individuals involved in standardization require the following skills:

- skills in communications and a good feeling for listening, persuasiveness, motivation, and facilitation.
- understanding of each party's positions, viewpoints, expectations and backgrounds.
- identifying goals, costs, risks, quality requirements, measures, and alternatives.
- willingness to find compromises to achieve results.

COMMUNICATION

Research should be driven by strategy, and not just mere curiosity. Strategies are built from consecutive decisions that may be interpreted in different ways. Project managers are responsible for precisely informing all functional-level members about the strategic approach to implementation within the Work Packages. Individual decisions are necessary concerning:

- **Intra consortium communication:** close attention will be paid to ensure regular gapless information of the partners the project's status, the planning, their responsibilities and task as well as and expected work achievement. Matters of confidentiality and non-disclosure will be included in the Consortium Agreement which will be signed before the project's begin. Interactive management as well as technical meetings will be a key element in the communication strategy. All information (minutes of the meetings, task reports, relevant publications) will be notified to the project coordinator, who will be responsible for forwarding the achieved information to the members of the consortium.
- **Communication outside the consortium:** The Dissemination and Communication Manager oversees the communication strategy which includes the publication planning (and their Open Access) and specifies conferences, media, etc., to be addressed. The technical outcome of the research project should be seen as confidential; thus, the agreement of all the concerned partners in accordance with the contracts (EC and Consortium) will be a precondition for the publication of these findings.

The following communication tools and strategies will be used:

- **Proactive direct approach** of the target stakeholders and the European Commission,
- **European Network of National Contact Points (NCPs)** theme through periodic newsletters and invitation to events, bimonthly newsletters are recommended.
- **Dedicated websites**, which lay forth an overview of the aims, the partnership, the activities proposed within

- the project and the opportunity of uploading/downloading the publicly accessible results of the project.
- **Partners' websites.** Each participating partner displays a reference to the project on their institution website (which contains a link to the dedicated project website and some summarizing information).
- **Publications.** The involved partners publish the results (in accordance to the IPR protection strategy) in the pertinent scientific literature, dedicated journals and magazines in the related research fields
- **Congresses, workshops, conferences, exhibition fairs.** Results and breakthroughs will be directly and interpersonally presented and illuminated in recognized European and worldwide congresses, scientific fairs and events.
- **Social media.** The relevant social media channels are utilized to directly and informally carry the findings to the interested target groups.

One element of the project action plan deals with the public image that the dissemination activities create within the international scientific and wider community and how the dissemination activities are perceived by the public. In all dissemination material special attention should be paid to avoid any 'gender stereotyping'. A balanced presentation of social groupings should be targeted. Finally, results are to be communicated to the wide public by far reaching media channels such as radio, newspapers, magazines at local and regional level and TV, at least at the early and final phases of the project. Any demonstrations and presentations should also be appropriately advertised with the technical press.

TRAINING

The EU (EU, 2019) attributes great importance to the ongoing advancement of education and training. Widespread and easy access to education and training is a not only a booster for wealth, economic growth, social stability but also research and innovation - and it increases the population's potential for personal evolvement. Having a multitude of supra disciplinary trained researchers in the industry is crucial for strengthening the innovativeness and economic competitiveness in Europe. Involvement in research projects results in a wide range of formal, non-formal and informal learning activities and learning effects for the participating researchers. It is an aim to make it possible for different types of experts (developers, technologists, integrators, etc.) to work with project results and develop new devices, applications and services based on these project results. This encompasses a wide area of activities that can be categorised as follows (Pro-Skills, 2019):

- **formal learning:** any formal training courses or educational programmes received from universities and other training/teaching institutions with structured learning objectives, curriculum, duration and teaching/learning methods, which lead to a certificate.
- **non-formal learning:** learning outside the framework of educational institution, often without certification, but with deliberate learning intention.
- **informal learning:** incidental or casual acquisition of knowledge or skills (such as social self-management skills) through everyday experiences and in everyday life.

Many European research projects provide a form of training programme which aim to benefit both from local or regional network partners as well and the collective multidisciplinary expertise of the entire network. The primary addressees of such a form of training are project participants in early stages of their research career. Training programmes often include a wide variety of activities:

- host oriented individual training: supervised working on personalized individual research projects
- arranging of, participation in and presentations to external workshops and conferences,
- exchange with peer specialists from network teams
- communication with relevant interest groups, whether academic or industrial/commercial
- short-term visits and secondments, and temporary inclusion into a company's structure, either within or outside of the network, to stimulate exposure to different approaches and schools of thought in different disciplines.
- organisation of training events (e.g. schools, training workshop/seminar, practice-oriented training sessions on certain tools or techniques) at individual participating institutions,
- training of complementary skills such as social and communication skills, language skills, computer and IT skills, project management know-how, ethics, team building, leadership etc.

Participation of the consortium's industry partners in the training programme feeds additional skills in perspectives into the knowledge pool. It is fundamental for more coherent dialogue and more effectful collaboration in training and research between the various sectors. Often a Supervisory Board, which takes into consideration the needs of both the academic and private interest groups, is authorized with the task of defining the skill requirements for the

recruited researchers. This aims to optimize the utilisation of complementary knowledge and viewpoints and exploitation of synergies between the different network partners. Thus, a well-balanced scientific and technological training with consideration of complementary skills is ensured.

The EC provides a specialized action framework for research training, the Marie-Sklodowska-Curie-Actions (MSC-Actions, 2019). The Innovative Training Networks (ITN) established by the MSC-Actions include industrial doctorates. Non-academic organisations are put on the same level as universities in terms of researcher's time and supervision and joint doctoral degrees between these non-academic organisations with several universities were established. The MSC-Actions are open to participation of non-European organizations, so that doctoral-level candidates are given the possibility to gather experience and receive training outside of Europe. The aim of ITNs is to provide a structural foundation for research and doctoral training with the right combination of research-related and transferable competences. Thus excellent quality, exceeding the borders of traditional, academic-only research is fostered in Europe.

DISCUSSION

A main target of European research projects since early frameworks is to bring forth a multitude of well-trained creative, entrepreneurial and innovative researchers, who can solve current and future tasks and who have the right combination of skillsets available to convert knowledge and innovation into products and services with great economic potential. Their aim is to enhance career perspectives in both the academic and industrial sectors based on experience resulting from international and interdisciplinary mobility and thus to stimulate economic growth and welfare.

ACKNOWLEDGMENT

Presented dissemination and training experience originates from the European projects FP7 SolarDesign and H2020 CABRISS.

REFERENCES

- Brenner, W., Adamovic, N. (2017). A Circular Economy for Photovoltaic Waste – the Vision of the European Project CABRISS. in Biljanovic, P. (ed.): mipro2017 proceedings, ISSN 1847-3946, ISBN 978-953-233-093-9, pp. 154-159, doi: 10.23919/MIPRO.2017.7973407
- Final Report Summary – FP7 SolarDesign On-the-fly alterable thin-film solar modules for design driven applications (2019). available at: <https://cordis.europa.eu/project/rcn/105949/reporting/en>
- H2020 project CABRISS Implementation of a Circular Economy Based on Recycling, Reused and Recovered Indium, Silicon and Silver Materials for Photovoltaic and Other Applications (2019). available at: <https://www.spire2030.eu/CABRISS>
- Penny, S. (ed.) (2011). STAIR An integrated approach for standardization, innovation and research. CEN/CENELEC, <https://www.cenelec.eu/research/news/publications/Publications/STAIR.pdf>
- EU (2019), European Commission, https://ec.europa.eu/education/education-in-the-eu/about-education-and-training-in-the-eu_en
- Pro-Skills (2019), EUROPEAN PRO-SKILLS Project, 230054-CP-1-2006-1-LU-Grundtvig-G1, www.pro-skills.eu
- MSC-Actions (2019), EC Marie-Sklodowska-Curie Action , <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/marie-sklodowska-curie-actions>

ETHICAL ISSUES IN EDUCATION AND THE ROLE OF TEACHERS IN ETHICS EDUCATION: FROM PAST TO PRESENT

Nur Yeliz GÜLCAN

Faculty of Education, Girne American University
Turkish Republic of North Cyprus

nuryeliz@gmail.com

ABSTRACT

Ethics is a branch of philosophy which is related to human conducts. Our actions and experiences are the subject of ethics. Ethics gives answer the question “what should I do?”, so people can know how to live their life. Today, ethics has an important place in all areas of life. Ethics in education is also very important. The subject of ethics and education are human, there is a relation between ethics and education. Education is also related to both individual and society. Individual behavior is central to the education and ethical principles have an important influence on individual behavior. In this study, it will be discussed how we can teach ethics to students. This is an important problem, because virtue is not a theoretical knowledge; it is a practice, students gain through their experiences. And also it is important to discuss who has to teach ethics. It will be discussed the role of teacher in ethics education. In doing this, it will also be discussed ethics of education from philosophical perspective. Before discussing these issues, it is good to define what ethics and education.

ETHICS

The term ethics is derived from Greek term *Ethos* which means character and custom. It means moral philosophy. Ethics is related to our conducts in everyday life. Ethics is also related to questions what is good and bad? Ethics can be divided into two basic levels; theoretical ethics and practical- applied- ethics. Theoretical ethics is also divided into three categories; these are normative ethics, meta-ethics and descriptive ethics. Normative ethics is the study of what makes actions right and wrong. Meta ethics is about the theoretical meaning and reference of moral propositions. Descriptive ethics is about facts; it examines ethics from observations of actual choices made by *moral agents* in practice.

Applied ethics includes ethical theories. It is about the particular ethical issues in public life. Interest in applied ethics has increased during the last decades. It analyses moral problems in different social areas. Ethics in education can be discussed under the name of professional ethics. Professional ethics mirrors applied ethics. In this context, it can be claimed that the aim of ethics of education is to develop the teachers’ moral characters. The subjects of ethics of education are ethical problems in education life and ethical principles. The task of ethics of education is to say which actions are good in education life. In this context, ethics and education compliment one and other.

Ethics is relevant to anyone who ever asks the question “what should I do” Principles, decision making process and conduct are 3 recurring themes appear in definition of ethics.

ETHICAL THEORIES

All theories applied to ethics of education are normative, there are 3 normative ethical theories applied to ethics of education. These theories are utilitarianism, Kantian ethics of duty and Aristotelian virtue ethics.

Utilitarianism is most common theological ethical theory and it is also called consequentialist theory. According to utilitarianism, the moral worth an action depends on its consequence. If the consequence of an action is good, the action is morally good. The founder of utilitarianism is Jeremy Bentham. “An action is right from an ethical point of view if and only if the sum total of utilities produced by that act is greater than the sum total of utilities produced by any other act the agent could have performed in its place”(Velasquez, 2001, p. 8). The main phrase of Utilitarianism is that “the greatest good for the greatest number of people”. “From the consequentialist ethics, the educator can draw the importance of the consequences of one’s actions and the justification for a public education that serves all children to the best of their abilities”(Gluchmanova, 2015, p. 510).

Kant’s ethical theory is also called deontological ethics. According to this ethics, the consequence of an action does not define whether the action is morally good or bad. According to Kant’s ethical theory, the moral worth of an action depends on a person’s maxim (intention) or duty. “The action which is objectively practical according to this law and excludes inclination from its determining grounds is called duty”(Kant, 1956, p. 83). Kant believes that there are two kinds of actions: in accordance with duty and from duty. The former is not ethical, only actions occur from duty are ethical. Kant also distinguishes imperatives into two: hypothetical imperatives and categorical imperatives. Hypothetical imperatives are conditional and these are not ethical;

categorical imperatives are unconditional and these are ethical. According to Kantian ethics, if an action is done from categorical imperative, the action is ethical. Categorical imperative can be summed up by the phrase, “treat others as you would be treated”. “Deontological ethicists consider these principles to be universal and categorical, and in ethical conflicts, deontological ethicists argue over which rule or principle should be more prominent” (Gluchmanova, 2015, p.510).

Aristotelian ethics is called virtue ethics. The virtue of human being consists of moral and intellectual excellence. In other words, there are two kinds of virtues: intellectual and moral virtues. Intellectual virtue is the virtue of knowledge, and moral virtue is the virtue of action and feeling. For Aristotle, human virtue is *eudaimonia* (happiness). *Eudaimonia* involves the exercise of both practical reason and speculative reason. Practical reason exists for the sake of speculative reason as seen in our attitude toward business. Practical reason is useful, while speculative reason is valuable.

According to Aristotle, virtue (*arete*) is the quality that seems distinctively human is the use of reason. Virtue ethics asks this question: What kind of person should I be? In addition, virtue is a mean called *Golden Mean*. This mean is relative to us, it is not the same for everyone. It is the extremes that damage people. A person who eats too much or eats too little will not be healthy. Similarly for the soul, a person who acts in an extreme manner will not be virtuous. For example, courage is the mean between recklessness and cowardice. “Concerning the virtue ethics the most important set of virtues in the school are the ones that are being cultivated in the students”(Gluchmanova, 2015, p. 510).

ETHICS OF EDUCATION

In ancient Greece, education was seen as a function of the state and the aim of it is to serve the ends of state. Today, education also serves both the needs of state or society and citizens. According to Socrates, “education is a process which is based upon ethics”. For Socrates and Plato education means to examine of life and this is called *paideia*. *Paideia* is a practical education that includes teaching of values. It is a moral education. “Education builds character, gives knowledge and helps progressing of state. Education makes a man complete and it also plays an important role in developing society and state. Schools are basic frameworks of education.” (Gülcan, 2015, p.2624).

Ethics education can be occurred in family, school, university and business. In family, Children observe their parents’ and they learn ethical behavior. In school, ethics education is a character education. In university, students learn professional ethics. In business, people learn codes which guide to them in their professional lives. Virtue is not a theoretical knowledge; it is a practice, students gain through their experiences. Therefore, talking about ethics is not enough to behave ethically.

The ethics of education includes teachers, students, school administrators and parents. The relation between ethics and education can be established on three main topics: Moral education, aim of education and teaching professional ethics. Today, ethics of education refers to teaching professional ethics defines. This reveals the role of teacher in education.

In education process, humans interact with each other and these interaction causes some ethical problems or issues as follows:

- Cultural and individual diversity
- Discipline issues- punishment (cheating)
- Assessment of students- grading (Teachers can be made mistakes students’ papers)
- Plagiarism (For example; you are a teacher. You realized the fact that a large portion of your student’s paper was plagiarized. What should you do in this situation?)
- Inappropriate relationships with students.
- Using school equipment inappropriately are some examples of violations of ethics in education.

These ethical problems mainly arise in three areas: Conduct, Assessment and Planning. Conduct is an important aspect of ethical practices. Teachers should be role model of ethical conduct for their students. Teachers must be honest and they respect both ethical and legal rules. Assessment is also another important aspect of ethical practice. Teachers should be fair to evaluate their students. Planning is also important for teachers to be ethical. Teachers should make good planning to perform their works as a professional.

Teachers often face ethical dilemmas in their school. To analyze similar case studies may help teachers make the right decision when faced with similar situations. To solve ethical problems, in the following 7 steps may be helpful.

- 1-Identify problem. - what is the problem?
- 2- Identify individuals who are affected
- 3- Identify ethical principles in the problem- which principles are violated?)
- 4- Present solutions, options
- 5-Discussing consequences of the options
- 6- Choose the best option and
- 7- Act on the chosen option.

CONCLUSION

Teachers have responsibilities for their students, their colleagues, their school managers, parents and society. To perform these responsibilities, teacher must make decisions within a moral framework. These responsibilities outline ethical principles. Every student is different and shouldn't be evaluated on the same basis. Teachers should be aware of this issue. "Teachers at all levels of education should ensure the cognitive, intellectual and moral progress of their students and show them appropriate respect and appreciation"(Gluchmanova, 2015: 512). The absence of some virtues leads to unethical and illegal activities. In education life to prevent these kinds of activities, educators must accept ethical principles. Felicity Haynes claims that "Good to others, good to oneself, harm to others and harm to oneself are four of the considerations that moral individual must entertain (98-99)

Teachers help students learn the academic basics, but they also help students improve ethical behavior. Many ethical issues or problems in education are related to teachers' conducts, so teachers have an important role in educational life.

Teachers must demonstrate ethical behavior. They should be respectful, fair, sensitive, honest and kindly. These are also core moral values in education. From these core moral values, we can reach basic ethical principles. These principles are; Do no harm, Make things better, Respect others, Be fair, Be loving. These principles outline teachers' responsibilities and define their role in students' lives.

Gunzenhauser argues for three tenets of professionalism for educators: 1. As a professional, an educator is in a position to profess substantive beliefs about the meaning and value of education. 2. As a professional, an educator is in a position to exercise ethical and professional judgment. An educator is in a position to continually develop ethical and professional judgment throughout his career and in his various positions of responsibility. 3. As a professional, an educator is in a position to acknowledge and resist opportunities to enact normalization on herself, students, and colleagues. (Gluchmanova, 2015, p. 510).

Professional Ethical Codes for Educators which are developed by Republic of Turkey Ministry of National Education consist of six basic principles, these are:

- 1- Ethical conduct toward students
- 2-Ethical conduct toward performance
- 3-Ethical conduct toward colleagues
- 4-Ethical conduct toward parents
- 5-Ethical conduct toward school administration and society
- 6- School administrators' conduct toward teachers, students and parents.

People learn how to be a good person through education. The aim of ethics education is not to create individuals who obey rules without examined; individuals who examine rules and use their reasons to understand these rules. Person who knows definitions cannot be reached moral competence, only people who realized their responsibilities can be reached moral competence. It is good to conclude this study giving a quote from Aristotle, "Educating the mind without educating the heart is no education at all".

REFERENCES

- Abbott, A. (1983). Professional Ethics. *The American Journal of Sociology*, 88 (5), pp. 855-885.
- Dobson, J. (2009). Alasdair Macintyre's Aristotelian Business Ethics: A Critique, *Journal of Business Ethics*, 86, pp. 43- 50.
- Cevizci, A. (2008). *Etiğe Giriş*, Paradigma: İstanbul.
- Cevizci, A. (2016). *Uygulamalı Etik*, Say Yayınları: İstanbul.
- Gluchmanova, M. (2015). "The Importance of Ethics in the Teaching Profession", *Procedia-Social and Behavioral Sciences* 176, pp. 509-513.
- Gülcan, N.Y. (2015). "Discussing the Importance of Teaching Ethics in Education", *Procedia-Social and Behavioral Sciences*, 174, pp. 2622-2625.

- Haynes, F. (2014). *Eğitimde Etik*, Ayrıntı Yayınları: İstanbul.
- Hull, R. T. (1979). *The Varieties of Ethical Theories*, Buffalo Psychiatric Center.
- Kant, I. (1956). *A Critique of Practical Reason*, New York: Liberal Arts Press.
- Kuçuradi, I. (1994). *Uludağ Konuşmaları-Özgürlük, Ahlak, Kültür, Kavramları*, TFK: Ankara.
- MacIntyre, A. (1966). *A Brief History of Ethics*. Macmillan: New York.
- Pieper, A. (2012). *Etik Giriş*, Ayrıntı Yayınları: İstanbul.
- Snoeyenbos, M. & Humber, J. (2002). “Utilitarianism and Business Ethics,” in Robert Frederick, ed. *A Companion to Business Ethics*, UK: Blackwell.
- Solomon, R.C. (2004). “Aristotle, Ethics and Business Organizations”, *Organization Studies*, 25, pp. 1021-1043.
- Tepe, H. (2000). *Etik ve Meslek Etikleri*, TFK: Ankara
- Velasquez, M. G. (2001). *Business Ethics Concepts&Cases*, *Business Ethics*, Anderson University DBA.

EXAMINATION OF SECONDARY SCHOOL (5TH -8TH GRADES) PHYSICAL TRAINING AND SPORTS TEACHING PROGRAM ACCORDING TO TAXONOMIES

Dr. M. Enes IŞIKGÖZ

Physical Training and Sports Academy, Mardin Artuklu University, Türkiye
pdgenes@gmail.com

Dr. Kerim Karabacak

Hasan Ali Yücel Educational Faculty, İstanbul University, Cerrahpaşa
kerimk@istanbul.edu.tr

ABSTRACT

The aim of this study is to examine the learning outcomes of physical training and sports teaching programs (5th - 8th grades) which have been revised in 2018 according to cognitive, affective and psychomotor taxonomies. Document analysis method had been used in the study. The document of this study is established from physical training and sports teaching programs (5th -8th grades) which have been revised in 2018. 61 (%50) of 122 learning outcomes which have been given in the teaching program are related with cognitive field, 29 (%23,77) of them are related with affective field and 32 (%26,23) of them are related with psychomotor field. Mostly cognitive field learning outcomes are existent in 5th and 6th grades, affective ones in 8th grades and psychomotor field exist in 7th grades. Whereas factual knowledge does not take place in all class levels in knowledge dimension of the program, it has been observed that the learning outcomes mostly have been in conceptual knowledge dimension and in the frame of cognitive process they have been concentrated on in application process. It has been determined that the learning outcomes related to affective field mostly concentrate on 8th grades and sub-level of giving value, the learning outcomes related to psychomotor field mostly concentrate on 5th, 6th ,and 7th grades and grades and sub-level of transforming to a skill.

KEY WORDS: Secondary school physical training and sports teaching programs, cognitive, affective, learning outcome, psychomotor.

INTRODUCTION

Elements taking place in the educational system take an important place in the realization of education policies of the countries. One of the elements of these is educational programs' having a dynamic structure. Educational program is all activities of an educational institution related to realization of aims of national education and institutions which have been provided for children, young people and adults. Teaching program is defined as gaining knowledge and skills in the direction of educational program aims and realizing this in a planned method, it is also concentrated on skills and applications at schools and is established from knowledge categories. (Varış, 1988). Teaching programs taking place in the content of educational programs is a guide demonstrating what, why and how the subjects will take place in teaching –learning process in a course, in other words it is a project plan having this qualification (Özçelik, 1992). The countries are able to determine the knowledge, skill and abilities which they target for their citizens they should gain with the help of educational programs which have been prepared in the content of national educational systems and they try to realize these in the direction of some objectives determined previously with the help of these programs (Önal and Topçu, 2013). As teaching programs have been an instrument for guiding the course, time and techniques of the required skills which should be gained, they have an important place for qualified education (Bayburtlu, 2015). Because teaching programs demonstrating a product by reflecting the features of the age being lived are also instruments for educating human type having qualifications which this age requires in this society at the same time (Doğanay, 2005).

An educational program has four basic elements as (1) objectives, (2) content, (3) educational situations and (4) evaluation. Objectives state the features required for individuals at the end of learning-teaching process. Content is thought as complete subjects relevant to the objectives in the educational program. In other words, it is a list of subjects to be studied in reaching the objectives. Educational situations state which learning-teaching models, strategies, methods and techniques and instruments will be used to reach the objectives. Evaluation is to determine at what level the objectives have been reached (Demirel, 2015).

Objective in education is the required features such as decided knowledge, skill, interest, attitude, motivation (Sönmez, 2007). In other words, these are required features which should an adult have and they should be gained by education. According to Demirel(2007) these features can be knowledge, abilities, skills, attitudes, interests, habits and similar of these. Objectives are the most important element of educational program, the reason of this is educational program is the determiner of other elements (Arslan, 2018).Because the answer of question “why” includes “objective” element in all these occupations. As teaching has been an action which has been thought on

deeply, it has a special importance (Anderson and Krathwohl, 2010). Objectives are being arranged at vertical and horizontal dimension, the objectives at vertical dimension are determined as far, general and special objectives (Ertürk, 1998). Far objectives are defined as political objectives (Sönmez, 2011) in the light of educational philosophy of a country, special objectives as objectives of a course and units and subjects in this course (Özdemir, 2007). Special objectives are determined as separated to three fields as cognitive, affective and psychomotor in horizontal dimension (Demirel, 2015).

Classification of objectives as cognitive, affective and psychomotor and sequencing the objectives from basic to complex, easy to difficult, concrete to abstract as each other's condition has been accepted as taxonomy in literature (Sönmez, 2007). These taxonomies are still being used extensively in our age. The study of classification of objectives as gradually (taxonomy) started in USA in 1948, three taxonomies in three fields as cognitive, affective and psychomotor have been developed. In this content, Bloom and his colleagues (1956) developed the first taxonomy related to "cognitive field classification" and it had been translated in many languages in the world and known as Bloom Taxonomy in literature (Demirel, 2015). Taxonomies related to "affective field" which had been established by Bloom (1956) and revised by Krathwohl and his colleagues (1964) and "psychomotor field" by Simpson (1966) followed these. Although different taxonomies have been developed related to the classification of objectives gradually, the most accepted and used ones had been these taxonomies (Senemoğlu, 2010).

Taxonomy related to cognitive field classification of Bloom and his colleagues (1956) has been related with mental processes, it is established from 6 levels from basic to complex and concrete to abstract as knowledge, application, analysis, synthesis and evaluation, except evaluation other levels are separated into sub levels in each other. Every level in taxonomy is accepted as pre-condition of the next level and in order to gain the behavior in the next level the behaviors in previous levels should be gained (Ari, 2011). In the direction of the critics made this taxonomy in this process which is used with the name Bloom taxonomy, taxonomy had been revised and developed again in 2001 (Anderson and colle. 2001) and it is used recently revised Bloom taxonomy (Krathwohl, 2002).

Revised Bloom taxonomy has two dimensions as (1) knowledge and (2) cognitive process. Knowledge dimension is established from (A) factual knowledge, (B) Conceptual knowledge, (C) procedural knowledge and (D) metacognitive knowledge. Cognitive process dimension includes (1) remembering, (2) understanding, (3) application, (4) analysis, (5) evaluation and (6) creation. New Bloom taxonomy is established from six levels as the old one, but three levels (knowledge, understanding, analysis) has been named again, the place of upper two levels changed and the names of the levels have been transformed to action form. All original sub categories have been changed as verbal noun and named as cognitive processes (Bümen, 2006; Ari, 2013). In this content, important innovations have been made in taxonomy classification and demonstrating the levels more understandable and detailed has been provided (Yüksel, 2007).

Affective field taxonomy developed by Krathwohl and colleagues. (1964) is established from five levels as (1) perception (2) giving reaction, (3) giving value (4) organization and (5) making as individualism. This field includes attitudes, beliefs end orientations shaping and giving direction to human behaviors. Affective field is a field where the individual's interest, attitude, motivation, love and fright have been dominant (Demirel, 2015). Affective field learning outcomes taking place in educational programs demonstrate how the students feel at learning-teaching process and how their objective levels change in the context of feelings (Duman ve Yakar, 2017).

Psychomotor field taxonomy developed by Simpson (1966) is established from seven levels as (1) perception (2) foundation, (3) guided action (making with a guide, making at supervision of a guide), (4) being mechanic (5) realizing as a skill, (6) orientation (7) creation. Levels of psychomotor field are related with the capacities of the muscles requiring durability, power, elasticity, agility or not demonstrating a concrete skill (Senemoğlu, 2010). The individual demonstrate some skills by using some or all body parts, muscles of him as psychomotor. As cognitive and affective processes are the subject of psychomotor behavior, this field is one with another with cognitive and affective processes (Sönmez, 2011).

When the literature has been examined, it is seen that studies are existent in which taxonomic analyses have been made related to different teaching programs (Yolcu, 2019; Aktan, 2019; İlhan and Gülersoy, 2019; Büyükanan and Baysal, 2019; Çelik and colleagues., 2018; Aslan and Atik, 2018; Efe and Efe, 2018; Eke, 2018; Avşar and Mete, 2018; Ünsal and Korkmaz, 2017; Akarsu, 2017; Zorluoğlu and colleagues., 2016; Tahaoğlu, 2014; Zorluoğlu and colleagues , 2013; Karabacak, 2013). Most of these studies intensify on Bloom taxonomy. The studies in which physical training and sports course teaching program learning outcomes in the context of different taxonomies (Uğraş and Aral, 2018; Güllü and colleagues (2011a) have been examined are limited. In these studies, Uğraş and

Aral (2018) examined physical training and sports course teaching program learning outcomes according to revised Bloom taxonomy Güllü and colleagues examined (2011) physical training and sports course teaching program learning outcomes according to cognitive, affective and psychomotor field. Again studies of Güllü and colleagues in which they examined applied elementary physical training and sports course teaching program (1st-8th grades) starting from 2006-2007 semester is existent. In this study, it is aimed to examine secondary school physical training and sports course teaching program learning outcomes which started to be applied in 2018-2019 semester in the frame of different taxonomies(cognitive, affective and psychomotor).

METHOD

Document analysis method from qualitative research methods has been used in this study which examines secondary school (5th-8th grades) physical training and sports course teaching program learning outcomes in the frame of different taxonomies. Document analysis, which has been known as examination process according to the facts at the center of written material, record or documents, is used database of generally course books and teaching program in educational studies (Yıldırım and Şimşek, 2008). “Secondary school (5th-8th grades) physical training and sports course teaching program” which has been applied since 2018-2019 semester with Ministry of National Education’s (MoNE) 19.01.2018 dated and 6 numbered board decision Board of Education has been used as a document in this research. (MoNE, 2018). Learning outcomes distribution related to learning and sub-learning fields relevant to the classroom level have been presented in Table 1.

Table 1. Distribution of learning outcomes of physical training and sports course teaching program relevant to the grades and fields

Learning field-sub	Learning field	5. Grade	6. Grade	7. Grade	8. Grade	Total
1. Action Competence	1.1. Action skills	7	8	8	5	28
	1.2. Action concepts, principles end related life skills	9	9	10	12	40
	1.3. Action strategy and tactics	2	2	1	1	6
2. Active and healthy life	2.1. Regular physical activity	1	1	2	2	6
	2.2. Physical activity concepts, principles and related life skills	7	6	5	6	24
	2.3. Cultural values	5	5	4	4	18
Total		31	31	30	30	122

122 learning outcomes presented in physical training and sports course teaching program(5th-8th grades) have been examined by using “Bloom Cognitive Taxonomy” revised by Anderson and his colleagues (2001), “Affective Field Taxonomy” developed by Krathwohl and his colleagues. (1964) and “Psychomotor Field Taxonomy” developed by Simpson (1966). Learning outcomes have been transferred to Excel program, and they have been coded in relevant taxonomic levels according to learning and sub learning places in teaching program and the meaning they included. Ideas of an expert on educational programs and teaching an academician and two physical training and sports course teachers have been benefited at coding level to increase the reliability of the research. In this content some changes have been made in coding and a consensus has been established. The data taken from the research has been transformed to tables and number of learning outcomes related to every taxonomic field and sub levels and their numbers were given with percentage values and numbers.

FINDINGS

Table 2. Distribution of learning outcomes of physical training and sports course teaching program relevant to cognitive, affective and psychomotor fields at classroom level

Grade	Learning outcome number	Cognitive field		Affective field		Psychomotor field	
		n	%	n	%	n	%
5 th Grade	31	16	51,61	6	19,35	9	29,03
6 th Grade	31	16	51,61	6	19,35	9	29,03
7 th Grade	30	14	46,67	7	23,33	9	30,00
8 th Grade	30	15	50,00	10	33,33	5	16,67
Total	122	61	50,00	29	23,77	32	26,23

According to Table 2, 122 total learning outcomes have been given in physical training and sports course teaching program ; 61 (%50) of them have been related with cognitive, 29 (%23,77) of them have been related with affective and 32 (%26,23) of them have been related with psychomotor field. At classroom level, cognitive field learning outcomes have been %51,61 at 5th and 6th grades, %46,67 at 7th grades , %50,00 at 8th grades , affective field learning outcomes have been %19,35 at 5th and 6th grades , %23,33 at 7th grade %33,33 at 8th grade, psychomotor field learning outcomes have been %29,03 at 5th and 6th grades, %30 at 7th grades and %16,67 at 8th grades. Most

cognitive field learning outcomes have been in 5th and 6th grades, affective ones at 8th grade and psychomotor ones at 7th grade in the program.

Table 3. Distribution of learning outcomes of secondary school physical training and sports course teaching program relevant to cognitive field according to revised Bloom taxonomy

Grade	Knowledge dimension	Cognitive Process Dimension						Total	
		Remembering	Understanding	Application	Analyzing	Evaluation	Creation	n	%
5 th grade	Factual knowledge	-	-	-	-	-	-	-	-
	Conceptual knowledge	3	5	1	-	-	-	9	56,25
	Procedural knowledge	-	1	1	-	-	-	2	12,50
	Metacognitive knowledge	-	2	-	-	3	-	5	35,71
	Total	3	8	2	-	3	-	16	26,23
6 th grade	Factual knowledge	-	-	-	-	-	-	-	-
	Conceptual knowledge	1	3	3	-	-	-	7	43,75
	Procedural knowledge	-	-	2	-	1	1	4	25,00
	Metacognitive knowledge	1	1	-	-	1	2	5	31,25
	Total	2	4	5	-	2	3	16	26,23
7 th grade	Factual knowledge	-	-	-	-	-	-	-	-
	Conceptual knowledge	1	-	5	-	-	-	6	42,86
	Procedural knowledge	-	-	2	-	3	-	5	35,71
	Metacognitive knowledge	-	-	1	-	-	2	3	21,43
	Total	1	-	8	-	3	2	14	22,95
8 th grade	Factual knowledge	-	-	-	-	-	-	-	-
	Conceptual knowledge	2	5	1	-	-	1	9	60,00
	Procedural knowledge	1	-	2	1	-	-	4	26,67
	Metacognitive knowledge	-	-	-	-	2	-	2	13,33
	Total	3	5	3	1	2	1	15	24,59
General Total		9 (%14,75)	17 (%27,87)	18 (%29,51)	1 (%1,64)	10 (%16,39)	6 (%9,84)	61	100,00

When Table 3 is examined, it is observed that learning outcomes mostly intensify on conceptual knowledge dimension in knowledge dimension of physical training and sports course teaching program (5th grade: %56,25, 6th grade: %43,75, 7th grade: %42,86, 8th grade: %60). It is seen that the ratings at procedural knowledge dimension have been %12,50 at 5th grade, %25,00 6th grade, %35,71 7th grade, %26,67 8th grade, the ratings at metacognitive knowledge dimension have been %35,71 5th grade, %31,25 6th grade, %21,43 7th grade, %13,33 8th grade. Learning outcomes related to conceptual knowledge takes place mostly in 8th grade, least at 7th grade, learning outcomes related to procedural knowledge takes place mostly in 7th grade, least at 5th grade, learning outcomes

related to metacognitive knowledge takes place mostly in 5th grade, least at 8th grade. It has been observed that factual knowledge at all classroom levels in the program does not take place.

Again when Table 3 is examined, it is observed that learning outcomes mostly intensify on application (n:18; %29,51) in the frame of cognitive process in knowledge dimension of physical training and sports course teaching program according to revised Bloom taxonomy, understanding (n:17; %27,87), evaluation (n:10; %16,39), remembering (n:9; %14,75), creating (n:6; %9,84) and analyzing (n:1; 1,64) processes follow this. At classroom level, it has been determined that cognitive processes related to understanding in 5th grades (n:8) and 8th grades (n:5) have been concentrated on, cognitive processes related to application in 6th grade (n:5) and 7th grade (n:8) have been concentrated on. It is observed that all cognitive processes take place in 8th grade, in 5th grade analyzing and creating, in 6th grade analyzing take place and in 7th grade understanding and analyzing cognitive processes do not take place.

Table 4. Distribution of learning outcomes of secondary school physical training and sports course teaching program relevant to affective field sub-levels

Grade	Affective field					Total
	Perception	Giving reaction	Giving value	Organization	Making as individualism	
5. Grade	1	4	1	-	-	6 %20,69
6. Grade	-	2	4	-	-	6 %20,69
7. Grade	-	1	4	2	-	7 %24,14
8. Grade	-	-	5	3	2	10 %34,48
Total	1 (%3,45)	7 (%24,14)	14 (%48,28)	5 (%17,24)	2 (%6,90)	29 %100,00

According to Table 4, 29 of learning outcomes of secondary school physical training and sports course teaching program are related with affective field. 6 (%20,69) of affective field learning outcomes take place in 5th and 6th grade, 7(%24,14) in 7th grade and 10 (%34,48) in 8th grade. The most learning outcome in affective field is in 8th grade. When learning outcome numbers at sublevels of affective field have been examined, it is seen that the most learning outcome has been in giving value sub level (%48,28) then giving reaction (%24,14), organization(%17,24), making individualism (%6,90) and perception (%3,45) take place. It is observed that “organization” and “making individualism” takes place in 5th grade, “perception”, “organization” and “making individualism” takes place in 6th grade, “perception” and “making individualism” takes place in 7th grade, in 8th grade “perception” and “giving reaction” affective field sublevel learning outcomes do not take place.

Table 5. Distribution of learning outcomes of secondary school physical training and sports course teaching program relevant to psychomotor field sub-levels

Grade	Psychomotor field							Total
	Perception	Foundation	Guided action	Being mechanic	Making as a skill	Orientation	Creation	
5 th Grade	-	-	6	1	2	-	-	9 %28,13
6 th Grade	-	-	-	7	2	-	-	9 %28,13
7 th Grade	-	-	-	-	6	1	2	9 %28,13
8 th Grade	-	-	1	1	1	1	1	5 %15,63
Total	-	-	7 (%21,88)	9 (%28,13)	11 (%34,38)	2 (%6,25)	3 (%9,38)	32 %100,0

When Table 5 is examined, it is seen that 32 of learning outcomes of secondary school physical training and sports course teaching program are related with psychomotor field. %28,13 of psychomotor field learning outcomes take place in 5th grade, %28,13 in 6th grade and %28,13 in 7th grade, %15,63 in 8th grade. It has been determined that the most learning outcome in psychomotor field sub-levels has been in “making as a skill (%34,38)”, “being mechanic (%28,13)”, “guided action (%21,88)”, “creating(%9,38)” and orientation (%6,25)” psychomotor field sub-levels follow this. At all classroom levels of program, “perception” and “foundation” takes place in 5th grade, “orientation” and “creating” takes place in 6th grade, “guided action”, “orientation” and “creating” takes place in 7th grade, “guided action” and “being mechanic” learning outcomes sub levels have not been seen.

DISCUSSION AND RESULT

In the study in which learning outcomes of secondary school (5th-8th grades) physical training and sports course teaching program have been examined according to cognitive, affective and psychomotor field taxonomies, it has been seen that learning outcomes related to cognitive field have been the most. 122 total learning outcomes have been given in physical training and sports course teaching program; 61 of them have been related with cognitive, 29 of them have been related with affective and 32 of them have been related with psychomotor field. It has been determined that 33 learning outcomes in cognitive field, 66 in affective field, 15 in psychomotor field take place in secondary school physical training and sports course teaching program in the study in which Güllü and colleagues (2011b) examined physical training and sports course teaching program since 2006-2007 semester in the context of learning outcomes, activity samples and measurement-evaluation methods. At this point, when staging of secondary and elementary schools again, revising teaching programs according to the conditions of the day and dynamic process of the program have been taken into account, it is seen that there are important changes in the content of number of learning outcomes of the program.

Uğraş and Aral (2018) determined that 48 of total 122 learning outcome in the program have been cognitive, 37 psychomotor and 37 affective, most of the learning outcomes have been in cognitive field in their study in which they examined cognitive learning outcomes taking place in physical training and sports course teaching program according to the revised Bloom taxonomy in 2017. Mostly cognitive learning outcomes have been in teaching program in our study, the finding of the study corresponds in this direction, but number of learning outcomes determined in cognitive, affective and psychomotor fields do not correspond each other. In our study, “Secondary school physical training and sports course teaching program” being applied in 2018-2019 semester and accepted in 2018 have been examined, Uğraş and Aral (2018) examined “Secondary school physical training and sports course teaching program” which has been started to be applied since 2017-2018 semester. In this content, it is thought that there have been some differences because of combining some learning outcomes under more than field and some changes in program learning outcomes.

Learning outcomes in teaching program in cognitive field mostly have been in 5th and 6th grades, affective field in 8th grade and psychomotor field learning outcomes in 7th grade. Learning outcomes in “knowledge dimension” of the program has been intensified on “conceptual knowledge”, it has been seen that “factual knowledge” did not take place. “Conceptual knowledge” learning outcomes mostly take place in 8th grade least in 7th grade, learning outcomes related to “procedural knowledge” mostly take place in 7th grade least in 5th grade, “metacognitive knowledge” learning outcomes mostly take place in 5th grade least in 8th grade. Again according to revised Bloom taxonomy, at “knowledge dimension” of secondary school physical training and sports course teaching program, it has been seen that most learning outcomes in the frame of “cognitive process” have been at “application” process, then comes “understanding”, “evaluation”, “creating”, and “analyzing” processes. It has been observed that whereas all cognitive processes take place in 8th grade, “analyzing” and “creating” in 5th grade, “understanding” and “analyzing” cognitive processes do not take place in 7th grade.

When studies of Uğraş and Aral (2018) have been examined, it has been determined that learning outcomes of cognitive field have been mostly in 5th, 6th and 7th grades, least in 8th grade, learning outcomes at knowledge dimension mostly intensify on “procedure knowledge” at all classroom levels, “fact knowledge” takes place in a limited percentage. In the same study, it has been seen that most learning outcomes at “cognitive process” have been in “understanding” and then “application”, “analysis”, “evaluation”, “formation” and “remembering”. These findings partly support our study. Because of examined programs’ being revised and becoming valid on different dates, some possible changes in program learning outcomes and being able to write some learning outcomes under more than one field, it is thought that there are some changes in the findings. In the research in Güllü and colleagues (2011a) evaluated the learning outcomes of physical training and sports course teaching program of upper secondary school (9th-12th grades) which has been started to be applied in 2010-2011 semester, it is demonstrated that the program intensify on affective field. When it is taken into account that learning outcomes of affective field have been mostly in 8th grade in our study, it is thought that a program on affective field should be requested in transition to upper secondary school.

Total 29 of teaching program learning outcomes are related with affective field. Most of the learning outcomes related to affective field are in 8th grade. When learning outcome numbers in sub levels of affective field have been examined, it has been seen that most learning outcome has been on “giving value”, the least one has been on “giving reaction”. It has been observed that “organization” and “making as individualism” take place in 5th grade, “perception”, “organization” and “making as individualism” take place in 6th grade, “perception”, and “making as individualism” take place in 7th grade, “giving reaction”, and “perception” do not take place in 8th grade. In Uğraş and Aral’s (2018) study it has been seen that number of learning outcomes of affective and psychomotor fields have been equal, cognitive field is the most. This finding taken in the frame of affective field learning

outcomes support our study finding in the frame of whole program. Güllü and colleagues (2011b) in which they examined they examined elementary and secondary education physical training and sports course teaching program being applied since 2006-2007 semester, they have determined that most objective behavior have been written at secondary school in affective field learning outcomes has been “giving value”, the least has been “perception” dimension. It is seen that numerical knowledge protects its place at these levels.

It has been seen that 32 learning outcomes take place in psychomotor field in teaching program, most of these learning outcomes have been in 5th, 6th and 7th grades, according to sub-levels of psychomotor field the most learning outcome has been on “making as a skill”, the least has been on “orientation”. At all classroom levels “perception” and “foundation” sub-levels have been seen, “orientation” and “creating” at 5th level, “making with a guide”, “orientation” and “creating” at 6th level, “making with a guide”, “being mechanic” at 7th level, other sub-levels have not been seen. Güllü and colleagues (2011b) in their study have determined that the most objective behavior in psychomotor field learning outcomes at secondary school has been “making as a skill” the least one has been “creating”, “making with a guide” and “orientation” did not take place as objective behaviors. When our study findings have been taken into account, similar results like numerical knowledge take place at sub-levels of psychomotor level.

Educational program is a dynamic process formed of objective, content, educational situations and evaluation. In the light of feedback as a result of application and evaluation of programs, some changes are being realized in the direction of nowadays. Changes have been completed in 2015-2016 semester in teaching programs starting from 2005 by MoNE in this content in our country. Since 2016-2017 semester, changes in teaching programs gained a different dimension, revision and change studies are still being made in a detailed way in the programs. In this study, secondary school teaching program learning outcomes which started in 2018-2019 semester by revising lastly in 2018 have been examined in the direction of expert ideas in the context of taxonomies and the data taken has been tried to be presented as quantitative. In addition to quantitative researches related to learning outcomes of the programs, qualitative researches can be made and their functionality can be discussed. Similar research results can be achieved and reached new results by examining with meta-analysis method.

KAYNAKÇA

- Akarsu, S. (2017). İlköğretim (1-8) müzik öğretimi programı kazanımlarının bilişsel, duyuşsal ve devinişsel açıdan incelenmesi. *Akademik Sosyal Araştırmalar Dergisi*, 5(44), 279-289.
- Aktan, O. (2019). İlkokul matematik öğretim programı dersi kazanımlarının yenilenen Bloom Taksonomisine göre incelenmesi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, doi: 10.9779/pauefd.523545, 1-18.
- Anderson, L.W. and Krathwohl, D.R. (Eds.) (2001). A taxonomy for learning, teaching and assessing: A revision of Bloom’s taxonomy of educational objectives. New York: Addison Wesley Longman.
- Arı, A. (2011). Bloom’ un gözden geçirilmiş bilişsel alan taksonomisinin Türkiye’de ve uluslararası alanda kabul görme durumu. *Kuram ve Uygulamada Eğitim Bilimleri*, 11, 749-772.
- Arı, A. (2013). Bilişsel alan sınıflamasında yenilenmiş Bloom, SOLO, Fink, Dettmer Taksonomileri ve uluslararası alanda tanınma durumları. *Uşak Üniversitesi Sosyal Bilimler Dergisi*, 6(2), 259-263.
- Arslan, A. (2018). Öğretim hedefleri. Öğretim ilke ve yöntemleri. (Edt: Ali Arslan, Cevat Eker), Ankara: Nobel Akademik Yayıncılık.
- Bümen, N. T. (2006). Program Geliştirmede Bir Dönüm Noktası: Yenilenmiş Bloom Taksonomisi. *Eğitim ve Bilim*. 31(142), 3-14.
- Efe, H. ve Efe, R. (2018). 9. sınıf biyoloji dersi öğretim programındaki kazanımların yenilenmiş Bloom taksonomisi’ ne göre karşılaştırılması: 2013, 2017 ve 2018 yılları. *International Journal of New Trends in Arts, Sports & Science Education*, 7(3), 1-10.
- Aslan, M. ve Atik, U. (2018). 2015 ve 2017 İlkokul Türkçe dersi öğretim programı kazanımlarının revize edilmiş Bloom taksonomisine göre incelenmesi. *Uluslararası Türkçe Edebiyat Kültür Eğitim (TEKE) Dergisi*, 7(1), 528-547.
- Avşar, G. ve Mete, F. (2018). Türkçe öğretim programlarında kullanılan fiillerin yenilenmiş Bloom taksonomisine göre sınıflandırılması. *Karaelmas Eğitim Bilimleri Dergisi*, 6(1), 75-87.
- Bayburtlu, Y.S. (2015). 2015 Türkçe dersi öğretim programı ve 2006 Türkçe dersi öğretim programının değerlendirilmesi. *Turkish Studies-International Periodical for the Languages, Literature and History of Turkish and Turkic*, 10(15), 137-158.
- Bloom, B.S., Englehart, M.D, Furst, E.J, Hill, W.H and Krathwohl, D.R. (1956). *Taxsonomy of educational objectives. Book I: Cognitive Domain*. U.S.: Longman.
- Büyükalın, F.S. ve Baysal, S.B. (2019). Analysis of social studies curriculum objectives according to revised Bloom taxonomy. *Inonu University Journal of the Faculty of Education*, 20(1), 234-253.

- Çelik, S., Kul, Ü. ve Uzun, S.Ç. (2018). Ortaokul matematik dersi öğretim programındaki kazanımların yenilenmiş Bloom taksonomisine göre incelenmesi. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 18(2), 775-795.
- Demirel, Ö. (2007). *Eğitimde program geliştirme* (10. Baskı). Ankara: PEGEM Yayınları.
- Demirel, Ö. (2015). *Eğitimde program geliştirme: Kuramdan uygulamaya* (22. Baskı). Ankara: PEGEM Yayınları.
- Doğanay, A. (2005). Öğretimde kavram ve genellemelerin geliştirilmesi. Hayat Bilgisi ve Sosyal Bilgiler Öğretimi. (Edt: Öztürk, C. ve Dilek, D.), Ankara: PEGEM-A Yayıncılık.
- Duman, B. ve Yakar, A. (2017). Öğretime yönelik duyuşsal farkındalık ölçeği. *Cumhuriyet International Journal of Education*, 6(1), 200-229.
- Eke, C. (2018). Ortaöğretim fizik dersi öğretim programındaki kazanımların yenilenmiş Bloom taksonomisine göre analizi. *Sosyal Araştırmalar ve Davranış Bilimleri*, 4(6), 69-84.
- Ertürk, S. (1988). *Eğitimde program geliştirme*. Ankara: Meteksan A.Ş.
- Güllü, M., Arslan, C., Uğraş, S. ve Görgüt, İ. (2011a). Yeni ortaöğretim beden eğitimi ders programı kazanımlarının değerlendirilmesi. *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*, Özel Sayısı, 122-133.
- Güllü, M., Arslan, C., Görgüt, İ. ve Uğraş, S. (2011b). İlköğretim beden eğitimi dersi (1-8. sınıflar) öğretim programı ve kılavuzunun incelenmesi. *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*, 8(özel sayı), 122-133.
- İlhan, A. ve Gülersoy, A.E. (2019). Evaluation of the achievements of 10th grade geography course curriculum according to the revised bloom taxonomy. *International Journal of Geography and Geography Education*, 39, 10-28.
- Karabacak, K. (2013). Matematik Problemi Çözme Basamaklarının Gösteri Araçları İle öğretiminin Öğrenci Başarısına Etkisi. *Bartın Üniversitesi Eğitim Fakültesi Dergisi*, 2(1), 323-341.
- Krathwohl, D.R. (2002). A revision of Bloom's taxonomy: An overview. *Theory Into Practice*, 41(4), 212-218.
- Krathwohl, D.R. Bloom, B.S. and Masia, B.B. (1964). Taxonomy of educational objectives. The classification of educational goals. Handbook II: Affective domain. New York: David McKay Company Inc.
- MEB (2018). Ortaokul (5-8. Sınıflar) beden eğitimi ve spor dersi öğretim programı. Ankara.
- Önal, H.İ. ve Topçu, Ö.Ş. (2013). Eğitimi gerçekleştirmek: Öğretim programlarında okul kütüphanelerinin yeri. *Bilgi Dünyası*, 14(2), 306-328.
- Özçelik, D.A. (1992). Eğitim programları ve öğretim. Ankara: ÖSYM Yayınları.
- Özdemir, S.M. (2007). *Öğretim ilke ve yöntemleri*. (Edt: Ocak, G.), Ankara: PEGEM-A Yayıncılık.
- Senemoğlu, N. (2010). *Gelişim, öğrenme ve öğretim*. Ankara: PEGEM Akademi.
- Simpson, E.J. (1966). The classification of educational objectives: Psychomotor domain. *Illinois Journal of Home Economics*, 10(4), 110-144.
- Sönmez, V. (2007). *Program geliştirmede öğretmen el kitabı*. Ankara: Anı Yayıncılık.
- Sönmez, V. (2011). *Öğretim ilke ve yöntemleri*. Ankara: Anı Yayıncılık.
- Tahaoğlu, A. (2014). Ortaöğretim Türk edebiyatı dersi öğretim programı kazanımlarının bilişsel açıdan incelenmesi. Yayımlanmamış Yüksek Lisans Tezi. İhsan Doğramacı Bilkent Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara
- Uğraş, S. ve Aral, H. (2018). Ortaokul beden eğitimi ders programındaki kazanımların yenilenmiş Bloom taksonomisine göre değerlendirilmesi. *Journal of Global Sport and Education Research*, 1(1), 33-46.
- Ünsal, S. ve Korkmaz, F. (2017). Felsefe dersi öğretim programındaki kazanımların farklı taksonomiler bağlamında incelenmesi. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 17(2), 948-967.
- Varış, F. (1988). *Eğitimde program geliştirme: Teori ve teknikler* (4.Baskı). Ankara: Ankara Üniversitesi Eğitim Fakültesi Yayınları.
- Yıldırım, A. ve Şimşek, H. (2008). *Sosyal bilimlerde nitel araştırma yöntemleri*. Ankara: Seçkin Yayıncılık.
- Yolcu, H.H. (2019). İlkokul öğretim programı 3 ve 4. sınıf fen bilimleri dersi kazanımlarının revize edilmiş Bloom taksonomisi açısından analizi ve değerlendirilmesi. *İlköğretim Online*, 18(1), 253-262.
- Yüksel, S. (2007). Bilişsel alanın sınıflamasında (Taksonomi) yeni gelişmeler ve sınıflamalar. *Türk Eğitim Bilimleri Dergisi*, 5(3), 479-509.
- Zorluoğlu, S.L., Kızılaslan, A. ve Sözbilir, M. (2016). Ortaöğretim kimya dersi öğretim programı kazanımlarının yapılandırılmış Bloom taksonomisine göre analizi ve değerlendirilmesi. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi*, 10(1), 260-279.
- Zorluoğlu, S.L., Şahintürk, A. ve Bağrıyanık, K.E. (2013). 2013 yılı fen bilimleri öğretim programı kazanımlarının yenilenmiş Bloom taksonomisine göre analizi ve değerlendirilmesi. *Bartın Üniversitesi Eğitim Fakültesi Dergisi*, 6(1), 1-15.

EXPLORING THAI IN-SERVICE SCIENCE TEACHERS UNDERSTANDING AND TEACHING PRACTICE IN STEM EDUCATION

Kotchakorn MANGMEE
Naresuan University, Thailand
kotchakornm60@nu.ac.th

Thitiya BONGKOTPHET
Naresuan University, Thailand
thitiyab@nu.ac.th

ABSTRACT

The ministry of education in Thailand recently launched the new science curriculum in 2017 and STEM Education became the main focus of the curriculum. The Institute for the Promotion of Teaching Science and Technology (IPST) encourages science teachers to integrate STEM education in their classrooms as a way to develop 21st century skills. Little research was done on teachers' understanding and their teaching practices in STEM education. The objective of this study was to explore teachers' understandings and teaching practices in STEM education. Qualitative research was employed as the research methodology. The participants were five secondary science teachers who have experience both in attending STEM education workshops and teaching STEM lessons in their classrooms. The research instruments were a questionnaire and in-depth interviews. The data were analyzed through content analysis and a triangulation technique was used to ensure the credibility of the result.

The data from the questionnaire revealed that four teachers understood the meaning of STEM education, but one teacher had incomplete understanding of it. The STEM activities that teachers implemented in their classrooms included project-based learning, problem-based learning, and laboratory. The learning resources for their STEM activities were books, computers, and natural materials. In order to successfully implemented STEM education in their classroom, the teachers identified that they need budget support from the school to buy learning materials. The teachers believed that problem solving and independent thinking are important elements that should be developed through STEM lessons.

The data analysis from the interviews was used to show how the teachers implemented their STEM integration lessons in their classroom. The results from the interview showed that the teachers rarely designed their own STEM lessons and they usually taught STEM lessons according to STEM's handbook that they received from workshops such as from IPST, Teacher Professional Development Institute (TPDI) or universities. They usually started their STEM lesson with open-ended problem in real life context. Then they tried to encourage and support their students to find the solution to the problem. During solving the problem, they always arranged students to work in pairs or in small groups. At the end of the activity, they asked the students to make a poster or presentation about their solution in front of the classroom. The teachers stated that teaching STEM lessons always took a long period of time.

Keywords: *STEM education, in-service science teacher, understanding and teaching practice in STEM education*

INTRODUCTION

STEM Education is widely interested for fostering students who need to be equipped with 21st century skills (National Research Council, 2011, Stohlmann et al., 2012). The benefits of STEM education have recognized in many countries for quality learning and literacy developing, taking measures to support education (National Research Council, 2014). In 2013, STEM education was introduced in Thailand and STEM Academy was established by the Institute for the Promotion of teaching Science and Technology (IPST) (Chulavattanaol, M., 2013) and the roadmap for STEM Education was developed in the following year. (National STEM Education Center, 2015) In 2015, the IPST STEM online (iSTEM) was established for support STEM education activities. The government policy presented a new economic model titled Thailand 4.0 and policy expected to every Thais for an inclusive society where everyone needs to have personal and social skills to work collaboratively with others from many disciplines. (Government Spokesman Bureau, 2016) In stepping towards education in Thailand 4.0, the Ministry of Education laid out the guidelines for educational reform. Then, in 2017 Thailand revised standard and indicators in science the basic education core curriculum, the new science curriculum and STEM education became the main focus of the curriculum. The revised standard ordered to be used in the first semester 2018. (The Ministry of Education, 2017)

A revision of science learning standards and indicators in Thailand has a new focus on promoting the integration of STEM education in the classroom (Ministry of Education, 2017). Science teachers are confronted with the challenge of how to integrate STEM into their classrooms. Therefore, it is necessary for the teachers to have the potential to managed and teach STEM education in classroom. Teachers should be developed capabilities the

following are 1) Teachers are able to organize learning that integrates 21st century skills, learning tools and learning management strategies into classroom action. 2) Teachers are able to manage teaching by integrating the subjects within and between subjects. 3) Teachers should be managed learning that focuses on doing project-based learning and connecting learning to real life. 4) teachers should be organized learning that encouraged students to practice, thinking and developed skills that conform to basic skills in the 21st century. 5) Teachers could design learning activities that encourage students to share knowledge and work cooperatively. 6) Teachers can design measurements and assessment that support the 21st century skill development. 7) Teachers can use technology, medias as tools to help manage learning. And 7) Teachers could organize learning that encouraged individual person development, according to the potential of the learner. (Charnprasert, S., 2013) However, most teachers do not currently have the knowledge and/or equipment to integrate STEM in the classroom, finding the balance of developing problem-solving skills and teaching science content challenging (Dare, Ellis, & Roehrig, 2014; Wang et al., 2011). Then, the understanding and teaching practices are essential for teachers to integrate STEM education in the classroom.

STEM education is quite new there are many sides of different understanding of STEM education (Bybee, 2010, English, 2016, Prasertsan, 2015). And this different understanding also cause confusion and concern for teachers (Nadelson et al., 2013) while teachers play an important role in driving STEM education to success. Teachers need a fundamental understanding of what STEM encompasses before they can develop curricular materials that meet students' needs. The concept of STEM extends across content areas (e.g., science, math) by encouraging students to develop solutions that incorporate a variety of disciplines (Basham, Israel, & Maynard, 2010). Teachers need to have strong content knowledge and pedagogical expertise in order to teach STEM lessons effectively. (National Research Council, 2011) They require multidisciplinary knowledge across the STEM disciplines and a unique set of pedagogical practices that help design and implement a robust STEM integration curriculum. (Kelley and Knowles 2016) Teaching integrated mathematics and science provides a good basis for teaching integrated STEM education, it depends largely on teachers' understanding of the subject matter and the benefits of using an integrated STEM approach is that many of these practices lend themselves integrated STEM activities. (Pang & Good, 2000).

There is a lack of research on the understanding and teaching practice of Thai teachers about STEM education. In this amount, research of Ladachart, L. et.al. (2018) the informants included 22 teachers who registered to engage in a workshop. They individually completed questionnaires, which consisted of both open-ended and rating scale formats. The research showed that all teachers agreed with STEM education policy, but some of them lacked understanding in STEM education regarding its definition, goal, and approach to teaching and learning. And in research of Klinkajorn, P. et.al. (2018). They conducted a study of understanding of physics teachers regarding teaching and learning according to STEM education. And studying teaching practice of physics teachers, both lesson plans teaching methods and medias in teaching physics in classroom. it was found that the physics teachers did lecture-based in their classrooms and did not employ a student-centred strategy. They focused on solving problem and applying knowledge to daily life and physics teachers partially understood STEM education but they did not know how to apply it in their teaching styles. The result offered some suggestions that physics teachers should develop their knowledge about STEM education and there should be a good plan for physics teachers in developing and implementing STEM in classroom. Therefore, it is necessary to understand teachers' understandings, and practices of integrated STEM instruction.

RESEARCH PURPOSE AND RESEARCH QUESTIONS

The purpose of this study was to explore teachers' understanding and teaching practice of STEM education. The research questions that guided this study were as follows:

1. What are secondary science teachers' understanding of STEM education?
2. What are secondary science teachers' teaching practices of STEM education?

THE STUDY

Qualitative research was employed as the research methodology. The participants in this study were five in-services science teachers who are teaching in 7th to 9th grade in opportunity expansion school in Thailand. All of them had experience both in attending STEM education workshops and teaching STEM lessons in their classrooms. Two teachers had master of education in teaching science degree and bachelor degree in general science, and three teachers had bachelor degree in general science education background. All of The research instruments were an online questionnaire and in-depth interviews. The questionnaire consisted of ten open-ended question about general question consist of gender, grade or subjects of teaching, teaching experience, STEM integration experience before this study and education. The understanding and practice of STEM education. The interview questions were similar to the questions in the questionnaire. The online questionnaire in google form was sent to five in-services science teachers who voluntarily responded to the questions. The in-depth interviews

with five participants lasted about 30 minutes per person.

The data were analyzed through content analysis and a triangulation technique was used to ensure the credibility of the result. The analysis of responses from the open-ended online questions were elaborated through interviews with selected participants in order to probe and clarify their responses. Then, the data sources were compared against each other for that were supported across all three data sources.

FINDINGS

The results of the general information of teachers as shown in [Table 1]

Table 1: The general information of five in-services science teachers.

Name	Grade/Subject of teaching	Teaching experience	STEM integration Experience before this study	Education
Teacher A	7-9 / Science	20 years	1 year	Master degree/ Teaching science Bachelor degree/ General science
Teacher B	7-9 / Science	5 years	2 years	Master degree/ Teaching science Bachelor degree/ General science
Teacher C	7-9 / Science	4 years	1 year	Bachelor degree/ General science
Teacher D	7-9 / Science	2 years	1 year	Bachelor degree/ General science
Teacher E	7-9 / Science	2 years	1 year	Bachelor degree/ General science

The Meaning of STEM education

From the open-ended questions and in-depth interviews, it was found that the teachers in this study defined STEM education as an integrated STEM-disciplines course or a program to solve problems. The example of their ideas is as: *"STEM Education is guidelines for learners to learn and integrated knowledge of science, technology, engineering processes and mathematics. Linking and solving real-life problems."* (Teacher E) And *"STEM Education is an integrated teaching and learning activities that include science, technology, engineering and mathematics."* (Teacher A)

Even though the teachers stated that I have heard the word STEM education before, but one teacher has defined it superficially. This group of teachers has not specified the integration of 4 disciplines, namely science, technology, engineering and mathematics, but consider it a step-by-step learning management focus on problem solving. The example of their ideas is as: *'STEM Education is an integrated teaching in mathematics science and computing for problem solving.'* (Teacher B)

Teaching goals with STEM education.

From the open-ended questions and in-depth interviews, it was found that the in-service teachers indicated that the teaching goal of STEM education is a teaching method that allows students to learn and solve real-life problems. The example of their ideas is as: *"It is a sustainable learning that students can be thought of solving problem as real life."* (Teacher D) and *"Students be learned through various processes from real practice."* (Teacher A) And besides that, teachers think that STEM education will be able to enable students to practice thinking, integration and able to solve problems in real life The example of their ideas is as: *"Teaching STEM that make students have integrated thinking."* (Teacher B) And *"I want my students able to think, analyzed and solving problems and integrated knowledge with other subjects."* (Teacher E)

Teaching experiences in STEM education

From the open-ended questions and in-depth interviews, it was found that all of the teachers had teaching experience in STEM education. Teaching and learning of teachers in STEM education may be project-based learning. Problem-based learning and learning management through integration Teachers tend to focus on students to do or search for knowledge. The example of their ideas is as: *"Yes, I have. STEM is educational management in the form of supplementary support in experimental activities and can actually be used in everyday life, e.g.*

project-based learning or problem-based learning.” (Teacher A) Or teachers start by creating questions in the form of a problem. Then, they activated students think and solving problems by creating work pieces The example of their ideas is as *“I have experience about STEM Education, I will help students about their practice in the thinking process and solving problems and create work pieces.”*(Teacher D) And *“In my classroom, students are separated into groups. Each group is about 4-5 people and think about their own problems. Then, ask students to search for information about their problems and found solutions to solving problems.”* (Teacher E) Each teacher may teach STEM education in different ways. Maybe from the experience gained. Most of the reasons were students development in terms of knowledge, thinking, application of knowledge. Linking knowledge and problem solving

Resources or Medias

The teachers require materials and resources for students to investigate solutions to real world problems through designing work pieces or project-based learning. The example of their ideas is as: *“Natural materials such as bamboo, Mulberry paper craftsmen, flowers, and Straw and Laboratory instruments.”*(Teacher A) *“Natural materials, Computer, Books.”*(Teacher D) *“Computers, Smart phone, Books.”* (Teacher E) The teachers have chosen the same or different STEM education resources or medias. These depended on teaching situation, their own knowledge, ability in teaching and learning experience. Most of teacher have chosen the resources or medias that the school has.

The Needs

In part of the needs for support STEM teaching, the teachers requested to budget and learning material improve their abilities for teaching. The example of their ideas is as: *“I Need budget support from the school to buy learning materials.”*(Teacher B) And *“I Need medias and budget.”*(Teacher C) In addition, some teachers still need learning resources in order to have sufficient resources to teach. And still need professional development to ensure that I have understanding and can teach STEM effectively. The example of their ideas is as: *“I Need budget support from the school to buy learning materials and professional development.”*(Teacher A)

DISCUSSION AND CONCLUSIONS

In this study have shown that the respondents gave different insight into what STEM education and how it was implemented in classroom. The data from the questionnaire revealed that four teachers understood the meaning of STEM education, but one teacher had incomplete understanding of it. According to Ladachart, L. et.al. (2018) the results show that some teachers do not understand the important characteristics of stem studies. The STEM activities that teachers implemented in their classrooms included project-based learning, problem-based learning, and laboratory. The results from the interview showed that the teachers rarely designed their own STEM lessons and they usually taught STEM lessons according to STEM’s handbook that they received from workshops such as from IPST, Teacher Professional Development Institute (TPDI) or universities. In this section, it described in-service teachers’ experiences putting their learning into practice during on their own STEM education learning experiences from earlier workshop in classroom. They usually started their STEM lesson with open-ended problem in real life context. Then, they tried to encourage and support their students to find the solution to the problem. During solving the problem, they always arranged students to work in pairs or in small groups. At the end of the activity, they asked the students to make a poster or presentation about their solution in front of the classroom. The learning resources for their STEM activities were books, computers, smart phone and natural materials. The teachers believed that problem solving and independent thinking are important elements that should be developed through STEM lessons. In order to successfully implemented STEM education in their classroom, the teachers identified that they need budget support from the school to buy learning materials and professional development. The results may come from the characteristics of the teacher when they receive the policy from the revised standard. Policies can cause anxiety. The requirement of budget media, resources, and professional development. It shown that teachers want to teach STEM education effectively. According to Khumwong et.al (2017) it was shown that, the most teachers are concerned about teaching and learning in accordance with STEM education. Most of the concerns are related to their knowledge and ability in teaching practice.

The instructional in STEM integration, connections between teacher understanding for integration and teachers’ subsequent classroom teaching practices, and also ways in which teachers view STEM integration. Experience with teaching integrated curriculum built skill and comfort for creating future integrated lessons. Effective STEM education is vital for the future success of students. The preparation and support of teachers understanding and teaching practice of integrated STEM education is essential for achieving these goals.

IMPLICATIONS

In addition, the teachers’ STEM integration understanding and classroom practices focused on certain qualities of STEM integration, such as problem solving, application, and engineering design. However, when teachers focus

on problem solving, application, and engineering design in their STEM integration lessons. If we want STEM integration to mean more than problem solving, project-based learning, application, and engineering design in classroom. There is no doubt that teachers will need a lot of support to help them with more ideas for implementing STEM integration in classroom.

REFERENCES

- Bybee, R. W. (2010). Advancing STEM Education: A 2020 Vision. *Technology and Engineering Teacher*, 70(1): 30-35.
- Charnprasert, S. (2013). *Learning management in science and the required skills in the 21st century*. IPST, 42(185), 14-18. [in Thai]
- Chulavatnatol, M. (2013). *STEM education Thailand and STEM ambassadors*. IPST, 42(185), 10-13. [in Thai]
- Cohen et al., (2018). *Research method in education* (8nd ed.). Talor & Francis: Talor& Francis group.
- Dare, Emily A.; Ellis, Joshua A.; and Roehrig, Gillian H. (2014) "Driven by Beliefs: Understanding Challenges Physical Science Teachers Face When Integrating Engineering and Physics," *Journal of Pre-College Engineering Education Research (J-PEER)*, 4(2).
- Education International, 25(3), 246–258
- English, L. D. (2016). STEM Education K-12: Perspectives on Integration. *International Journal of STEM Education*, 3(3).
- ennedy, T., & Odell, M. (2014). Engaging students in STEM education. *Science*
- Government Spokesman Bureau, The Secretariat of the Prime Minister. (2016). Startup Thailand 4.0. Thai Khu Fah Journal, (33). (in Thai)
- James D. Basham., Maya Israel., and Kathie Maynard.,(2010). An Ecological Model of STEM Education: Operationalizing STEM for All. *Journal of Special Education Technology*. 25(3).
- Kennedy, T., & Odell, M. (2014). Engaging students in STEM education. *Science Education International*, 25(3), 246–258
- Khumwong, Pinit., Pruekpramool, Chaninan., and Phonphok, Nasan. (2017). The Impact of STEM Education Professional Development Workshop on Secondary Teachers' STEM Teaching Efficacy. *Journal of Education, Mahasarakham University*, 11(3): 108-121. [in Thai]
- Klinkajorn, P., Yutakom, N., Virapassapong, T. (2018), Physics Teachers' Understanding and Teaching practice in Accordance with Science, Technology, Engineering and Mathematics (STEM) education in a Pre-Engineering School. *Journal of Graduate Studies Valaya Alongkorn Rajabhat University*. 12(2). [in Thai]
- Ladachart, L., Phothong, W., Rittikoop, W., and Ladachart, L. (2018). Teachers' understanding and views about STEM education and engineering design. *Silpakorn university Journal*, 39(3). [in Thai]
- Loucks-Horsley, S., Love, N., Stiles, K., Mundry, S., & Hewson, P. (2010). *Designing professional development for teachers of science and mathematics* (3nd ed.).Thousand Oaks, CA: Corwin Press.
- Ministry of Education. (2017). *Basic Education Curriculum 2008*. Bangkok: Kurusapa Ladprao Publishing.
- Nadelson, L. S., Callahan, J., Pyke, P., Hay, A., Dance, M., and Pfiester, J. (2013). Teacher STEM Perception and Preparation: Inquiry-Based STEM Professional Development for Elementary Teachers. *The Journal of Educational Research*, 106(2): 157-168.
- National Research Council [NRC]. (2011). *Successful K-12 STEM education: Identifying effective approaches in science, technology, engineering, and mathematics*. Washington: National Academies Press
- National Research Council. (2014). *STEM integration in K-12 education: Status, prospects, and an agenda for research*. Washington, DC: National Academy Press.
- National STEM Education Center. (2015). Manual network STEM Education. Bangkok: The Institute for the Promotion of Teaching Science and Technology. Ministry of Education. [in Thai]
- Pang, J., & Good, R. (2000). A review of the integration of science and mathematics: Implications for further research. *School Science and Mathematics*, 100(2).
- Prasertsan, S. (2015). *STEM Education: Thai Education's New Challenges*. Songkhla: Numsilp Advertise. [in Thai]
- Stohlmann, M., Moore, T. J., and Roehrig, G. H. (2012). Considerations for teaching integrated stem education. *Journal of Pre-College Engineering Education Research*, 2(1), 28–34.
- Wang, Hui-Hui, Moore, Tamara J., Roehrig, Gillian H., and Park, Mi Sun. (2011). "STEM Integration: Teacher Perceptions and Practice," *Journal of Pre-College Engineering Education Research (J-PEER)*, 1(2).

FACTORS ANALYSIS OF DIGITAL LEADERSHIP OF ADMINISTRATORS IN EDUCATIONAL OPPORTUNITY EXPANSION SCHOOLS

Panumas CHANSRI

Faculty of Education, Khon Kaen University, Thailand

Panumas.chansri1982@gmail.com

Dawruwan THAWINKARN*

Faculty of Education, Khon Kaen University, Thailand

dawtha@kku.ac.th

*Corresponding Author

Abstract

This research objective to investigate factors of digital leadership of administrators in educational opportunity expansion schools. The research is a quantitative research form document and related research confirm the components by the 5 experts. The research instrument was a five scale rating questionnaire with reliability 0.976. The sample size for this study included 300 school administrators and teachers from educational opportunity expansion schools who had been selected by using the stratified random sampling technique. Factor analysis of digital leadership in educational opportunity expansion schools was conducted by using Mplus for Windows. The results are as follows:

The results of confirmative factor analysis the digital leadership of administrators in educational opportunity expansion schools consisted of 4 principle components: 1) Digital communication 2) Building the Learning Style for digital Literacy 3) Professional development and 4) Creating digital culture revealed that the model significantly correlated with the empirical data. The consistency index value was chi-square= 41.528, $df=30$, P-Value = 0.0785, TLI = 0.986, CFI = 0.993, RMSEA = 0.036, and SRMR = 0.024.

Keywords: factors analysis, digital leadership , administrators, educational opportunity expansion schools

Introduction

Administration is an important tool for advancing education, for setting the course to respond to change, and for developing Human Resources, which can keep pace with the changes. Hence, administrators must possess knowledge and leadership skills that are current in order to deal with transitions and on-going changes (Dawruwan Thawinkarn, 2019). Additionally, Digital leadership is an important skill that indicates how well a leader is able to leverage technologies to achieve operational and educational outcomes. Digital leadership can include promoting and supporting integrated learning management in classrooms, as well as using technology to carry out a school's administrative and management duties. School administrators should encourage the use of digital knowledge and foster its exchange within their organizations with the goal of usefully facilitating and developing operational processes and learning management, which are appropriate to their current situations and changes (Sukanya Chaemchoy, 2018). Digital technology, including media and equipment, increases level of convenience in classrooms since it has been purposefully designed to facilitate and respond to different needs of learners. Hence, with digital technology, the learning process is more convenient and students have more opportunities to develop their skills and knowledge. The researcher is interested in the context of the educational opportunity expansion school, which can provide support from early childhood education to Grade 9 (Mattayom 3) and can assist in improving access to basic education for those underprivileged students, who live in remote areas where there is a lack of wireless Internet access.

In fact, outdated computers, which are unable to support any new programs, and old classroom equipment are commonly seen in schools in remote areas. Hence, the administrators of the educational opportunity expansion schools should consistently challenge themselves with self-improvement, should integrate technology to reach their vision and to manage learning, and should encourage cooperation among students and teachers in the areas of solving problems, creating, and developing knowledge, which is practical and responds to the needs and the contexts of the learners, teachers, the community, and to the needs of the related sections. Importantly, digital technology should be included in the Vision statement, the Mission statement, and in the objectives of an educational organization (Schrump & Levin, 2009). Moreover, within the organizations, the school administrators should serve as role-models for the teachers and staff members in the area of utilizing digital technologies.

Hence, it is important to investigate the factors affecting the administrators' levels of digital leadership in the educational opportunity expansion schools in order to provide more effective school management. The results of this study can provide practical guidelines for development of school administrators, teachers, and staff members in the application of digital technology in learner-centered educational management and in the operation of an organization, which is appropriate in the digital age. Moreover, the results of this study can provide information, which may be useful for the improvement of the organization, particularly for the educational opportunity expansion schools.

Objective

To investigate the factors of digital leadership of the administrators in the educational opportunity expansion schools.

Concept Framework

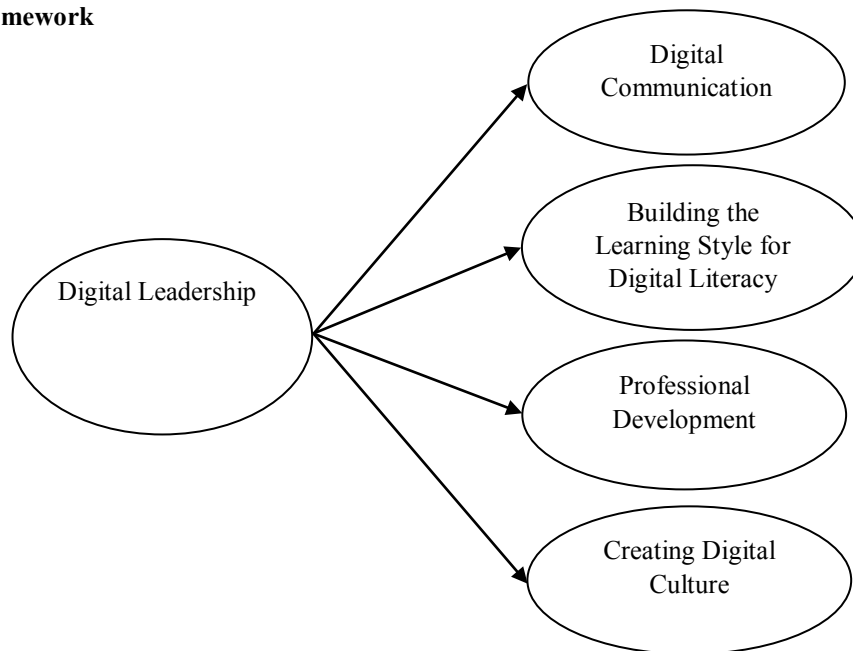


figure 1 Concept Framework

Research Methodology

The population of this study consisted of 3,952 administrators and teachers from 213 educational opportunity expansion schools and was conducted during the 2018 Academic Year. The function of parameter estimation in factor analysis (Hair, et al., 2010) was used to identify the sample size for this study, which was 300. After that, Multi-stage sampling was used to recruit the participants.

A questionnaire with a 5-point rating scale was used in this study. The validity of the instrument was found to be 0.976. For data analysis, the M-plus 7.0 program was used to identify the inferential statistics shown in Table 1.

Table 1 The variables in this study are presented.

Digital Leadership factors	Sub-factors/indicators
1. Digital Communication	1.1 Communication planning 1.2 Creating an affiliate network 1.3 Communication of the image through the media
2. Building the Learning Style for Digital Literacy	2.1 Manage teaching by digital technology 2.2 Provide an environment that is conducive to learning 2.3 Measurement and evaluation with technology
3. Professional Development	3.1 Master in using digital technology 3.2 teamwork 3.3 Create opportunities for learning in digital technology
4. Creating Digital Culture	4.1 Digital vision creation 4.2 Collaboration using digital technology

RESULTS

In order to identify the factors and indicators of the administrators' levels of digital leadership in the educational opportunity expansion schools, a synthesis of factors was used to examine the documents in this study and previous research studies, which were related. The results revealed that there were four principle components: 1)

Digital Communication, which consisted of 3 sub-factors and 10 indicators; 2) Building the Learning Style for Digital Literacy, which consisted of 3 sub-factors and 10 indicators; 3) Professional Development, which consisted of 3 sub-factors and 10 indicators, and 4) Creating Digital Culture, which consisted of 2 sub-factors and 10 indicators. In short, the four principle components found in this study consisted of 11 sub-factors and 40 indicators. The factor loadings for all four principle components, the 11 sub-factors, and the 40 indicators were found to be > 0.70 , > 3.00 , and > 0.30 , respectively. This indicated that the development model for the digital leadership of the administrators in the educational opportunity expansion schools was consistent with the empirical data as shown in Table 2 and Table 3 below.

Table 2 The results of comparative fit index of the model for the indicators analysis of the digital leadership of the administrators in the educational opportunity expansion schools.

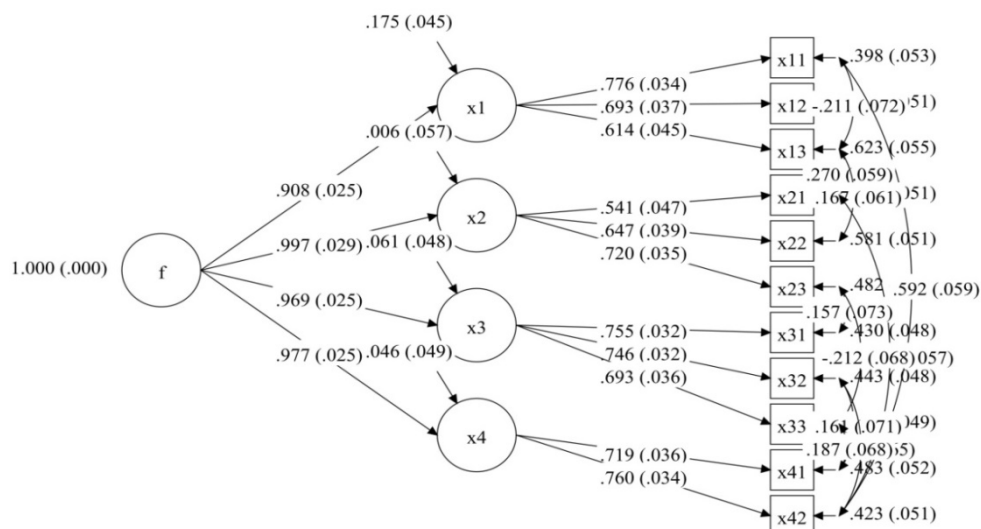
Model fit indexes	standard	Analysis results	result
χ^2 - Test	insignificant $P > 0.05$	$\chi^2 = 41.528$ Df = 30 P-Value = 0.0785	pass
χ^2 / Df	< 2.00	1.384	pass
RMSEA	≤ 0.05	0.036	pass
SRMR	≤ 0.08	0.024	pass
CFI	≥ 0.95	0.993	pass
TLI	≥ 0.95	0.986	pass

Table 3 The results of confirmatory factor analysis of the principle components of digital leadership of administrators in Educational opportunity expansion schools

The principle components of digital leadership	Factor loading			(R^2)	Factor Scores (FS)
	β	S.E.	t		
1. Digital Communication	0.908	0.025	36.368	0.825	0.019
2. Building the Learning Style for Digital Literacy	0.997	0.029	34.979	0.994	0.017
3. Professional Development	0.969	0.025	39.397	0.939	0.020
4. Creating Digital Culture	0.977	0.025	38.914	0.954	0.022

From Table 3, the confirmatory factor analysis of the principle components of digital leadership, the results of the factor scores ranked from the highest to the lowest were as follows: 1) Building the Learning Style for Digital Literacy ($x_2 = 0.997$ and $R^2 = 0.994$), 2) Creating Digital Culture ($x_4 = 0.977$ and $R^2 = 0.954$), 3) Professional Development ($x_3 = 0.969$ and $R^2 = 0.939$), and 4) Digital Communication ($x_1 = 0.908$ and $R^2 = 0.825$).

The model for the factor analysis of the digital leadership of the administrators in the educational opportunity expansion schools is shown in figure 2 below.



$$\chi^2 = 41.528, Df = 30, \chi^2 / Df = 1.384, P\text{-Value} = 0.0785, \\ RMSEA = 0.036, SRMR = 0.024, CFI = 0.993, TLI = 0.986$$

figure 2 The model for the factor analysis of the digital leadership of the administrators in the educational opportunity expansion schools

CONCLUSION AND DISCUSSION

In this study, previous studies and theory related to digital leadership from both national and international scholars were carefully reviewed in order to identify principle components, sub-factors, and indicators, as well as to provide definitions of the key terms that can be measured. Furthermore, in developing the research instrument, the researcher constructed the items on the questionnaire, which conformed to the definitions of the key terms. The items were examined by 5 experts in the field, and until all of the items had been deemed as valid, adjustments were made. Then, the sampling process was completed in accordance with the procedures of the research methodology. The results showed that there were 4 principle components of digital leadership for the administrators in the educational opportunity expansion schools as follows: 1) Digital Communication, which consisted of 3 sub-factors and 10 indicators; 2) Building the Learning Style for Digital Literacy, which consisted of 3 sub-factors and 10 indicators; 3) Professional Development, which consisted of 3 sub-factors and 10 indicators; and 4) Creating a Digital Culture, which consisted of 2 sub-factors and 10 indicators. The result of goodness of fit revealed that the measurement model for indicators for digital leadership of the administrators in the educational opportunity expansion schools was at an acceptable level. In conclusion, the measurement model for indicators of digital leadership for administrators in the educational opportunity expansion schools had conformed to the empirical data. The results were found to be similar to those of a study of Hong Kong Education City (2005), which investigated the technology leadership of principals and suggested that it consisted of the 8 following components: 1) technological integration; 2) planning and designing learning experience and environment; 3) teaching, learning, and curriculum; 4) evaluation and assessment; 5) productivity and professional practice; 6) social, legal, ethnic, and personnel issues; 7) policy implementation and budget allocation for technology; and 8) vision. This is also related to the framework put forth by Sheninger (2014), who introduced the 7 pillars of digital leadership in education as follows: 1) communication, 2) public relations, 3) branding, 4) student engagement and learning, 5) professional development, 6) re-envisioning learning spaces and environments, and 7) opportunities to seek digital resources and to make improvements, and the result of this research related to the study of Dawruwan Thawinkarn (2017) the exploratory factor analysis indicated that the technology leadership was composed of 6 factors : technological vision, technological support, promoting technology in teaching, administrative management technology, assessment and evaluation technology, and ethics technology.

Acknowledgement

This work was supported by the Graduate School Khon Kaen University and the Center for research on plurality in the Mekong Region (CERP).

Suggestions

Suggestions for research implementation

The results from this study showed that building the learning style for digital literacy had achieved the highest factor loading. To foster digital leadership, not only should school administrators or related sections encourage the use of technology when designing learning process and developing creative learning innovation, but autonomous learning skills and comprehensive knowledge, which are grounded in the learners' experiences both inside and outside classroom setting, should also be promoted.

Suggestions for further research

The results from this study revealed that building digital learning style had achieved the highest factor loading. Hence, when conducting future research, attention should be paid to this factor in order to be better able to understand and apply it.

REFERENCES

- Dawruwan Thawinkarn. (2017). Factors Analysis of Technology Leadership in Thailand Royal Awarded School. **Turkish online journal of education technology, special issue for INTE 2017**, November 2017 : 7-15.
- Dawruwan Thawinkarn. (2019). **Science and Art in Educational Administration**. Khon Kaen: Khon Kaen University.

- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). **Multivariate data analysis: A global perspective**. Upper Saddle River, NJ: Pearson.
- Hong Kong Education City. (2005). **Chief Executive's Award for Teaching Excellence Teachers Association : ATETA and The Hong Kong Association for Computer Education : HKACE**. Retrieved January 22, 2019, from <http://www.hkedcity.net/article/ec-hot-post/23apr10/>.
- Schrum, L., & Levin, B., B. (2009). **Leading 21st century schools : Harnessing technology for engagement and achievement**. California: United States of America.
- Sheninger, E.(2014). **Digital Leadership: Changing paradigms for changing times**. California: United States of America.
- Sukanya Chaemchoy. (2018). **School administration in the digital age**. Bangkok: Chulalongkron University.

FACTORS IN THE ABILITY OF (SELF) REFLECTION AS A TOOL TO COPE WITH THE DEMANDING PRACTICE OF SOCIAL WORK WITH VULNERABLE CHILDREN AND THEIR FAMILIES

Radka POLÁKOVÁ and Marek MIKULEC

Faculty of Social Studies, University of Ostrava, Czech Republic

radka.polakova@osu.cz, marek.mikulec@osu.cz

ABSTRACT

In today's social work, which can be characterised by reductionism, bureaucratisation, and the growing complexity of clients' life situations, the importance of reflection ability as a tool to deal with uncertainty, worries about making mistakes, and the ability to work with messy and complex client problems, is growing. The paper aims to determine, on the basis of a factor analysis of the GRAS and SRIS inventories, factors of (self) reflection of the ability of Czech social workers working with vulnerable children and their families, and also to map the (self) reflection ability of social workers working with vulnerable children in defined factors. The objective of the paper was met using a quantitative research strategy, where 145 inventory series were collected, which were subsequently analysed using an exploratory factor analysis and methods of descriptive statistics. The following factors with the lowest average score across both questionnaires and their combinations were identified: Understanding (and Empathy) in relation to others, Understanding to oneself, Meaningfulness and Self-awareness. Education of Czech social workers in reflection ability should focus on the above factors.

INTRODUCTION

In a postmodern society that can be characterised by uncertainty and fragmentation, and in a contemporary society that is heavily influenced by neo-liberal political ideology (Ruch, 2005), some key institutions such as family continue to fail. Assistance in the form of social work is thus becoming particularly important. In addition, the heterogeneity of families and society as a whole is increasing and the complexity of problems faced by social workers is also growing (Gardner, 2006). In response to the above, two characteristics prevail in today's social work: a) conceptualisations of the individual, which are reductionist and privileged rational understanding of human behaviour; b) bureaucratic responses to the uncertainty, complexity, risk, and anxiety that are inherent in social work practice (Ruch, 2005). Ferguson (2005) adds that a striking feature of contemporary child protection discourse is its rationality; the system errors are thus corrected by seeking further bureaucratic solutions, laws, procedures, and methodologies. The prevailing focus on performance constitutes an environment where everything needs to be done more and more efficiently in the terms of visibility and measurability of the results. Only a small amount of space is given to the process and associated feelings, to the space for reflection, to the in-depth relationship with the client, and work with a client driven by the client's needs. In this context, Kontt & Scragg (2016) talk about marginalization of the importance of building a relationship with the client and emphasising the importance of the social worker's technical competence. Forrester et al. (2008) point to the concept of professional danger, which is based on an assumption of great demands in terms of assessing the client's life situation and limiting the danger to a client that are placed on a social worker. A social worker must be oriented in highly complex situations and evaluate, for example, the need to remove the child from a family in a situation where he/she has no space for establishing a relationship with the client and reflecting his/her interventions; there is a risk that the child will remain in the potentially threatening situation.

As a result of the above social workers can feel the need to constantly justify what they are doing in response to uncertainty (Ferguson, Lavalette, Mooney, 2002). It has major implications on the ability to act according to the social workers' personal and professional values as well as the job satisfaction and levels of anxiety (Gardner, 2009). This results in strong feelings of helplessness, failure and frustration that social workers experience as a result of their actions (Sanaya, 2012). In the agenda of social and legal protection of children, the aforementioned is further accentuated by: a) working with the difficult life situation of, in many cases, traumatised children who may feel distrust toward adults and may have educational problems; b) the fact that child protection service workers are aware of their "*schizophrenic role*" in the assessment of child abuse or neglect, when they need to retain the trust of the client on the one hand and, on the other collect evidence for the potential need to "*remove a child from a family*"; c) the existence of a series of inconsistent methodological guidelines from various institutions and the absence of methodological guidelines on topics such as the situation of unwanted children; d) the ambiguous definition of concepts such as "*a vulnerable child*" or "*remediation of the family*" (Glumbíková, Vávrová, Nedělníková, 2018).

The above information requires (new) competences on the part of professionals in social work that are connected to the application of the social work practice, to its reflection. Therefore, this paper aims to determine the (self) reflection ability of Czech social workers working with vulnerable children and their families based on factor analysis of internationally used inventories, and to map the (self) reflection ability of social workers working with

vulnerable children in defined factors.

THEORETICAL FOUNDATION

Reid (2011) points out that there is a wide range of views of reflexivity.¹ This paper views reflexion ability according to Sanaya and Gardner (2012), who consider (critical) reflexion as a process by which one may identify the assumptions governing one's actions, question them, and develop alternative behaviours; or according to D'Cruz et al. (2004), who considers reflexivity as a form of destabilisation or questioning of what we consider to be knowledge and the everyday defence of knowledge. Reflexivity is thus a process of observing from outside social and cultural artefacts and forms of thinking that saturate the practice of social work as well as questioning and challenging processes that make sense to the world. Graham et al. (2015) also define reflexivity in these intentions, when they consider it one's own capacity of self-awareness and sense of self in helping relationships in the practice of social work.

Individual authors differ in their theories in terms of what components the critical reflexivity consists. Individual components require special skills/competencies on the part of the reflecting individual.

Finlay and Gough (2003) present five categories of reflexivity/reflexivity: 1/ reflexivity as introspection (exploring one's own experiences and meanings); 2/ reflexivity as intersubjective reflection (includes mutual meanings in established relationships); 3/ reflexivity as mutual collaboration (contains diverse perspectives and conflicting positions); 4/ reflexivity as a social critique (contains issues of power and inequalities); 5/ reflexivity as an ironic deconstruction (contains the deconstruction of language and deals with ambiguity or lack of clarity of meanings in the language). Rigg and Trethan (2008) describe that critical reflexivity consists of an analysis of beliefs and convictions (our ideas, values, cultural practices, social structures, etc.); from contextual awareness; from imaginative speculation (i.e., the ability to think about alternative ways of viewing a given phenomenon) and from reflective scepticism (i.e., questioning of universal truths through all three of the above activities). The Council on Social Work Education (2012) also notes that critical thinking among social workers requires a combination of several abilities: to be able to distinguish, evaluate, and integrate multiple knowledge resources, including research-based knowledge, to apply wisdom; to analyse models of evaluation, prevention, and intervention; and to demonstrate effective oral and written communication skills when working with individuals, families, groups, organisations, communities, and colleagues. Van Woerkon and Croon (2008) distinguish within the framework of critical reflexivity criteria the following: *critical option sharing, feedback request, challenging group-think, openness to errors, experimentation, and career awareness*. Koohle et al. (2011) distinguish between the following aspects of the reflective process: reviewing the experience (the ability to describe events/situations adequately, the ability to identify essential elements and to describe own thoughts and feelings), critical analysis (the ability to ask searching questions, the ability to answer searching questions and being aware of references in use), reflective outcome (the ability to draw conclusions, the ability to describe concrete learning goals and plans for future action). Also Payne (2005, p. 37) defines the principles/categories of critical practice as: identification of situations of openness and uncertainty as an opportunity for creative practice; finding opportunities to transform personal empowerment towards collective relationships and social change; sensitivity to language use; awareness of the power of those who decide on different agendas; examining the content and methods of decision-making and assessing of the client's life situation; exploring the ideology from which different services stem; perception of different perspectives in the client's life situation; contextualizing of findings through understanding the theoretical and value positions; development of an overview of processes and events available to everyone; as well as assuring that everyone involved understands the given perspective and context.

METHODOLOGY

The paper presents partial data from the 2018 research carried out as part of a student grant competition titled Critical Reflexivity of Social Workers Dealing with Vulnerable Children and Their Families. The research consisted of the sequential synergy of qualitative and quantitative research. The quantitative research aimed to map the (self) reflection ability of social workers working with vulnerable children and their families and to determine (on the basis of factor analysis) the factors of (self) reflection ability in the social workers. The data was collected using an online questionnaire survey. For the selection of respondents, we used a purposeful criterion sampling. The criteria for this selection were set as follows: a) Active implementation of field social work with vulnerable children and their families in a social activation service for families with children, b) Length of experience in social work with vulnerable children and their families at a minimum of 12 months, c) Membership in a particular organisation, d) Voluntary participation in research. Altogether 260 organisations throughout the Czech Republic providing social activation services for families with children according to the Social Services Providers' Registry (2018) were asked to participate. In total we have received 145 series of completed inventories.

¹ In this paper, however, we will conceive the terms reflexivity and reflectivity in accordance with Fook (2016) and Fook and Gardner (2007) as interchangeable.

The questionnaire survey was completely anonymous, and the respondents were informed about the research objectives and the further data handling process.

There are several tools used abroad for detecting reflection and self-reflection ability. They are: GRAS (Groningen Reflexion Ability Scale; Aukes, 2008), SRIS (Self Reflection and Insight Scale; Grant, 2002), OSCE (Objective Structured Clinical Examination; Harden, Gleeson, 1979), and Critical Incident Questionnaire (Gilstrap, Dupree, 2002). In our research, we have chosen to use only GRAS and SRIS, since OSCE and the Critical Incident Questionnaire require an assisted administration. Both questionnaires were translated using a method of double-blind translation, which consisted of three basic steps: a) translation from English into Czech, b) reverse translation from Czech to English with respect to possible meaningful shift of statements in inventories, c) piloting of a translated questionnaire with respect to comprehensibility of questions (n = 5 social workers working with vulnerable children and their families).

The GRAS inventory consists of 23 items² measured on five-point Likert scales. Five items (G3, G4, G12, G17, G21) are differently worded or negated. The SRIS inventory consists of 20 items³ on five-point Likert scales with scores ranging from 'totally disagree' to 'totally agree'. Eight items (S1, S2, S4, S8, S11, S13, S14, S17) are reversed. We used a simple instruction for administration of questionnaires: *"How do you learn and function in social work practice with vulnerable children and families?"*

Data was analysed using the methods of descriptive statistics, Sperman correlation coefficient at significance level 0.05, and exploration factor analysis. As part of the answer analysis in both administered questionnaires, we excluded the GRIS G1 and G14 questions, since there was no difference in respondents' answers.

As for the used research methodology it is necessary to reflect its limits, which are given by: a) random selection of the research sample; b) use of the unassisted completion of the questionnaire, where it is not possible to explain individual statements in the inventories to respondents; c) possible social desirability of respondents in relation to inventory issues; and d) focusing on mapping the state of reflection and self-reflection without further analysis of influences and causes (e.g., length of social workers' practice, age, family situation, methodological leadership, etc.) related to this ability.

THE RESEARCH RESULTS AND DATA INTERPRETATION

The research was attended by 145 respondents. The average overall score of respondents in GRAS was 49.4 (the highest score 69 and the lowest 39), with the standard deviation being 5.2. The average overall score of respondents in SRIS was 58.3 (the highest score 72 and the lowest score 31), with the standard deviation being 5.9.

Based on factor analysis, we determined the following factors in each questionnaire:

GRAS (Gronigen Reflection Ability Scale) Factors:

- Understanding the effects of emotions on behaviour (G2, G6, G20, G23)
- Understanding (and empathy) in relation to others (G10, G13, G22)
- Understanding oneself (G5, G7, G19)

² 1. I want to know why I do what I do; 2. I am aware of the emotions that influence my behaviour; 3. I do not like to have my standpoints discussed; 4. I do not welcome remarks about my personal functioning; 5. I take a closer look at my own habits of thinking; 6. I am able to view my own behaviour from a distance; 7. I test my own judgments against those of others; 8. Sometimes others say that I overestimate myself; 9. I find it important to know what certain rules and guidelines are based on; 10. I am able to understand people with a different cultural/religious background; 11. I am accountable for what I say; 12. I reject different ways of thinking; 13. I can see an experience from different standpoints; 14. I take responsibility for what I say; 15. I am open to discussion about my opinions; 16. I am aware of my own limitations; 17. I sometimes find myself having difficulty in illustrating an ethical standpoint; 18. I am aware of the cultural influences on my opinions; 19. I want to understand myself; 20. I am aware of the possible emotional impact of information on others; 21. I sometimes find myself having difficulty in thinking of alternative solutions; 22. I can empathize with someone else's situation; 23. I am aware of the emotions that influence my thinking.

³ 1. I don't often think about my thoughts; 2. I am not really interested in analyzing my behaviour; 3. I am usually aware of my thoughts; 4. I am often confused about the way that I really feel about things; 5. It is important for me to evaluate the things that I do; 6. I usually have a very clear idea about why I have behaved in a certain way; 7. I am very interested in examining what I think about; 8. I rarely spend time in self reflection; 9. I'm often aware that I am having a feeling, but I often don't quite know what it is; 10. I frequently examine my feelings; 11. My behaviour often puzzles me; 12. It is important to me to try to understand what my feelings mean; 13. I don't really think about why I behave in the way that I do; 14. Thinking about my thoughts make me more confused; 15. I have a definite need to understand the way my mind works; 16. I frequently take time to reflect on my thoughts; 17. Often I find it difficult to make sense of the way I feel about things; 18. It is important to me to be able to understand how my thoughts arise; 19. I often think about the way I feel about things; 20. I usually know why I feel the way I do.

- Openness (G3, G4, G8, G15)
- Critical thinking (G9, G11, G16, G18)
- Flexible thinking (G12, G17, G21)

SRIS (Self Reflection and Insight Scale) Factors

- Meaningfulness (S1, S2, S4, S8, S9, S11, S13, S14, S17)
- Self-understanding (S3, S12, S15, S16, S18, S19)
- Self-criticism (S7, S10, S5)
- Self-awareness (S6, S20)

Simultaneously, we also carried out factor analysis of both questionnaires. Some items (S16, S6, G21, G17, S5) were identified as separate factors in the analysis. For these factors we performed a subsequent analysis based on the previous factor analysis within individual questionnaires and assigned them to the identified factors.

Factors in GRAS and SRIS

- Self-reflection (G5, G7, G19, S1, S2, S8, S12, S15, S16, S18, S19)
- Self-understanding (G8, G12, S4, S9, S11, S13, S14, S17, S20, S6)
- Self-awareness (G2, G6, G20, G23, S3)
- Flexibility of thinking (G10, G13, G22, G21, G17)
- Critical thinking (G9, S7, S10, S5)
- Openness (G3, G4, G15)
- Meaningfulness (G11, G16, G18)

Table 1: GRAS Factors

Factors	Average score (aver./items)	Standard deviation	Min.	Max.
Understanding the effects of emotions on behaviour (G2, G6, G20, G23)	6.1 (1.5)	1.6	4	11
Understanding (and empathy) in relation to others (G10, G13, G22)	5 (1.7)	1.5	3	12
Understanding oneself (G5, G7, G19)	5.3 (1.8)	1.8	3	14
Openness (G3, G4, G8, G15)	12.5 (3.1)	2.1	5	18
Critical thinking (G9, G11, G16, G18)	7.1 (1.8)	1.7	4	12
Flexible thinking (G12, G17, G21)	11 (3.7)	1.9	6	15

Within the determined factors, we proceeded to analyse the achieved scores. The average score for each GRAS factor, the standard deviation, and the minimum and maximum scores are shown in Table 1: GRAS Factors. The average score achieved was divided by the number of questions (items) for greater relevance of the data. From the above table it is apparent that the highest score was achieved by social workers in the Openness and Flexible thinking factors. The lowest score was achieved by social workers in the factors of Understanding (and empathy) in relation to others and Understanding the effects of emotions on behaviour. The average score for each SRIS factor, the standard deviation, and the minimum and maximum scores are shown in Table 2: SRIS Factors. The average score achieved was divided by the number of questions (items) for greater relevance of the data.

Table 2: SRIS Factors

Factors	Average score (aver./items)	Standard deviation	Min.	Max.
Meaningfulness (S1, S2, S4, S8, S9, S11, S13, S14, S17)	35.4 (3.9)	6	19	45
Self-understanding (S3, S12, S15, S16, S18, S19)	11.9 (2)	3.6	6	24
Self-criticism (S7, S10, S5)	7.3 (2.4)	2.1	3	12
Self-awareness (S6, S20)	3.7 (1.9)	1.1	2	8

From the table above it is apparent that the highest score was achieved by social workers in the Meaningfulness factor. The lowest score was achieved by social workers in the factor of Self-awareness. The average score for each factor of GRAS and SRIS, the standard deviation, and the minimum and maximum scores are shown in Table 3: GRAS and SRIS Factors.

Table 3: GRAS and SRIS Factors

Factors	Average score (aver./items)	Standard deviation	Min.	Max.
Self-reflection (G5, G7, G19, S1, S2, S8, S12, S15, S16, S18, S19)	27.8 (2.5)	3.9	14	43
Self-understanding (G8, G12, S4, S9, S11, S13, S14, S17, S20, S6)	35.0 (3.5)	4.6	24	46
Self-awareness (G2, G6, G20, G23, S3)	7.8 (1.6)	2.1	5	14
Flexibility of thinking (G10, G13, G22, G21, G17)	11.6 (2.3)	1.8	7	18
Critical thinking (G9, S7, S10, S5)	8.8 (2.2)	2.4	4	15
Openness (G3, G4, G15)	8.7 (2.9)	1.7	4	13
Meaningfulness (G11, G16, G18)	5.6 (1.9)	1.5	3	10

From the table above it is apparent that the highest score was achieved by social workers in the factors of Openness and Self-understanding. The lowest score was achieved by social workers in the factors of Meaningfulness and Self-awareness.

DISCUSSION

Within the paper, we defined the reflection ability factors in Czech social workers working with vulnerable children and their families and mapped the reflection ability of social workers working with vulnerable children in defined factors. The GRAS questionnaires identified the following factors: Understanding the effects of emotions on people's behaviour (G2, G6, G20, G23); Understanding (and empathy) in relation to others (G10, G13, G22); Self-understanding (G5, G7, G19); Openness (G3, G4, G8, G15); Critical thinking (G9, G11, G16, G18), and Flexible thinking (G12, G17, G21). The average score in the questionnaire was 49 and the standard deviation was 5.2. Andresen et al. (2014) carried out the GRAS factor analysis with 361 medical students. Using factor analysis, the authors identified three main factors in the inventory – *self-reflection* (G1, G2, G5, G6, G7, G9, G13, G18, G19, G23), *empathetic reflection* (G8, G10, G12, G16, G20, G22), and *reflective communication* (G3, G4, G11, G14, G15, G17, G21). The average score in the questionnaire was 88 (standard deviation was 11.42). If we compare our research with Andresen et al. (2014), we can state that medical students reached a higher average score with a higher standard deviation in the GRAS questionnaire than Czech social workers working with vulnerable children and their families. The factors we determined can be related to the factors determined by Andresen et al. as follows (see Table 4: Relation of obtained factors and factors according to Andresen et al. (2014)).

Table 4: Relation of obtained factors and factors according to Andresen et al. (2014)

Andresen et al. (2014) Factors	Factors from research
Self-reflection (G1, G2, G5, G6, G7, G9, G13, G18, G19, G23)	Understanding the effects of emotions on behaviour (G2, G6, G23) Understanding (and empathy) in relation to others (G13) Understanding oneself (G5, G7, G19) Critical thinking (G9, G18)
Empathic reflection (G8, G10, G12, G16, G20, G22)	Understanding the effects of emotions on behaviour (G20) Understanding (and empathy) in relation to others (G10, G22) Openness (G8) Critical thinking (G16) Flexible thinking (G12)
Reflective communication (G3, G4, G11, G14, G15, G17, G21)	Openness (G3, G4, G15) Critical thinking (G11) Flexible thinking (G17, G21)

From the above it is apparent that the factors set by Andresen et al. (2014) differ from our research. In this context, we need to reflect on the following: a) there is a different national context of reflective ability in the Netherlands and in the Czech Republic; b) there are differences between professions of doctor and social worker (in terms of professional values, the view of expertise, the work description, the role of a social worker, prestige, etc.); c) there are differences in the research population (students v. workers with a minimum of one-year experience). However, the differences in the scores achieved can also be attributed to the fact that there is a greater emphasis on reflection ability in the Dutch education system of medical students than in the Czech education system of social workers.

In the SRIS questionnaire we identified four factors: Meaningfulness (S1, S2, S4, S8, S9, S11, S13, S14, S17); Self-understanding (S3, S12, S15, S16, S18, S19); Self-criticism (S7, S10, S5), and Self-awareness (S6, S20). In the original SRIS questionnaire, three factors/scales were identified: Engaging in self-reflection (S1, S8, S10, S13, S16, S19), Need for self-reflection (S2, S5, S7, S12, S15, S18), and Insight (S3, S4, S6, S9, S11, S14, S17, S20). The factors set can be related to the original factors in the questionnaire as follows (see Table 5: Relation between the SRIS factors and the factors obtained from the research).

Table 5: Relation between the SRIS factors and the factors obtained from the research

SRIS Factors	Factors from research
Engaging in self-reflection (S1, S8, S10, S13, S16, S19),	Meaningfulness (S1, S8, S13) Self-understanding (S16, S19) Self-criticism (S10)
Need for self-reflection (S2, S5, S7, S12, S15, S18)	Meaningfulness (S2) Self-understanding (S12, S15, S18) Self-criticism (S7, S5)
Insight (S3, S4, S6, S9, S11, S14, S17, S20).	Meaningfulness (S4, S9, S11, S14, S17) Self-understanding (S3) Self-awareness (S6, S20)

It is apparent from the above table that the factors set out in our research differ from the factors determined by the authors of the questionnaire. Differences can again be explained by: a) differences in the national context of reflective ability; b) differences in the research population; c) specifics of the social worker's profession.

From the above comparison of the GRAS average scores in the research sample of Czech social workers working with vulnerable children and medical students in the Netherlands, the Czech social workers have achieved a significantly lower average score. Critical reflection is, in social work, associated with the following categories: embracing doubts, anxieties, uncertainties, avoiding errors in decision making and dealing with messy or complex problems (Fook, 2016); deeper understanding of individual reactions in social and organisational contexts (Sanaya, Gardner, 2012); reframing of the idea of power in social work and using empowering methods (Fook, Gardner, 2007); creating more inclusive practice (Jones, 2010); focus more on developing skills to integrate "the personal" and "the professional" in social work practice and creating better "connectedness" with colleagues, (Fook, 2016). In the context of the above, reflective practice should be a standard in curricula of educational programmes.

Increasing of self-awareness and (critical) reflexivity can be achieved in social workers by improving the process of social work education in the following areas: a) including experience learning into the curriculum of social work education, which is based on sharing and reflecting of experience with social work practices; b) using reflexive education in relation to the content of the educational material and practical course of studies, e.g. in a form of using reflexive diaries; c) improving practical education in social work, primarily by selecting quality students' mentors and improving the process of mentoring the students; d) introducing courses focused on the development of practical skills in social workers and social work supervision (Glumbíková, Vávrová, Nedělníková, 2018).

The factors with the lowest average score across both questionnaires and their combination were: Understanding (and empathy) in relation to others (GRAS), Understanding the effects of emotions on behaviour (GRAS), Meaningfulness (GRAS and SRIS), and Self-awareness (SRIS, GRAS and SRIS). Therefore, education of Czech social workers on reflection ability should focus on these areas. The overall purpose of strengthening the ability of critical reflection and self-reflection is to enable Czech social work students to become autonomous and critical thinkers who are able to reflect the role of social work in society and their own role as a social worker.

CONCLUSIONS

Based on factor analysis of internationally applied inventories (GRAS and SRIS), the paper determined the factors of (self) reflection ability in Czech social workers working with vulnerable children and their families and mapped the (self) reflection ability of social workers working with vulnerable children in the defined factors. The factors with the lowest average score across both questionnaires and their combination were: Understanding (and empathy) in relation to others, Self-understanding, Meaningfulness, and Self-awareness. These are the factors on which the education of Czech social workers in reflection ability should focus.

REFERENCES

- Andresen, NB., Gormsen, LK., Hvidberg, L., Morcke AM. (2014). *A validation study of the psychometric properties of the Groningen reflection ability scale*. BMC medical education 2014, 14, (pp. 214).
- Aukes, LC. (2008). *Personal reflection in medical education Groningen*. Groningen: University of Groningen.
- Council of SW Education; 2012. [online] [cit. 2018-20-10]. Available from: www.cswe.org/File.aspx?id=41861
- D'Cruz, H., Jones, M. (2004). *Social work research: Ethical and political contexts*. London: Sage.
- Ferguson, I., Lavalette, MA., Mooney, G. (2002). *Rethinking welfare: A critical perspective*. London: Sage.
- Finlay, L., Gough, B. (2003). *Reflexivity: A practical guide for researchers in health and social sciences*. Oxford: Blackwell.
- Fook, J., Gardner, F. (2007). *Practicing critical reflection: A resource handbook*. Berkshire: Open university press.
- Fook, J. (2016). *Researching critical reflection. Multidisciplinary perspectives*. NY: Routledge.
- Forrester, D., McCambridge, J., Waissbein, C., Rollnick, S. (2008). *How do child and family social workers talk to parents about child welfare concerns?* Child abuse review 2008, 17 (pp. 23-35).
- Gardner, F. (2006). *Working with human service organisations: Creating connections for practice*. Melbourne:

- Oxford university press.
- Gardner, F. (2009). *Affirming values: using critical reflection to explore meaning and professional practice*. Reflective practice 2009, 10(2), (pp. 179-190).
- Gilstrap, DL., Dupree, J. (2008). *Assessing learning, critical reflection, and quality educational outcomes: The critical incident questionnaire*. College & Research libraries 2008, 69(5), (pp. 407-426).
- Glumbíková, K., Vávrová, S., & Nedělníková, D. (2018). *Optiky posuzování v agendě sociálně-právní ochrany dětí [Optics of Assessment in the Agenda of Social-legal Protection of Children]*. Sociální práce /Sociální práce 2018, 18(6), (pp. 78 – 88).
- Graham, T., Gillingham, P. (2015). *Big data in social welfare: The development of a critical perspective on social work's latest "Electronic turn"*. Australian social work 2015, 70 (pp. 135 – 146).
- Grant, AM. (2002). *The self-reflection and insight scale: A New Measure of Private Self-Consciousness*. Social behavior and personality 2002, 30(8), (pp. 821-836).
- Harden, RM., Gleeson, FA. (1979). *Assessment of clinical competence using an objective structured clinical examination (OSCE)*. Medical education 1979, 13 (pp. 39–54).
- Jones, C. (2010). *Voices from the front line: State social workers and New Labour*. British Journal of Social Work 2010, 31 (pp.547–562).
- Knott, CH., Scragg, T. (2016). *Reflective practice in social work*. London: Sage.
- Koole, S., Dorman T., Aper, L., De Wever, B., Scherpbier, A., Valcke, M. (2012). *Using video-cases to assess student reflection: Development and validation of an instrument*. BMC medical education 2012, 12, (pp. 22).
- Payne, M. (2005) *Modern social work theory*. Basingstoke: Palgrave MacMillian.
- Registr poskytovatelů sociálních služeb; 2018. [online] [cit. 2018-18-10]. Available from: http://iregistr.mpsv.cz/socreg/vitejte_fw.do?SUBSESSION_ID=1539850166575_1
- Reid, CE. (2011). *Rationale argument mapping software*. Journal of technology in human services 2011, 29 (pp. 147–154).
- Rigg, C., Trethan, K. (2018). *Critical reflection in the workplace: Is it just too difficult?* Journal of european industrial training 2018, 32(5), (pp. 374–384).
- Ruch, G. (2005). *Relationship-based practice and reflective practice: Holistic approaches to contemporary child care social work*. Child and family social work 2005, 10 (pp. 111 – 123).
- Sanaya, R., Gardner, F. (2012). *Critical reflexion to identity gaps between espoused theory and theory in use*. Social work advance access 2012, 57(2), (pp. 145-154).
- Van Woerkon, M., Croon, M. (2008). *Operationalising critically reflective work behaviour*. Personnel review 2008, 37(3), (pp. 317-331).

FROM TRADITIONAL TO NEW MEDIA “An Evaluation of 31st March Local Elections in Turkey as a Sample”

Süleyman Bedri Kalyoncuoğlu
European University of Lefke Faculty of Communication
skalyoncuoglu@eul.edu.tr

Özge Özgür Bayır
European University of Lefke Faculty of Health
obayir@eul.edu.tr

ABSTRACT

Starting with the use of the internet as a means of interpersonal communication by means of communication, the formation of networks created social networks where shares could be made, interpreted, and reproduced by transforming into environments produced by private network providers found on the internet. In this paper, the news of the March 31 election results in traditional and new media were evaluated and the inferences about the election results were discussed. For analyze, the traditional media and the new media contents were compared at the first day of after election (1st of April), and the differences in the discourse changes were analyzed in both media types and evaluations and suggestions were presented on the new media which is the metamorphosis of traditional media.

INTRODUCTION

Today, the media is the most important social force that enables the exchange of information between people and events. In this sense, it is concluded that the most important task of the media in the society is informing because people are aware of the events that occur outside their own environment through the media.

“The news” emerged as a result of an effort to know and be aware of the “curiosity” which is one of the most important motives of human beings, within the media organizations in every stage of human life (Oktay, 1995: 160). New information on any subject, summary of the truth, the social fiction of reality, the report of any event and the transfer of events that took place in a certain place and time to the unknown has always been the focus of the media studies (Girgin, 1998: 13). Perhaps news has been the most common research topic in media studies.

The professionals of mass communication learn, teach and apply which subject, event, which facts, which face of the facts and which world view they should package (Erdoğan 1997: 245). These professionals do this mostly through news creation. “News is the output of the media. Where there is media there are news. Media and news, the institution and its product complement each other” (Kazancı t.y : 78). Media institutions are influenced by opinions and thoughts in creating the news, which leads to the subjective, unbalanced and biased (Hall 1981: 272-273) of the news (Said 1994: 81). In this case, it becomes somewhat difficult to talk about objective reporting. The absence of objectivity is not only about the choice of subject and the character of the presented; it is also about those who are not presented”(Erdoğan 1997: 279- 281). Because “objectivity is an ideological concept and media practices are ideological frameworks: they build media structure and truth” (Erdoğan 1997: 282).

By the globalization, technological developments, information and the mass media developed in this process now play an important role on political images and voting opinions. In other words, voters have ideas in all kinds of political processes by means of the images presented by the media to them instead of having direct information. This affects the voting opinion of individuals. Of course, it is not possible for every citizen to directly recognize and evaluate the governors. Therefore, the task of introducing the rulers to the society today is attributed to the media and is defined as the fourth power. (Damlapınar and Balcı, 2014: 52). McNair (2011: 43. Akt. Tyali, 2019: 2) argues that the media and those who work in such an influential industry are in fact political actors. Not only do these institutions play the role of transmitting messages of political parties to the public, but the media also sifts, interpret and transforms these messages through its various processes of new reporting. Agenda-setting theory provides convincing arguments on how the media can politically influence the public to concentrate on certain messages and directives. Shaw (1979. Akt. Tyali, 2019: 4) argues that researchers on agenda-setting insist that the media is very persuasive in its unique way. He notes that the media is influential in focusing our attention on specific events, issues and persons, and ultimately tries to determine the importance that we attach to public matters.

THE NEW VERSUS TRADITIONAL MEDIA

The basis of social networks is the reproduction of truth. Social networks, which are the virtual or second living spaces offered by the internet, have become virtual by the transfer of the existing life practices to the social

environment and at the same time it has changed from the quantity of real life to the quality of virtual life. This great development in the field of communication has initiated a significant transformation in the field of media. While the written, visual and audio tools known as the basic tools in mass communication are referred to within the definition of traditional media, the tools that have been made mobile with technology have started to be defined as new media.

In general, the term “mass”, “old” or “broadcast” is also referred to as traditional media. However, although the concept of journalism differs between radio, television and newspaper, in the literature, these media are evaluated within the traditional media. Traditional media refers to forms of mass media that focus on delivering news to the general public or a targeted group of the public. These include print publications (newspapers and magazines), broadcast news (television and radio) and, in recent years, the digital version of those media outlets, such as digital newspapers and blogs. The term “social media” is used a lot these days to describe a variety of different digital platforms. For the purpose of this piece, social media refers to social networking sites like Facebook, Twitter, Instagram, Pinterest, YouTube, LinkedIn, etc.

In general, new media and traditional media differs from each other. Differences between new media and traditional media are shaped around three basic qualities that characterize new media. The first of these is “Interaction”. This concept refers to the realization of the interaction in the new media, although there is no direct interaction between the receiver and the transmitter in the traditional media. For example, a receiver that wants to send a song request to a radio or TV channel that broadcasts music needs a third communication channel, such as mail, sms or telephone. On the other hand, a receiver that can listen to any music through a website that broadcasts music over the internet does not need another communication channel (Yurdigül and Zinderen, 2012: 83).

Over the last decade, the internet has become one of the most popular vehicles facilitating a variety of communication and information-sharing tasks worldwide. Its growing popularity as a new medium of communication has resulted in changes in use of traditional media. The differences between traditional media and social media include:

1. Where traditional media generally offers a wider audience pool, social media allows for more targeted distribution. Social media gives the opportunity to really target their messages, selecting everything from the demographics and geography of an audience to the time of day the post will go live.
2. Social media is immediate, while traditional can be delayed due to press times. Traditional media tends to have a longer timeline than social media. Social media posts are generally shorter, usually meaning they take less time to put together, and can be published immediately.
3. Traditional media pieces are more final, where social media is dynamic. For the most part, once a story is published on a traditional form of media, it's final. In social media people have the freedom to issue retractions, edit posts after they're pushed live or even delete messages entirely. And since social media happens immediately, there is absolutely no delay between the time a change is needed and when it reaches audiences.
4. Social media offers more control over the message than traditional media. Although you can't control how the public will respond once the message is out there, you do have the opportunity to control what is said in the first place.
5. Social media is a two-way conversation, and traditional is one-way. With social media, the public has the opportunity to voice their opinions.

STUDY

Research has been conducted to compare the usage, functions, and roles of new media with traditional media. Singer (2001. Akt. Dimmick et al., 2004: 19-33) investigated the print and online versions of six newspapers, comparing the amount of local and nonlocal news in different content areas. The findings suggest that online products have a much stronger local orientation than print products. Poindexter and McCombs (2001 Akt. Dimmick et al., 2004: 19-33) examined news media use in the new media environment from the perspective of the civic duty to keep informed. They found that the civic duty to keep informed had the same strong relationship to the use of cable news and national news on the Internet as to traditional sources of news. Other studies examined the perception of online news usage by consumers. Sundar (1999. Akt. Dimmick et al., 2004: 19-33) identified four criteria used by news receivers—credibility, liking, quality, and representativeness. The same author found stories with quotes were rated considerably higher in credibility and quality than identical stories without quotes, although quotes did prove to be related to the other two criteria: the liking for and the representativeness of online news.

The continued insistence on examining competition in the media landscape is a product of the preoccupation with selling the new and discarding the old on one hand (Duguid, 1996; Stephens, 1998. Akt. Mohan and Bergman,

2004: 41-60), and nostalgic lamenting over the loss of the old at the footsteps of the new on the other hand (Stephens, 1998. Akt. Mohan and Bergman, 2004: 41-60). Both liberationists that believe that new media will release humans from the shackles of traditional media and pessimists that succumb to the nostalgia for the past are driven by a tendency to create a monolithic media space occupied by a single medium. Media scholars and futurists in both camps suffer from a myopic vision of the medium as the driving force without taking into account the role of content, context, audience, or history.

The fact that new media can be produced more socially, faster content, direct communication, and can transmit messages to the selective target audience has enabled it to go beyond its limits more than traditional media does. However, the fact that content providers are again the traditional media companies in terms of reliability also shows the dependence of the new media. While the formation of uncontrollable, prohibited and uncensored content opened the debates on freedom of expression on the one hand, it became possible to come across events that would end the debates with the prohibitions introduced. When we look at the basic functions of the media, it is possible to see functions such as giving information, educating, entertaining and providing vision in both media categories.

The new media has become more attractive thanks to the speed of content production, the number of accesses, content and translation, and the ability to access them all over the world. As an example for this evaluation, the newspapers published in Turkey and the web pages of these newspapers were selected.

FINDINGS

As the literature stressed an important difference between new media and traditional media appears in the context of the creation and presentation of media content.

Finding 1: In the traditional media environment, threshold guards decide which media content can be transmitted to a wide audience. Today, the media, radio, television and newspapers, which are accepted as traditional media, determine the content of the media and the presentation of the content by the managers of that publication (Kara, 2005: 97–139). The new media redefines the source concept of media content. In the traditional media, commercial broadcasters tend to dominate the creation of media content. However, in the new media environment, most of the content is created by users. When the internet pages of the newspapers are examined, it is seen that the content of the message has not changed since the content providers are again their own administrations. This can be seen in the following newspaper examples:

Example 1.1.: Cumhuriyet Newspaper (Traditional media)



Headline: I know we won ... "One Man" warning!

Internet site of Cumhuriyet Newspaper (New Media)

<http://www.cumhuriyet.com.tr/arama/31%20mart%20yerel%20se%20c3%a7im?page=29>

Great rise in CHP: While the CHP's campaign on the economy found a response in the field, CHP increased the number of metropolitan cities from 6 to 10 according to uncertain results. The number of CHP's 8 municipalities was 10.

Example 1.2.: Yeni Şafak Newspaper (Traditional Media)



Headline: Breathtaking race in Istanbul... Cumhuriyet has won. This is the Turkey's victory

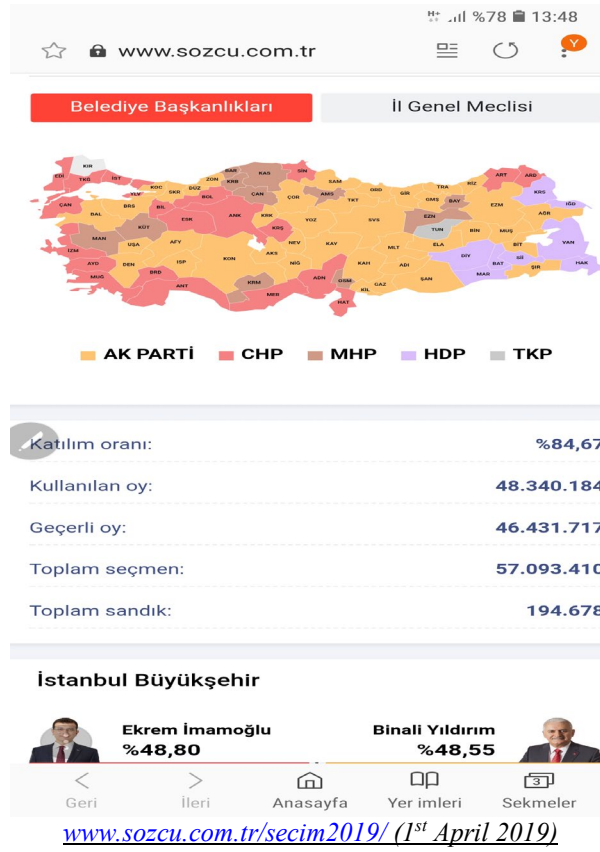
Internet site of Yeni Şafak Newspaper (New Media)

<https://www.yenisafak.com/arama/31%20mart%20yerel%20se%20c3%a7im?word=31%20mart%20yerel%20se%20c3%a7im&page=2>

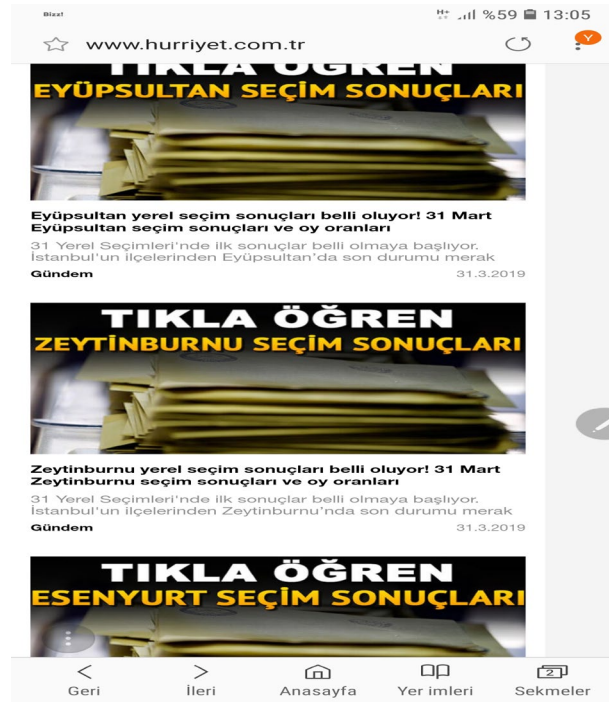
The AK Party took 24 out of 39 districts in Istanbul. The AK Party received 24 of 39 districts in Istanbul and 14 of the CHP. Turkey's most crowded in its Istanbul AK Party, 39 of the first output taking the mayoralty district 24. According to unofficial results, the AK Party took the Çatalca from CHP.

Finding 2: Unlike traditional media, new media provides users with a variety of content on the same channel, including graphics, tables, printed documents, moving images and links to different Web sites or to different pages within the same site. Daily newspapers can only present the stories of the previous day to their readers. On the other hand, online newspapers using the means of the new media have the opportunity to transmit news to their readers with little delay or at the same time as the event develops (Widmann, 2002: 87–94). One important point of Internet journalism is the “last minute” section. While the news is expected to be published in the traditional media the next day for publication and meeting with the reader, the latest news in new media journalism meets the reader instantly. In this study, it is found that the results of local elections on newspapers' websites are constantly updated on provincial and district level and transmitted to readers. The reader can follow the voting rates instantly by clicking on the selected province or district.

Example 2.1.: Internet Site of Sözcü Newspaper (New Media) (graphics, instant news)



Example 2.2: Internet Site of Hürriyet Newspaper (New Media)



Finding 3: We found that the concept of “title” distinguishes traditional journalism from internet journalism. The headlines in newspapers are positioned according to the extent allowed by the newspaper design, which is renewed every day, while the headlines in internet journalism may be longer. Because there is no design that is renewed every day in internet newspapers. The “umbrella headlines”, which we frequently see in Internet newspapers, allow the news to be classified according to genre and circumstance and to be found more easily by the readers.

Example 3.1.: Karar Newspaper (Traditional Media) (Headings)



Heading: Head to head racing

Example 3.2.: Cumhuriyet Newspaper (New Media) (Headings)

Great rise in CHP

While the CHP's campaign on the economy found a response in the field, CHP increased the number of metropolitan cities from 6 to 10 according to uncertain results. The number of CHP's 8 municipalities was 10.

Only 2 women won in 81 provinces

According to unofficial preliminary results, only 2 women were nominated in 81 provinces.

Devlet Bahçeli: The alliance of the Republic has achieved its goals MHP President Devlet Bahçeli made statements after the results of the local elections were announced.

Finding 4: Internet journalism has a cheaper and non-censurable structure compared to traditional journalism. There is an interactive release that reads. The readers who have the opportunity to give instant feedback to the news can reach the author of the news by means of e-mail and commenting.

When the news sites of the newspapers were examined, it was observed that there was a comment and appreciation section under the news, and there were also social media account images in order to follow the news on social media. In addition, with the "share" option the reader can share the news in their social media accounts. Thus, the reader can reproduce the news by commenting on the newspaper's comment or with a different comment. In addition, newspapers provide readers with the opportunity to create a membership system and read the news they choose later.

CONCLUSIONS

In this study, transformation of traditional media to new media is discussed. Daily newspapers, which are the tools of traditional media, and their websites were selected for analysis. For analyzing the day after the local elections held in Turkey on March 31, 2019 (April 1, 2019) was assessed by examining the news made. The results are as follows:

Firstly; while the literature tells that the new media redefines the source concept of media content we found that the content of the message has not changed since the content providers are again their own administrations.

Secondly; unlike traditional media, new media provides users with a variety of content on the same channel, including graphics, tables, printed documents, moving images and links to different web sites or to different pages within the same site. In this study, it is found that the results of local elections on newspapers' websites are constantly updated on provincial and district level and transmitted to readers. The reader can follow the voting rates instantly by clicking on the selected province or district.

Thirdly; we found that the concept of “title” distinguishes. The headlines in newspapers are positioned according to the extent allowed by the newspaper design, which is renewed every day, while the headlines in internet sites are longer.

Finally; In new media the readers have the opportunity to give instant feedback to the news can reach the author of the news by means of e-mail and commenting. When the news sites of the newspapers were evaluated, it was observed that there was a comment and appreciation section under the news, and there were also social media account images in order to follow the news on social media. In addition, with the "share" option the reader can share the news in their social media accounts.

REFERENCES

- Damlapınar, Z. ve Balcı, Ş. (2014). *Siyasal iletişim sürecinde seçimler, adaylar, imajlar*. Konya: Literatürk Academia.
- Dimmick, J., Y. Chen & Z. Li (2004) Competition Between the Internet and Traditional News Media: The Gratification-Opportunities Niche Dimension, *Journal of Media Economics*, 17:1, 19-33, DOI: [10.1207/s15327736me1701_2](https://doi.org/10.1207/s15327736me1701_2)
- Erdoğan, İ. (1997), *İletişim Egemenlik Mücadeleye Giriş*, Ankara: İmge Kitabevi.
- Girgin, A.(1998). *Haber Yazma Teknikleri*, Ankara: İnkılap Kitabevi
- Hall, S. (1981), *The Structured Communication of Events*, Oxford: U.P
- Kara, H. (2005). “Bilgisayar/İnternet Teknolojisi ve Değişen Gazetecilik”. In *Yeni İletişim Teknolojileri ve Medya*. İstanbul: IPS İletişim Vakfı Yayınları
- Kazancı, M. (2002). Althusser, *İdeoloji ve İletişimin Dayanılmaz Ağırlığı*, Ankara Üniversitesi SBF Dergisi, 57-1, ss: 55-87.
- Mohan J. Dutta-Bergman (2004) Complementarity in Consumption of News Types Across Traditional and New Media, *Journal of Broadcasting & Electronic Media*, 48:1, 41-60, DOI: [10.1207/s15506878jobem4801_3](https://doi.org/10.1207/s15506878jobem4801_3)
- Nisan, F . (2016). 2009 ve 2014 Yerel Seçimlerinin Ulusal Basındaki Sunumunun Söylemsel Karşılaştırması. *Selçuk Üniversitesi Türkiyat Araştırmaları Dergisi*, (38), 281-324. DOI: 10.21563/sutad.187034
- Oktay, A.(1995). *Medya ve Hedonizm*, İstanbul: Yön Yayınları
- Said, E. (1994), *Haberlerin Ağında İslam*, İstanbul: Pınar Yayınları
- Tyali, S. M. (2019). Delving into the political role of the media: An analysis of South Africa’s mail and guardian and the online reception of its electioneering message. *Journal of Media and Communication Studies*, 11(1), 1-9.
- Widmann, J. (2002). “Almanya’dan Bir Örnek: Netzeitung”. In *İnternet Çağında Gazetecilik*. İstanbul: Metis Yayınları.
- Yurdigül, Y. and Zinderen, İ . (2012). Yeni Medyada Haber Dili (Ayşe Paşalı Olayı Üzerinden Geleneksel Medya ve İnternet Haberciliği Karşılaştırması). *The Turkish Online Journal Of Design Art and Communication*, 2 (3), 81-91. Retrieved From <http://Dergipark.Org.Tr/Tojdoc/Issue/13010/156765>.

GUESSING THE MEANING FROM CONTEXT CLUES TO UNDERSTAND ENGLISH VOCABULARY OF MATHAYOM SUKSA 6 STUDENTS IN THE DEMONSTRATION SCHOOL OF KHON KAEN UNIVERSITY

Nujaree Sukasame
Demonstration School Khon Kaen University
Email : nsuk5159@gmail.com

ABSTRACT

The purpose of this research was to construct and test the students' efficiency of vocabulary learning guessing the meaning from context clue exercises for Mathayom Suksa 6 students to compare students' English Vocabulary learning proficiency before and after using the exercises constructed and to study students' opinions toward the exercises.

The sample consisted of one randomly selected class of 29 Mathayom Suksa 6 students of Demonstration School Khon Kaen University randomized by during the second semester academic year 2017

The instruments used for gathering data were:

- 1) The vocabulary learning strategies guessing the meaning from context exercises constructed by the researcher; 2) A vocabulary learning proficiency test used as a pretest and posttest; and 3) A questionnaire on opinions toward the vocabulary learning exercises.

The research designs to use as follow: One group Pretest, Posttest Design method, and analyzed by percentage and means.

The results of the study were;

1. The average score of the Pretest and the Posttest were 39.69 and 53.59 respectively. The result of t-test indicated statically $t = 8.21$
2. The student's vocabulary learning proficiency on understanding the meaning from Context Clues to understand English vocabulary at the 0.01 level
3. The students' opinions toward guessing the meaning from Context Clues exercises were very positive

Key words: Guessing the meaning understand

INTRODUCTION

Guessing the meanings of words from context is the most important strategy for dealing with how frequency vocabulary in written texts. There are many low frequency words and their occurrence is largely unpredictable so it is not possible to learn them in advance. Thus dealing with them as they occur is the only feasible way of handling them. Because of their narrow range and the low probability of meeting them again soon, they do not deserve much effort in learning them. It is better to use context clues to infer their meaning than to spend time on learning the words themselves.

Several writers have described strategies for guessing words from context (Seibert, 1945 ; Honeyfield, 1977 ; Clark and Nation, 1980). This piece of research is an attempt to discover some of the factors that make guessing difficult and to see the potential of the guessing strategy.

Guessing word meaning and contextual clues.

Contextual inference or contextual guessing is defined as an important strategy in the absence of dictionaries or human assistance and it "entails guessing the meaning of target word based on interpretation of its immediate context with or without reference to knowledge of the world" (Haastrup, 1989 in Parel, 2004, P.848)

There are two main factors affecting guessing ability: reader-related variables and text-related variables. Reader-related variables are vocabulary size, knowledge of grammar, language proficiency, attention to details, cognitive and mental effort, and reader characteristics. As for text-related variables, they are word characteristics, text characteristics, the presence of contextual clues and topic familiarity (Kaivanpanah & Alavi, 2008)

Research has indicated that during the process of determining the meaning of unknown words, languages learners attempt to use contextual clues. In a study by Kanatlar (1995), it was observed that the prediction of word meaning by means of context clues was the most popular strategy. The total use of this strategy was 260, while the total use of translation was 195, the total use of parts of speech and word analysis was 18 and 15 respectively. Fraser (1999) carried out a study on lexical processing strategy use by using retrospective think-aloud interview. The study showed that the participants tended to use sense creation (use of linguistic and situational) situational context to infer) 65% of the time while inferring unknown word meaning. Soria (2001) conducted a study that aimed to examine language learners' use of different types of sources 9 interlingual, intralingual and contextual sources) and compare them across different proficiency levels. Word morphology was the major knowledge source used by the language learners. Also, the learners were able to apply contextual clues in inferring word

meaning. However, the high level learners were more successful than the low level learners in utilization of the immediate co-text and the wider co-text. The results of these studies may be considered as an indication of the fact that language learners tend to make use of contextual clues so as to make correct word meaning inference.

The amount and quality of contextual can determine the success of guessing. Mondria and Wit-de-Boer (1991) adopted the terms contextual richness and context pregnancy from Van Parreren (1967 cited in ibid). They defined a rich context or a pregnant context as a context which provides sufficient clues enabling readers to infer the meaning of unknown words easily and correctly. The study by Kelly (1990 in Laufer, 1997) can be considered as the study about the nature of contextual clues.

Kelly collected a sample of unknown words from two Italian books randomly and made an effort to figure out the meanings of the words from context. As a result of his lack of success, he believed that “unless the context is constrained, which is relatively rare occurrence, or unless there is a relationship with a known word identifiable on the basis of form and supported by context, there is little chance of guessing the correct meaning” (Kelly, 1990 in Laufer 1997, P. 27) In this regard, it is possible to say that clues are not available in some contexts.

Context may provide different kinds of clues to make guessing process easier for readers. For instance, context may supply partial clues that enable language learners to arrive at a general meaning. An example for a partial clue was given by Clarke and Nation (1980 in Laufer, 1977, P. 29): “Typhoon Vera Killed or injured 28 people and crippled the seaport city of Kelling.” The reader can understand crippled as “damaged” or “destroyed” due to the fact that a typhoon can have mostly negative effects on a place. It is understood from this example that in some searches have suggested that language learners are more sensitive to local contextual clues than global contextual clues. In a study by Haynes and Baker (1993 in Mokhtar & Rawian, 2012), L2 learners of different groups were all capable of utilizing local contextual clue effectively.

However, a high percentage of the participants in the study has difficulty using global contextual clues far away from the target word. Huckin and Bloch (1993 in Huckin & Coady, 199 p. 187) also found that the subjects in their study preferred local contextual clues rather than global contextual clues. The importance of immediate contextual clues was confirmed in the above mentioned studies.

A great majority of studies in literature have demonstrated the value of guessing strategy. The purpose of this study is to determine whether guessing the meaning from context clue have any impact on Learners Mathayom Suksa 6 students.

CONTEXT CLUES

Context clues are clues that the author gives intentionally or incidentally in the text to help the learners understand a difficult or an unfamiliar word. Most importantly, learners not only understand the meaning of the words but they also understand the contextual use of the words.

Context clues provide information about how a word fits in a sentence and with the ideas discussed in it. In other words, figuring out what a word means by looking at the words or phrases nearby (Hartman & Blass 2007). For example, The fireman ascended the tree and brought the little girl's kitten back down to her, “If the reader knows that trees are tall and that kittens like to climb high to feel safe, then the reader can guess that” ascended means to climb”

Contextualization helps learners to understand and effectively use the target language. Many shades of meaning of words used in a particular context can better be mastered if context clue is provided. This way of testing administered to the tertiary level second language learners seems effective as the vocabulary learning becomes a practicality. SLL have created a dislike towards the target language because of the numerous words they have to learn before they could speak or write the target language. Context Clue test enables the SLL to learn many words from the context.

In course of reading a text, if learners fail to interpret words correctly, they might end up in misunderstanding the text. Even dictionary meaning of certain words used in reading texts may differ from the contextual meaning of the words. In such situations, context clues help the students in making a logical guess of the meaning of the unknown words. Context clues are useful in a number of ways. Readers use context clues to:

- Help them confirm the pronunciation of a word they are trying to decode.
- Resolve ambiguity and arrive at correct pronunciation of multiple meaning words.
- Determine a possible meaning of an unknown word.
- Accelerates their reading rate.

When teaching students how to use context clues, teacher must be very explicit in his/her description and modeling the application of this as a strategy while reading texts. The teacher needs to guide and encourage students as they try to use the strategy, slowly increasing the complexity of the text (Blachowicz, Fisher, Ogle, & Watts-Taffe, 2006).

TYPES OF CONTEXT CLUES

1. **Definition or** - the meaning of the vocabulary word is in the sentence itself, usually following the vocabulary word e.g., Martha is a **curator**, a person who is responsible for looking after a museum's collection.
 - Celestial bodies, such as the sun, moon, and stars, are governed by predictable laws.
2. **Synonym or Restatement** - the sentence uses a similar word to help explain the meaning for the vocabulary word. E.g., **Carnivores**, that is, meat eaters, are the top of the food chain.
 - My best friend **squandered** all his money; his drinking and gambling wasted all his earnings.
3. **Antonym or Contrast** - The sentence uses a word with an opposite definition to give the meaning of the vocabulary word. E.g., While Luis is hardworking his **indolent** brother spends most of the time watching TV or sitting around with friends
 - The gentleman was **portly**, but his wife was thin.
4. **Example/Explanation** - This type of context clues uses examples to help the reader infer the meaning of the vocabulary word. E.g., the archeologist found different **amulets**, such as a rabbit's foot and bags of herb.
 - Paula was suspended from school because of several **infractions** of the rules, including smoking in the bathroom and dressing improperly.
5. **Cause and Effect** - The meaning for an unknown word depends on the cause/effect relationship with other words in the text.
 - E.g., since no one came to the first meeting, attendance for the second one is **mandatory** for all staff.
 - Because the **conflagration** was aided by wind, it was so destructive that every building in the area was completely burned to the ground.
6. **Comparison.** In comparison clues, the unfamiliar word is shown to be the same as or like another word.
 - E.g., The stench of the old shoes was like the smell of garbage.
 - My brother is **enthralled** by birds similar to the way that I am fascinated by insects.

METHODOLOGY

The purpose of this study was to construct and test the students' efficiency of vocabulary learning guessing the meaning from context clues exercises as a strategy to help students to improve their vocabulary.

Participants

The participants for the study were 29 students from Mathayom Suksa 6 students in The Demonstration School Khon Kaen University.

3.1 Materials

To accomplish the objective of the study, (the instruments used for gathering data were :)

There were 3 instruments namely: 1) The vocabulary learning strategies guessing the meaning from context clues exercises constructed by the researcher; 2) a vocabulary learning proficiency test used as a pretest and posttest ; and 3) a questionnaire on opinions toward the vocabulary learning exercises.

The subjects were required to guess the meanings of the target words written in bold and underlined in single sentence contexts and the target words were presented in single contexts in which all the words apart from the target words were familiar to the subjects.

The structure of the sentences was simple. Some sentences included coordinating conjunction such as "and, so" and "because" which is a subordinating conjunction. The subjects were familiar with these conjunctions and it was thought that they would not cause any difficulty for them to comprehend the sentences.

Procedure

The researcher conducts pre-experiment study in this research. The pre-experimental design in this research applies the one-group pre-test post-test. In one-group pre-test post-test design there is no control group and the students are given some experimental instructions or treatments for a period of time. At the beginning of period of time the students have pre-test and at the end of the period of time the students have post-test.

IMPLEMENTATIONS OF RESEARCH

Pre-test : pre-test given before teaching was help. The purpose of pre-test is to know the students pre condition about their vocabulary. The pre-test was given on the Mathayom Suksa 6 students in The Demonstration School of Khon Kaen University as sample. In the pre-test students were asked to answer the questions that consist of multiple choices. The time was 60 minutes and the result of the pre-test was analyzed.

Treatment: the treatment was held in two times. The treatment is teaching vocabulary through guessing from context. The context consists of some clues that help the students to find the meaning of the word that they

are not familiar with. In teaching and learning process, the students involved activity, where the teacher have facilitating and monitoring **during** the process. For the first, the teacher told the material and explained about what is guessing and how to guess through some clues and the students learn how to improve their vocabulary. After that, the students encouraged to answer the test was given by teacher.

Post-test : after having the treatments, the students of class Mathayom Suksa 6 students in The Demonstration School of Khon Kaen University was given the post-test. The post-test given to the student is to see the achievement of the student's vocabulary list after having the treatment by guessing the meaning from context clues to understand English Vocabulary. In post-test the students asked to answer the same questions with pre-test.

FINDINGS

In analysis the percentage of responses in each category was computed by taking the ratio of the students' score in the pre-test and in the post-test. Table 1. Shows the results students' performance on the pre-test and the post-test shows that

Table 1: The results' students' performance on the pre-test, the post-test

No.	60 questions	Pre-test	Percentage	Post-test	Percentage
1.	60	48	80.00	58	96.67
2.	60	49	81.67	55	91.67
3.	60	44	73.33	55	91.67
4.	60	52	86.67	53	88.33
5.	60	30	50.00	52	86.67
6.	60	35	58.33	55	91.67
7.	60	49	81.67	51	85.00
8.	60	52	86.67	55	91.67
9.	60	36	60.00	54	90.00
10.	60	49	81.67	52	86.67
11.	60	33	55.00	54	90.00
12.	60	31	51.67	54	90.00
13.	60	34	56.67	51	85.00
14.	60	42	70.00	55	91.67
15.	60	39	65.00	54	90.00
16.	60	43	71.67	52	86.67
17.	60	45	75.00	54	90.00
18.	60	31	51.67	54	90.00
19.	60	27	45.00	51	85.00
20.	60	24	40.00	55	91.67
21.	60	32	53.33	54	90.00
22.	60	23	38.33	52	86.67
23.	60	53	88.33	54	90.00
24.	60	47	78.33	54	90.00
25.	60	48	80.00	51	85.00
26.	60	49	81.67	55	91.67
27.	60	44	73.33	54	90.00
28.	60	36	60.00	52	86.67
29.	60	26	43.33	54	90.00
Average		39.69	66.15	53.59	89.31

According to table 1. The results of students' score of the pre-test and the post-test were found that, the average of the pre-test 39.69 and the percentage was 66.15%

On the other hand, the respondents of the average of the post-test were found that 53.59 and the percentage was 89.31%.

Table 2. The results of the increasing in the students' score on the pre-test, the post-test.

No.	Pre-test	Post-test	Increased Score	Percentage
1.	48	58	10	18.9
2.	49	55	6	11.34
3.	44	55	11	20.79
4.	52	53	1	1.89
5.	30	52	22	41.58
6.	35	55	20	37.8
7.	49	51	2	3.78
8.	52	55	3	5.67
9.	36	54	18	34.02
10.	49	52	3	5.67
11.	33	54	21	39.69
12.	31	54	23	43.47
13.	34	51	17	32.13
14.	42	55	13	30.95
15.	39	54	15	38.46
16.	43	52	9	20.93
17.	45	54	9	20.93
18.	31	54	23	43.47
19.	27	51	24	45.36
20.	24	55	31	58.59
21.	32	54	22	41.58
22.	23	52	29	54.81
23.	53	54	1	1.89
24.	47	54	7	13.23
25.	48	51	3	5.67
26.	49	55	6	11.34
27.	44	54	10	18.9
28.	36	52	16	30.24
29.	28	54	26	49.14
Average score	39.69	53.59	14.21	35.01

In Table 2 displays that the result of increasing in the students' score of the post-test indicated that the result of the post-test was high 53.59. It increased to 14.21. The percentage reached 35.01%

Table 3. Descriptive Statistics of Pre-test Post-test Result

	N	MD	S.D	Df	T	Sig
Pre-test	29	39.69	9.27			
				28	8.21	0.00
Post-test	29	53.59	1.64			

Significant at 0.01

In table 3. Reveals that the result of the pre-test and the post-test were found that the mean score of the pre-test 39.69 (MD = 39.69) and Standard deviation (SD = 9.27)

On the other hand, the respondents for the post-test was found that the mean score of the post-test 53.59 and standard deviation 1.64

The result of t-test indicated statistically that ($t = 8.21$) and the Degree of freedom was 28. In this case, there was a significant difference was at 0.01

RESEARCH FINDINGS AND DISCUSSIONS

Table 4 : The results of the increasing in the students' score on the pre – test, the post – test.

No.	Pre – test	Post – test	Increased Score	Percentages of Progress Score
1	48	58	10	16.67
2	49	55	6	10.00
3	44	55	11	18.33
4	52	53	1	1.67
5	30	52	22	36.67
6	35	55	20	33.33
7	49	51	2	3.34
8	52	55	3	5.00
9	36	54	18	30.00
10	49	52	3	5.00
11	33	54	21	35.00
12	31	54	23	38.33
13	34	51	17	28.33
14	42	55	13	21.67
15	39	54	15	25.00
16	43	52	9	15.00
17	45	54	9	15.00
18	31	54	23	38.33
19	27	51	24	40.00
20	24	55	31	51.67
21	32	54	22	36.67
No.	Pre – test	Post – test	Increased Score	Percentages of Progress Score
22	23	52	29	48.33
23	53	54	1	1.67
24	47	54	7	11.67
25	48	51	3	5.00
26	49	55	6	10.00
27	44	54	10	16.67
28	36	52	16	26.67
29	26	54	28	46.67
Average score	39.69	53.59	13.90	23.16

In Table 4 displays that the result of increasing in the students' score of the post – test indicated that the result of the post – test was high 53.59. It increased to 13.90. The percentages of progress score reached 23.16%.

DISCUSSIONS

This study attempts to examine guessing the meaning from context clues to understand English Vocabulary. (Roots, prefixes, suffixes Compound words, definitions, restatement, comparisons, contrast, examples and synonyms.) On learns' guessing of the meaning of unknown vocabulary. The findings of the study reveals that first, different types of contextual clues are significantly effective in better comprehension and understanding of unknown vocabulary in the post-test. Moreover the learners were able to guess the meaning of unknown vocabulary better if contextual clues were alternatively roots compound words, suffixes and synonyms.

Also the findings of the study reveals that the average score of the pretest and the post-test were 39.69 and 53.59 respectively.

The result of t-test indicated statically $t = 8.21$ and the student's vocabulary learning proficiency on standing the meaning of English vocabulary from context clues at the 0.01 level and the last the students' opinions toward guessing the meaning from context clues exercises were very positive.

CONCLUSIONS AND SUGGESTIONS

Referring to the research findings and analysis of the students test results. The researcher draws the conclusion as follows: (1)

The average score of the pre-test and the post-test

2) Increasing in the students' score by guessing the meaning from context clues to understand English Vocabulary. It is shown by the students' score in the post-test is better than in the pre-test. Is 13.90. The percentage reached 35.01%; (3) It could also be concluded that the students were interested in guessing the meaning from context clues to understand English Vocabulary. The students' opinions toward guessing the meaning from context clues exercises were very positive. The students also can indicate from the clue that inside the instruction. This is enjoyment of teaching was represented by students enthusiasm in following the lesson from the beginning to the end.

Suggestions

In this paper, the researcher would like to offer some suggestions as below:

For the Teachers

1. English teachers should be creative to choose an appropriate technique in teaching that is interesting for the students. For example Guessing from Context as one of Technique to teach vocabulary since Guessing technique provides clues that student's need to help them to get the meaning and to understand about what they read.

2. The teacher has involved student's activities as communicative and gives some guidance and directions to the students that had difficulties from guessing vocabulary to find the meaning of unfamiliar word.

3. The teacher should consider all the teaching stages to have a better result in every meeting. So the process in applying the strategy cannot be redundant. The redundant activities will make the students feel boring.

For the students

1. Students should be given enough chance to develop their vocabulary skill by guessing the meaning from context clues to understand English Vocabulary.

2. Students should be always encouraged to utilize the clues implied in the texts so as to develop their general language proficiency and to improve their vocabulary and reading comprehension skills in particular.

REFERENCES

- Clarke D.F & Nation, I.S.P (1980). Technique "Guessing the meaning to Words from context; Strategies and Technique" System 813) : 211-217.
- Blachowicz, e.L.Z, Fisher, P.J.L, Ogle, D, & Watts-Taffe, S (2006) Vocabulary: Questions from the classroom. Reading Research Quarterly. 41(4), 524-539.
- Fraser, C.A.(1999). Lexical Processing Strategy Use and Vocabulary Learning through Reading. Studies in Second Language Acquisition, 21,225-241.
- Haastrup, K (1989). The Learner as Word Professor. International Association of Applied Linguistics Review, 6,34-46.
- Honey field, J 1977. Word frequency and importance of context in vocabulary learning. RELC Journal 8 : 2, 35-42.
- Huckin, N.T, & Bloch, J, (1993). Strategies for Inferring Word Meanings in Context : A Cognitive Mode. Second Language Reading and Vocabulary Learning, ed. By T. Huckin, M. Haynes, J. Coady, (pp.87-107), NJ; Ablex, Norwood.
- Huckin, T & Coady, J. (1999). Identical Vocabulary Acquisition in a Second Language. Studies in Second Language Acquisition, 21, 181-193.
- Kaivanpanah, S, & Alavi, M. (2008). Deriving Unknown Word Meaning from Context : Is Reliable? Regional Language Centre Journal, 39 (1), 77-95.
- Kanatlar, M. (1995). Guessing Words in Context Strategies Used by Beginning and Upper-intermediate Learners, Bilkent University (MA Dissertation), Ankara.
- Kelly, P (1990). Guessing : No Substitute for Systematic Learning of Lexis. Sytem, 18, 199-207.
- Laufer, B. (1997). The Lexical Plight in Second Language Reading. Second Language Vocabulary Acquisition, ed. By James Coady, Thomas Huckin (pp. 20-34), Cambridge University Press, UK.
- Mokhtar, A.A, & Rawian R.M. (2012). Guessing Word Meaning from Context Has Its Limit: Why? International of Linguistic. 4 (2), 288-305.
- Mondria, J, & Witt-de Boer, M. (1991). The Effects of contextual Richness on the Guessability of the Retention of Words in a Foreign Language. Applied Linguistics,12 (3), 249-267.
- Seibert, L.C. 1945 A study of practice of guessing word meaning from a context. Modern Language Journal 29, 296-323.
- Soria, J.(2001). A study of Llokano Learners' Lexical Inferring Procedures through Think-Aloud. Second Language studies, 19(2),77-110.

IMPLEMENTATION OF SUPERVISION IN NURSING

Zuzana Bachratá

Faculty of Nursing and Professional Health Studies, Slovak Medical University in Bratislava, Slovak Republic
zuzana.balajova@gmail.com

Jarmila Kristová

Faculty of Nursing and Professional Health Studies, Slovak Medical University in Bratislava, Slovak Republic
jarmila.kristova@szu.sk

ABSTRACT

Supervision, from the English word "supervision", means leadership, control, control over. Supervision is a group and individual help in solving professional situational crises. In the field of helping professions, we can also understand supervision as one of the forms of personal and professional development. Supervision in nursing practice is a topic that is little known and poorly implemented in Slovak nursing practice. Supervision could be used as a tool for developing and supporting nurses, similarly to social workers and other helping professions. By executing it, it would be possible to anticipate an increase in the quality and professionalization of nursing practice. The research study was attended by eight respondents from the health and social section of the Senior Care facility in Dolná Súča in the Slovak Republic. Three supervisory meetings with a certified supervisor were carried out in practice to fulfill the objective of the research study. After their completion, respondents' opinions on effectiveness, the importance of supervision in practice and personal experience with supervision were mapped through an individual structured interview. The responses of the face to face research participants have been written down, rewritten into the charts and evaluated. The respondents stated the need to reflect on their feelings, which they experience while working with the patients and 7 out of 8 respondents agreed to introduce supervision into nursing practice. After the implementation of the supervision, the respondents appreciated a safe environment in which this aspect was not evaluated neither criticized, but in which space was created for mutual discussion. The subject of the respondents' interest were relations and behavior towards patients, co-workers, but also general topics to acquire new knowledge and knowledge about supervision. The benefit of supervisory meetings was the constructive resolution of problems between team members, positive worker-patient relationships and the work team, active participation in their mental well-being and learning new approaches. The method of supervision applies to nurse practice. The proper mental well-being of nurses, support and understanding of the patient's and colleague's situation is essential for quality nursing care. Its regular implementation could help the supervised person cope with emotional burdens and professional development issues.

Keywords: Supervision, Nursing, Implementation

INTRODUCTION

The patient health care as a nurse's priority role is a constantly discussed topic. However, nurse's health, especially the mental one and well-being, remains a marginal topic. Surveillance, guidance or control are synonyms for the word "supervision". This term has no unified definition yet, but authors provide several explanations. Franck and Graaff (2011) interpret supervision as a joint activity of a qualified supervisor and nurses, which aims to find solutions to problems, improve procedures and increase understanding in the professional field. Venglářová et al. (2013) talks about a process focused on reflecting tasks, actions and activities related to the job position performed by a team, group of workers or individual. It's about looking after an employee who can provide patients with better care, thanks to psychological well-being and professional growth. The term "supervision" is currently discussed more intensively in relation to the so-called helping professions including health care, more specifically in terms of the development of work competencies, burnout prevention, promotion of the mental health, work roles and collegial relationships. Supervision in the nursing practice is not a well-known nor sufficiently implemented topic in conditions of the Slovak nursing practice. The aim of this study was to stimulate the idea of supervision and support the protection of nurses' mental health at work by introducing supervision into the nursing practice conditions. Venglářová (2013), Schavel and Tomka (2010) bring out three basic functions of supervision – managing, educational and supportive. The supportive function of supervision, which was also applied in our study, can be demonstrated by providing support when a supervisee feels to be emotionally threatened, or by providing encouragement and hope for further work. The goal of this supervision function is to reduce the subjectively perceived burden caused by the work activity, and to increase the motivation and support (Schavel, Tomka, 2010). The supportive supervision includes a care for people who provide the care themselves. Only a satisfied nurse can provide the satisfaction, hope and high-quality nursing care to patients. The supportive supervision brings relief, it renews, complements, and also inspires and increases the feeling of satisfaction from the work done.

RESEARCH OBJECTIVES

The main objective of this research study was to find out if it was possible to implement the supervision methodology into the nursing practice in conditions of a selected medical facility in Slovakia.

RESEARCH QUESTIONS

- Can supervision be used in the nursing practice as a method of professional development and tool for nurses for dealing with the emotional burden?
- Which topics and supervision areas are preferred by nurses?
- What are the advantages and disadvantages of supervision as methods of the professional development of nurses?

RESPONDENTS AND METHODS

Three supervisory meetings were realized in practice to fulfil the purpose of this study. The research sample consisted of 8 respondents, employees of the Health and Social Department of the Facility for Seniors in Dolná Súča, Slovakia. Three supervisory meetings in the duration of 1.5 hour were held under the leadership of the certified supervisor Mgr. Zuzana Jankovcová from May to July 2018.

Topics of the individual supervisory meetings:

1. Characteristics of the supervision, preparation and motivation of the respondents for supervision. Creating a supervisory relationship.
2. Supporting the patient, understanding of his situation.
3. Communication of the medical staff.

At first, respondents received a motivational lecture on supervision. After that, supervisory techniques we used – the Questionnaire and the Ball of Wool by Schavel, Hunyadiová, Kuzyšin (2013). The aim of the Questionnaire technique was for the participants to get to know each other, achieve a cooperation, cohesion and thus support the development of trust-based relationships in the group. The Ball of Wool technique – debriefing in this activity was focused on identifying and revealing feelings from areas that a person perceives in others. The second supervisory meeting was held on the topic Support in Understanding the Patient's Situation. A supervisor applied the Abreaction technique where a supervisee could experience a problematic situation and relieve the hidden or suppressed emotion, tension, stress. It's about reliving and perceiving this situation in a safe place with people who can offer a feedback and encouragement. The social skills of the supervisee are developed to cope with a similar situation in the future. Another method called Strengthening is based on knowing the strengths of an individual, virtues that a person knows and values about oneself, and which set him or her apart from the others. Communication of the Medical Staff was the topic of the last supervisory meeting, where the supervisory techniques such as Clarification were implemented. In this method, a supervision participant clarifies various aspects of the presented problem. Supervisees thus had the opportunity to get indications of their feelings and parallels they didn't think of as important. The supervisee uncovered the basic framework of the problem in a non-directive manner, distinguished the essential from the non-essential, looked for the causes of problem with the support and summarization of aspects, as well as with the motivation to search for alternative solutions. The Confrontation method was carried out based on the counterarguments of a certain dichotomy, which may appear in the group from the beginning when rules are set, through negotiating and formulating a collective task or activity. It can also encourage supervision participants to "assert themselves and speak up". This method also creates a space for consolidating relationships in the group, clarifying things through friction which generates heat. These dichotomies help to reduce and transform disarranged situations into specific aspects, so that the group members can make better decisions. They stimulate the reflection of inner value and relation systems of the supervisees through feedback (Schavel, Hunyadiová, Kuzyšin, 2013). When the supervisory meetings were over, respondents' opinions on effectiveness, importance of supervision in practice, benefits, disadvantages and personal experience with supervision were surveyed through a group structured interview.

Interview methodology:

- a) interview type: group structured interview, which ensured a so-called synergic effect – continuity of the mutual communication of supervisees,
 - b) interview questions:
 - Q3-Q9 were used from the evaluation questionnaire by Venglářová (2013):
- Q3 What was the benefit of supervision for you?
 Q4 Which topics on supervision are you interested in?
 Q5 What did you like during supervision?
 Q6 What didn't you like during supervision?

Q7 What qualities should a supervisor have?

Q8 What traits should a supervisor not have?

Q9 Did you have the opportunity to speak openly?

- interview questions Q1-Q2-Q10 were of our own design:

Q1 What was your previous experience with supervision?

Q2 Will you use anything from what you have learnt at the supervisory meetings at your job?

Q10 Would you agree/disagree with a regular introduction of supervision into nursing practice?

c) interview phases:

- preparatory phase – selection of respondents, location, questions and data recording,
- implementation phase – “small talk“, rapport, interview,
- evaluation phase – transcript,

d) interview duration: 45 minutes,

e) interview principles – cooperation with the respondent, empathy, politeness and competent behaviour.

Responses of the participants during “face to face” survey were recorded in writing, rewritten into tables and evaluated.

RESULTS

Scientific research objects consisted of 8 respondents from the health and social facility for seniors. Their work position, age, years of professional experience and education are presented in Table 1.

Table 1 Scientific research objects

Respondent number	R1	R2	R3	R4	R5	R6	R7	R8
Work position	Head nurse	Medical assistant	Nurse	Medical assistant	Social worker	Nurse	Medical assistant	Nurse
Age	48	34	42	37	45	47	51	51
Years of professional experience	30	7	6	12	23	12	4	10
Education	Higher education	Secondary education	Secondary education	Secondary education	Higher education	Higher education	Secondary education	Secondary education

Respondents' questions and answers from the interview are presented in Tables 2-11.

Q1 What is your previous experience with supervision?

Table 2 Previous experience with supervision

Respondent number	Answer
R1	No
R2	No
R3	No
R4	No
R5	Yes
R6	No
R7	No
R8	No

Q2 Will you use anything from what you have learnt at the supervisory meetings at your work?

Table 3 Use of supervision at work

Respondent number	Answer
R1	Yes, I learned to listen more to my colleagues and patients. I will behave differently in certain situations.
R2	I will change communication with coworkers and patients.
R3	I will work more calmly and improve my communication with patients and colleagues.
R4	I will be more patient, understanding and will improve my approach to patients.
R5	I will be more thoughtful towards other colleagues because we have looked into our souls.
R6	Yes, I want to have more understanding for others.
R7	I will be a little different, I'm leaving with a good feeling
R8	We are better towards ourselves than before, tomorrow when we meet it will be a better "hello".

Q3 What was the benefit of supervision for you?

Table 4 Benefit of supervision

Respondent number	Answer
R1	That we got to know each other better as a working team.
R2	I learned how to deal with some work-related stress situations.
R3	I let out my feelings
R4	I understood my colleagues and their actions in some situations.
R5	I got to know my colleagues better, their problems, by this I understood their behavior at work, why they react and act in such a way.
R6	That we got together and learned new things. Communication between us, new views.
R7	I do not regret being here, I am a little wiser, the supervision has enriched me.
R8	I am pleasantly surprised how many of us opened up, wept.

Q4 Which topics on supervision are you interested in?

Table 5 Topics on supervision

Respondent number	Answer
R1	organization of work, job description and competence general and philosophical themes (learn something new) relationships (to clients, associates)
R2	case supervisions
R3	relationships and behavior (to clients, associates)
R4	case supervisions
R5	organization of work, job description and competence general and philosophical themes (learn something new) relationships (to clients, associates)
R6	general and philosophical themes (learn something new) relationships (to clients, associates)
R7	relationships (to clients, associates)
R8	relationships (to clients, associates)

Q5 What did you like during supervision?

Table 6 Positive aspects of supervision

Respondent number	Answer
R1	Openness of my co-workers.
R2	All methods and tasks that we did helped us to get to know each other better as a team.
R3	Atmosphere during supervision.
R4	Openness of co-workers.
R5	Everything we did.
R6	I was surprised by the openness of my co-workers.
R7	I liked everything, it was completely new experience for me.
R8	Openness, honesty.

Q6 What didn't you like during supervision?

Table 7 Negative aspects of supervision

Respondent number	Answer
R1	I have no objection.
R2	I have no objection.
R3	I have no objection.
R4	I cannot express it exactly, but probably greater interference with my personality and personal matters.
R5	I have no objection.
R6	I have no objection.
R7	I have no objection.
R8	It was emotionally difficult.

Q7 What qualities should a supervisor have?

Table 8 Supervisor's qualities (positive)

Respondent number	Answer
R1	Calm, reasonable, well-read, having an overview of all topics
R2	Open, empathetic, knowing how to gain attention, having knowledge of supervision
R3	Empathetic, having an overview of life and work, willing to advise and encourage people to think about themselves
R4	Understanding, patient, empathetic
R5	Positive-minded
R6	To remain "human"
R7	Communicative, truthful, smiling
R8	Educated, empathetic, communicative

Q8 What traits should a supervisor not have?

Table 9 Supervisor's traits (negative)

Respondent number	Answer
R1	Arrogant, mocking, with an unpleasant voice.
R2	He/she should not pick up something that is uncomfortable to someone.
R3	Angry, sad.
R4	He/she should not lead supervision to private and very personal topics.
R5	Haughty.
R6	Arrogant, impatient.
R7	Unpleasant.
R8	Uncommunicative, non-empathetic.

Q9 Did you have the opportunity to speak openly?

Table 10 Opportunity to speak openly

Respondent number	Answer
R1	Yes
R2	Yes
R3	Yes
R4	No, because in some cases it's not possible to tell the whole truth.
R5	Yes
R6	Yes
R7	Yes
R8	Yes

Q10 With a regular introduction of supervision into nursing practice, you would agree/disagree?

Table 11 Supervision implementation

Respondent number	Answer
R1	agree
R2	agree
R3	agree
R4	disagree
R5	agree
R6	agree
R7	agree
R8	agree

These results indicate that only one in ten respondents had a previous experience with supervision. All respondents (8) answered in the affirmative to the question if they will use something from supervision at their work. They mentioned especially the change in communication towards patients and co-workers as well as change in behaviour. According to the participants, among the main benefits of supervision was getting to know the work team better, empathy towards co-workers (5 respondents) and the opportunity to learn how to deal with some stressful situations at work (1 respondent). Research participants were mostly interested in supervision topics – relations towards clients, co-workers (6 respondents), general and philosophical topics (3 respondents) and also case supervisions (2 respondents). Openness and sincerity of co-workers were indicated as positive aspects of supervision (4 respondents). Regarding the question about negative aspects of supervision, 6 respondents had no objections, 1 respondent said that supervisory meetings were emotionally demanding and 1 respondent reported negative interference with personal matters. Results of this questionnaire indicate that the supervisor should be mainly empathetic (4 respondents), educated (3 respondents) and have good communication skills (2 respondents). When participants were asked whether they had the opportunity to speak openly, 7 respondents said yes, 1 said no. 7 out of 8 respondents agreed with a regular implementation of supervision into the nursing practice.

DISCUSSIONS

Nowadays, we can observe results of researches in countries where supervision was implemented, e.g. Australia, Great Britain, Portugal, Lithuania. Pinto de Abreu and Marrow (2012) conducted a comparative study, which involved introducing supervision for nurses in two countries – Great Britain and Portugal. A total of 45 nurses from both countries filled in questionnaires that were analysed using the Colaizzi's framework (1978). Based on results of the study, authors claim that a clinical supervision has a positive impact on the professional development of nurses and their clinical practice. They also noted some objections to supervision, especially in Great Britain, which included mainly a lack of time, understanding of supervision and commitment. Results of our interview indicate that implemented supervisory meetings were beneficial for both social and medical staff. According to the participants, among the main benefits of supervisory meetings was constructive problem solving in team, a positive relationship between worker and patient as well as the work team, active participation in one's own well-being and in learning new approaches. Empirical studies in the medical literature also emphasise the positive impact of supervision on the patient safety, provision of high-quality health care, reducing stress and increasing satisfaction with work among the medical staff (Tomlinson, 2015, Bifarin, Stonehouse, 2017). During the interview, we asked respondents which topics on supervision interested them the most (they could have presented other alternatives to the supervision topics). 6 nurses chose relationships and behaviour toward clients and co-workers, and 3 participants expressed interest in general topics on supervision in order to learn something new. Circenic et al. (2015) carried out a study focused on burnout prevention to evaluate the effectiveness of supervision in nurses working in a hospital in Latvia. Results show that there is a statistically significant difference between indicators of emotional exhaustion and depersonalization in participants of the experimental group before and after supervision, as well as between indicators of the experimental and control group after supervision. Supervision reduced the burnout indicators in the experimental group in comparison with the control group. Supervision also helped nurses with better understanding of themselves, their emotions and behaviour in various work situations. Psychological well-being of nurses, support and understanding of the patient's and co-worker's situation is important for a high-quality nursing care. As Miklovičová (2008) states, the current health care system places high demands on the work of nurses. The workload is intensifying and it can lead to a gradual loss of motivation and physical and mental exhaustion that can have consequences on nurse's physical and mental health. Respondents expressed the need to reflect on emotions they experience when working with patients, and 7 out of 8 research participants agreed with introducing supervision into the nursing practice. Supervision is also applicable in the conditions of the nursing field. A regular implementation of supervision could help the supervisee to cope with the emotional burden and problems of the professional development. Supervision is one of those strategies, as stated by Čech (2009), that can provide support and safety, strengthen the professional self-esteem, broaden knowledge, give orientation, show direction, establish structure, help to manage doubts and insecurities, offer techniques and interventions, enable control, but also open up the space for creativity. Although there are several studies on the effectiveness of a group supervision of nurses, Francke and Graaff (2012) report that the evidence is still inadequate and they also appeal to the need for further methodological research.

CONCLUSIONS

In conclusion, we present the following recommendations for the nursing practice in conditions of the Slovak Republic:

- call on managers of the health care facilities to assume the participation and support the implementation of supervision into the nursing practice,
- motivate nurses to conduct supervisory meetings and participate on supervision,
- create safe conditions for all supervision participants, implement the supervision technique into the nursing practice as a method of professional support and protection of the nurses' mental health.

REFERENCES

- BIFARIN, O. & STONEHOUSE, D. (2017) Clinical supervision: an important part of every nurse's practice. In *British Journal of Nursing*. [online]. 2017, vol. 26, no. 6. Available: <https://www.magonlinelibrary.com/doi/full/10.12968/bjon.2017.26.6.331>
- CIRCENIS, K. et al. (2015) Supervision in Nursing: Latvian sample study. In *Procedia - Social and Behavioral Sciences*. [online]. 2015, vol. 205, p. 86-91. ISSN 1877-0428. Available: <http://www.sciencedirect.com/science/article/pii/S1877042815050417>.
- FRANCKE, A.L. & GRAAFF, F.M. (2012) The effects of group supervision of nurses: a systematic literature review. In *International Journal of Nursing Studies*. [online]. 2012, 49(9), p. 1165-1179. Available: <https://www.sciencedirect.com/science/article/abs/pii/S0020748911004561?via%3Dihub>

- FREEMAN, C. (2005) Clinical Supervision Guidelines for Registered Nurses. [online]. 2005. Available: [http://www.supervisionandcoaching.com/pdf/page2/CS%20Guidelines%20\(Birkenhead%20&%20Wallas%20PCT%20-%20UK%202005\).pdf](http://www.supervisionandcoaching.com/pdf/page2/CS%20Guidelines%20(Birkenhead%20&%20Wallas%20PCT%20-%20UK%202005).pdf).
- MIKLOVIČOVÁ, E. (2008). Psychická záťaž sestier pracujúcich v lôžkových zdravotníckych zariadeniach. In Posilňovanie postavenia sestier medzi zdravotníckymi pracovníkmi [Zborník prednášok z odborného seminára]. Bratislava : SZU, 2008. ISBN 978-80-89352-24-1. p. 49-59.
- SCHAVEL, M. & HUNYADIOVÁ, S. & TOMKA, M. (2013). Supervízia v sociálnej práci. Bratislava: Spoločnosť pre rozvoj sociálnej práce. o.z. 207 p. ISBN 978-80-971445-0-0.
- SCHAVEL, M. & TOMKA, M. (2010) Základy supervízie a supervízia v praktickej výučbe v sociálnej práci. 1. vyd. Bratislava : Vysoká škola zdravotníctva a sociálnej práce s. Alžbety. 193 p. ISBN 978-80-89271-87-0.
- TOMLINSON, J. (2015) Using clinical supervision to improve the quality and safety of patient care: a response to Berwick and Francis. In BMC Med Educ. [online]. 15: 103. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4464130/>.
- VAŇKOVÁ, M. & STASKOVÁ, V. (2010) Rozvoj emočních dovedností sester v supervizi. Práce pomáhajících profesí v oblasti zdravotnictví a sociální práce. Praha : Evropské vzdělávací centrum. s. 434–439. ISBN 978-80-87386-10-1.
- VENGLÁŘOVÁ, M. a kol. (2013) Supervize v ošetrovateľskej praxi. 1. vyd. Praha : Grada Publishing. 104 s. ISBN 978-80-247-4082-9.

INPUT FOR CURRICULUM DESIGN: DETERMINING THE ATTITUDES OF STUDENTS TOWARDS ENGLISH COURSES

Dilek Türkarslan

The Institute Social Sciences, Zonguldak Bülent Ecevit University, Turkey
dlktrkrsln@gmail.com

Elif Akdemir

The Institute Social Sciences, Zonguldak Bülent Ecevit University, Turkey
akdemirelif@gmail.com

ABSTRACT

As a result of the importance given to English which is the world's most common communication language in science and trade, English courses have taken place in the curriculum as elective or compulsory courses. Personal traits of the individuals are among the items which must be taken into consideration while designing curriculum. The purpose of this research is to determine the students' attitudes towards English courses in order to use them as input in curriculum design. Explanatory Research Design among the Mixed Research Designs was used in this research. The qualitative and quantitative data of the research were obtained from 977 secondary school students and 6 English teachers. Man Whitney U and Kruskal Wallis H tests were used for the data analysis. In the analysis of qualitative data, descriptive analysis method was used. At the end of the research, it was found out that the attitudes of the students towards English course didn't change according to gender, grade level and having a family member knowing English. Considering the sub-dimensions of the attitudes, it was found out that the female students' attitudes were more positive than the male students' attitudes regarding the general aspects and importance of the course; the male students' attitudes were more positive than the female students' regarding the interestingness of the subject and the teachers' teaching styles. While it was found out that the students' attitudes towards the general aspects and importance of the course, the interestingness of the subjects and the teachers' teaching styles didn't change according to grade levels. Other components which take role as input while designing curriculum should be investigated in future studies.

Keywords: Curriculum Design, English Courses, Attitude of Students

INTRODUCTION

In a globalizing world, inter-country relations have intensified, foreign language learning and teaching has become one of the important goals in education and daily life and has become a need for many people (Doğan, 2012). English, the world's common communication language, which is accepted as a universal language, is taught as a compulsory or elective course in education programs due to this need that arises in many parts of the world. A number of factors play a role in the success of learning English, which has become the target of the whole world. Ülgen (1997: 88) defines the attitude that is one of the influential factors in the success of language learning as 'the element acquired through learning, which directs the individual's behavior and causes bias in the decision-making process'. Our attitudes affect our emotions, thoughts and behaviors at every point of our lives as well as affect students' feelings, thoughts and behaviors in language learning and teaching. Whether students like to learn English as a universal language, their positive or negative feelings about the course, their thoughts and beliefs about the course, and their behavior towards escape or approach within or outside the course are important factors affecting their English proficiency and achievement.

When the literature was examined, it was found that there were studies about the power, change, consistency, confidentiality, knowledge and emotion based on the attitudes and individuality. The strength and degree of attitudes are different. The power of attitude is the result of the sum of cognitive, emotional and behavioral responses to an individual's object of attitude. It is easier to predict the behaviors that will be revealed by very strong attitudes than to predict the behaviors that will be revealed by moderate or weak attitudes (Binbasioglu, 1995). According to Ülgen (1997), attitudes may be strengthened, weakened or changed. Strengthening and changing attitudes vary from individual to individual, from society to society. Attitudes consist of observable and unobservable variables and behaviors. There is consistency and regularity among these variables. Attitudes are also related to other attitudes (Binbaşıoğlu, 1995). According to Kirel (2004), in an environment where an individual is present, some people are confronted with event institutions or objects. It interacts with these stimuli and thus forms a belief or thought system.

When the literature is examined, it is seen that interest is a form of attitude. Ormrod (2016) states that interest is an intrinsic motivation and positive affect is accompanied by interest and divides interest into personal interest

and situational interest. According to Ormrod (2016), personal attention is a relatively stagnant phenomenon within the individual, and there is consistency in preferences resulting from interest. Situational attention is stimulated by something surprising in the surrounding area. Interest causes information to be processed effectively. An individual who is interested in a subject is more careful about it and becomes more successful in learning. Personal interests are due to past experiences of individuals, and situational interests arise from instant situations.

Attitudes towards foreign languages have an important effect on language. Attitudes towards language in the life of a language are effective in the healing, maintenance, weakening or disappearance of that language. The attitudes of countries towards the second language reveal problems or possibilities related to the language in that country. The status, importance and value of language in that country are measured by attitudes (Baker, 1992). According to Lewis (1981), attitudes of people who may be affected by language policies should be taken into consideration. No policy can be expected to be successful in the long run unless the policy of the people involved is inconsistent, the people with negative attitudes are not convinced that the policy is correct or the reasons for the conflict are not eliminated. When establishing language policy, in order to ensure policy success, people's attitudes towards language need to be known (Baker, 1992). When the literature on foreign language is examined, it is seen that the attitudes of individuals towards the target language affect language achievement. Baker (1992) states that a positive attitude towards language learning is an important input in language achievement, and that attitude is a factor that provides pre-readiness and affects the outcomes of education. Kırkız (2010) and Kazazoğlu (2011) found that attitudes positively affect language achievement.

The student's positive attitude towards the target language community also affects the student's success. According to Doğan (2012), students who have a positive attitude towards the target language and want to see themselves as a member of the target language community learn the target language in a much easier and shorter time period than other students who do not have these characteristics. The attitudes of the people around the student towards the target language also directly or indirectly affect the student's language learning. If people around the student praise the target society, this encourages language learning and positively affects learning, and vice versa (Doğan, 2012). With a sense of need, there is a strong desire to learn, so that language can be learned very easily and well. Apart from the need and desire to learn, other factors affect language learning. According to Doğan (2012) and Gardner (2010), the success of the individual is influenced by the educational environment, classroom atmosphere, quality of teaching, materials, facilities and teacher factor. The effect of the age of the student should also be taken into consideration in foreign language teaching. The content of the curriculum and the arrangement of language materials in such a way that the age group of the students will be of interest will positively affect the success. Chambers (1999) states that factors such as target language learning experiences, travel experiences, friends, family and attitudes affect student values.

Student Attitudes and Role of Teacher

Teachers should use approaches and strategies in which the student can develop a positive attitude to the lesson (Ülgen, 1997). Chambers (1999) and Doğan (2012) state that students' attitudes towards teachers affect language learning. According to Ülgen (1997), students' attitudes towards school, lessons and teachers sometimes lead students to approach or move away from learning activities.

Student Attitudes and Role of Family

Attitudes are features that distinguish people from other people. Attitudes are part of personality. According to Fidan (2012), some behaviors that form the basis of personality are acquired in the family environment.

Relationship Between Attitude and Behavior

Binbasioglu (1995) states that the relationship between attitude and behavior is important in terms of education, and if one's attitude is known, one can predict his behavior. According to Ülgen (1997: 88), a person evaluates an object based on their perceptions, feelings, beliefs and value judgments. Attitudes affect decisions. Positive decisions are made about the event or object where a positive attitude is developed, and negative decisions are made about an event or object where a positive attitude is developed.

Related Research

In this section, the studies about the attitudes towards English course in Turkey and abroad and the results of these studies are given.

Research Studies completed on topic in Turkey

Kırkız (2010) used the relational survey model and stratified random sampling method in the study in order to determine the relationship between the attitudes of the 8th grade and 11th grade students of the high school and

their academic achievement. 402 8th grade and 402 11th grade students participated in the study. As a result of the study, it was found that the attitudes of 8th grade students were more positive than the 11th grade students. A moderate positive relationship was found between students' academic achievement scores and attitude scores.

Burgucu (2011), in order to investigate the relationship between university students' motivation, attitude and anxiety levels and their age, gender, department and education level, motivation for 242 first-year students studying in 8 different departments of a state university, anxiety and attitude scales. As a result of the research, it was determined that the motivation intensity levels of female students were higher than male students. However, no significant difference was found between male and female students in terms of intrinsic and instrumental motivation levels. There was no significant relationship between age and motivation variables. There was a significant relationship between motivation and department. While there was a significant difference between intrinsic motivation and motivation intensity and education level, there was no significant difference between instrumental motivation and education level. It was found that the students' attitude scores towards learning English were high and there was no significant difference between the attitude scores of female and male students. No significant difference was found between students' anxiety levels according to education level, motivation, attitudes and concerns of students and gender and age factor. Although students' anxiety level towards English was low, motivation and attitude scores were found to be high. It was found that the motivation and attitude scores of the female students were slightly higher than the male students and the motivation, attitude levels of the students studying in English related departments were higher and their anxiety levels were lower. In general, it was found that students' motivation and attitude scores were high and anxiety scores were low.

In this study, Kazazoğlu (2011) examined the effect of attitudes towards Turkish and English classes on academic achievement. Attitudes were examined according to variables such as class, gender, presence of English TV channels at home, presence of computers at home, internet access at home, father's foreign language knowledge, mother's foreign language knowledge and the period in which English was started. As a result of the research, it was seen that most of the students had positive attitude towards English and Turkish courses; It was determined that the attitude scores towards the English and Turkish lesson had a significant difference in favor of girls according to gender. The attitudes of eighth grade students were found to be more negative than the ninth grade students in terms of the negative judgments developed for the English course. It was found that the students who started to study English at the kindergarten had the most positive attitude towards Turkish lesson; It was found that the most positive attitude towards the English course belongs to those who started English during the primary education period and the most negative attitude to those who started English at high school.

Sarkmaz (2011) examined the attitudes of students in vocational high schools towards language learning, and applied an attitude questionnaire to 472 10th grade students in vocational high schools. As a result of the research, it was found that there was a significant relationship between attitudes and school type, department, taking English for special purposes and learning English variables and attitudes did not change according to gender.

Salman (2011) examined the attitudes of high school students towards English course, and applied the Attitude Scale towards English Course to 704 high school students. As a result of the study, it was found that there is a significant difference between the attitudes towards English course and gender in favor of girls. It was found that the attitudes of the students who started to take English lessons in primary school were more positive and the relationship between the number of years of English lessons and the attitude was higher than the students who took English lessons for a longer period of time. There was a significant difference between the attitudes of the family and the attitudes in favor of those living in the city center, and the difference between the attitudes of family and attitudes in favor of the students with high income levels. A significant relationship was found between the education level of the mother and the attitude in favor of the mother factor whose education level was low.

In a study conducted by Köyönü (2012) to examine the relationship between primary school students' attitudes towards English courses and their course achievements, a questionnaire was applied to 895 students studying at 4th, 5th, 6th, 7th and 8th grade levels in primary schools. As a result of the study, it was observed that attitudes on all classes affected the success of the course. According to gender, it was found that female students had more positive attitudes, attitudes were more effective on female students' achievement, and attitude scores decreased from 4th grade to 8th grade.

Kocadelioğlu (2013) examined the attitudes of primary and secondary school students towards English as a foreign language. As a result of the research, a significant difference was found between students' attitudes towards behavioral and emotional sub-dimensions and gender in favor of girls. However, there was no

significant difference between cognitive attitudes and gender. When the attitudes were examined according to the class variable, it was seen that 4th and 5th grades had more positive attitudes than 6th, 7th and 8th grades, respectively.

In the study where Erbaş (2013) examined the attitudes of primary and secondary school students towards the English course, an attitude scale consisting of love, interest, expectation and anxiety sub-dimensions was applied to 300 students in 1 primary and 4 secondary schools. As a result of the research, it was seen that anxiety scores of female students were higher than male students' anxiety scores, anxiety scores of 5th, 7th and 8th grades were higher than 4th and 6th grades, while the education level and income level of the mother or father increased and the anxiety level of the student increased. It was found that male students liked the English lesson more than female students and the love and success of the English lesson increased as the family education and occupation level increased.

Karabulut (2013) examined English attitudes towards learning English and English language according to age, type of education and gender in the study using the attitude scale consisting of three dimensions. As a result of the study, it was determined that students' attitudes towards learning English and using English did not change according to gender, type of education and age.

In order to examine the attitudes and concerns of university students against Pan (2014) 's English course, 280 first grade students applied foreign language anxiety scale, attitude scale, personal information form, open - ended questions form. As a result of the study, it was determined that students had positive attitude and high anxiety level, and there was no significant relationship between attitude and anxiety. In addition, it was seen that those with low parental education levels were more anxious than those with high educational level.

Aydoğdu (2014) examined the relationship between foreign language learning anxiety, attitude towards English, language learning strategies and foreign language achievement. Attitude questionnaire, language anxiety strategies, language learning strategies questionnaire and achievement test were applied to 100 randomly selected students. As a result of the study, it was found that students with high anxiety levels had low achievement and students with high attitude scores had higher achievements.

In the study, Kesgin and Arslan (2015) examined the relationship between high school students' attitudes towards English and gender, parental educational status, family monthly income, and graduated primary school factors, and a 56-item attitude scale was administered to 350 students from 7 schools. When the relationship between school type and attitude was examined, it was found that the highest attitude scores were found in foreign language-oriented schools and the lowest attitude scores were found in technical high schools. It was determined that female students' attitudes were more positive than male students' attitudes. The students whose parents have university and graduate degrees have higher attitude points than the ones whose parents have primary and high school graduates; It was found that the attitudes of the children of high-income families were higher than the attitudes of the children of low-income families.

Karatas, Alcı, Bademcioglu and Ergin (2016) examined the relationship between university students' attitudes towards learning English and gender, language level, whether they had previously taken preparatory education and the high school variables graduated from. In this study, Attitude Scale towards English was applied to 488 English preparatory class students, 320 male and 168 female. As a result of the study, it was found that students had an above-average attitude towards learning English, and their attitudes towards English were not affected by their gender, language level, previous preparatory education and high school types they graduated from.

Ataman (2017) used an attitude scale consisting of personal information, motivation and attitude sections in his study to investigate the relationship between motivation, attitude and achievement level of university preparatory students. In the 2014-2015 academic year, 364 English Preparatory School students studying at the University School of Foreign Languages participated in the study. According to the results of the study, it was found that the motivation levels of the students were good, the motivation towards learning English did not change according to gender, and the instrumental motivation of female students was higher than the male students. It was found that there was no significant difference between motivation and teaching type and department variables, and although the motivation levels of the students were positive, their academic achievement scores were low.

Research Studies Conducted Abroad

In the study conducted by Hussain, Shahid, Zaman (2011) to measure the attitudes and anxiety levels of high school students against foreign language learning, anxiety scale and attitude scale were applied to 720 10th grade

students selected from 6 regions in Punjab, Pakistan. As a result of the study, it was found that there was a significant difference between the anxiety and attitude scores of female students and the anxiety and attitude scores of male students.

In the study conducted by Ming, Ling and Jaafar (2011) to examine the attitudes and motivations of high school students towards English as a second language, Sibu studied in Sarawak with different ethnic identities (Chinese, Malaysian and Ibanian) and English proficiency levels. A questionnaire of 48 questions was applied to 111 male students. In the first part of the questionnaire, there are questions about the demographic characteristics of the students and in the second part there are questions about attitude and motivation. It was found that science students and students with high English proficiency were more interested in improving their English and there was a positive significant relationship between high level of English and attitude and motivation factors.

Soleimani and Hanafi (2013) applied the attitude scale consisting of 30 sub-dimensions of behavioral, cognitive and affective to 40 students from Iran Medical School in their study to determine the attitudes of university students towards learning English. As a result of the study, it was found that the attitudes of male students were higher than female students and that their students had a very positive attitude towards learning English. As attitude dimensions were examined, it was found that the lowest attitude score was in the behavioral dimension and the highest attitude score in the affective dimension.

Burgos and Perez (2015) applied attitudes scale consisting of five sub-dimensions to 154 students from two high schools in Pourto Montt in the study in which 12th grade students from Chile examined their attitudes towards English as a foreign language. As a result of the study, it was found that 12th grade students had a positive attitude towards English as a foreign language. In addition, it was found that the students wanted translation and mother tongue support in the English course, the lowest score of the students' attitude towards learning English, and the attitude towards English as a universal language was positive. In addition, students' attitudes towards learning English at school were found to be positive.

Samadani and Ibnian (2015) conducted a mixed-pattern study in which Saud students' attitudes towards learning English as a foreign language and their success in English lessons were studied with 112 randomly selected 2, 3 and 4 grade students from the University. As a result of the study, it was found that the attitudes of the participants towards learning English were moderately positive and the students with high achievement scores had more positive attitudes. During the interviews with the students, it was determined that the students wanted to learn English by instrumental factors such as finding a good job.

Ibnian (2017) applied the 20-item attitude scale to 144 9th grade students in public and private schools in Amman, and conducted semi-structured interviews with 8 students in their study, which examined students' attitudes towards English as a foreign language. According to the results of the study, it was found that the attitudes of the students attending both public and private schools towards English were positive, but the attitudes of the students attending private schools were more positive than those attending the public schools.

When some studies conducted in Turkey and abroad were examined, it was found that gender factor affects attitudes and in some studies it was found that gender factor did not affect attitudes. Kazazoglu (2011), Salman (2011), Koyonu (2012), Gorgun (2013), Delbesoglulil (2013), Kesgin and Arslan (2015), Celik (2015) found that female students' attitudes were more positive than male students' attitudes. In the studies conducted by Erbaş (2013) and Soleimani and Hanafi (2013) it was found that the attitudes of male students were more positive than female students. Atli (2008), Burgucu (2011), Sarkmaz (2011), Karabulut (2013), Hovhannisyan (2014), and Karataş, Alçı, Bademcioğlu and Ergin (2016)' studies did not show a significant difference between attitude and gender.

In the literature, there are researches showing that attitudes towards English course change according to grade level and do not change. In the studies conducted by Kazazoğlu (2011) and Salman (2011), there was no significant relationship between class level and attitude. In the studies of Kırkız (2010), Köyönü (2012), Kocadelioğlu (2013) and Hovhanisyan (2014), it was concluded that attitudes decreased as the grade level increased.

When the studies on whether the attitudes change according to the department are examined; In the studies conducted by Burgucu (2011), Sarkmaz (2011), Görgün (2013), Pan (2014), it was determined that the attitudes changed according to the departments. In addition, in the study conducted by Manachon and Eamoraphan (2015), it was found that the attitudes did not change according to the departmental factor.

When the studies examining the change of attitudes towards English according to whether or not someone knows English at home, there is very little research on this subject. In the study conducted by Kazazoğlu (2011), it was concluded that the attitudes of students whose parents speak English are more positive than those whose parents do not speak English.

When the related studies between attitudes and success factor were examined; In the studies conducted by Kırkız (2010), Kazazoğlu (2011), Erarslan (2011), Köyünü (2012), Delbesoğlu (2013), Aydoğdu (2014) and Samadani and Ibrani (2015), a significant relationship was found between attitude and success.

In order to meet the needs of the individual and society, education programs must adapt to changing and developing world conditions. It is necessary to examine the changing interests, needs and attitudes of the society and individuals, which are the main sources of education programs, in order to gain the desired knowledge, skills, attitudes and behaviors that are the target of education to individuals in changing world conditions. This change in educational programs is a requirement to ensure the continuity of the system and to meet the needs of society and people. Positive attitudes increase success in achieving the desired goals. Nowadays, the increasing need for learning English and the necessity or necessity of elective English courses in order to be successful in education and training programs' readiness input attitudes and factors affecting these attitudes need to be examined.

Individuals and their interests and needs are among the factors that should be taken into consideration in designing and evaluating curriculum. According to Sönmez and Alacapınar (2015: 61); "The basic element of every skill is the individual. Kucukahmet (2009) states that meeting the needs and interests of the students is the basis of the selection of the content and the education programs. According to Kucukahmet (2009: 22), "The students' interests should lead to special criteria in the selection of the content. For example, elective and compulsory course content may allow students to learn the content of their interest."

According to Ornstein and Hunkins (2014: 246), some people believe that the curriculum should be designed based on information about how students learn, how they behave, what interests they have, and what values they care about. "Ornstein and Hunkins (2014: 246) "Progressive educational programmers and humanist educators with postmodern perspectives state that the student is the main source of program design."

Determining the interests, needs and attitudes of the students regarding the foreign language teaching and educational programs which are increasing day by day is important for program development experts, school administrators, English teachers and researchers interested in English lessons and attitudes.

The purpose of this study is to examine the attitudes of high school students towards English course according to gender, class, department and whether or not someone who knows English at home and to determine the teachers' perceptions about student attitudes. Within the framework of the mentioned problem, the following questions will be sought in this research:

- 1- Based on the opinions of the students, do the attitudes of the students towards English course change according to gender?
- 2- Do the attitudes of students towards English course vary according to their grade level?
- 3- Based on the opinions of the students, do the attitudes of the students towards English course change according to the presence of someone who knows English at home?
- 4- What are the teachers' perceptions about student attitudes in the English course?

THE STUDY

This section provides information about the research model, participants, data collection tools and data analysis. In this research, explanatory research design which is one of the mixed research designs was used. Quantitative data were firstly collected in order of data collection. According to the results of the analysis of the quantitative data obtained, qualitative data were collected later (Yıldırım & Şimşek, 2013).

Participants

Data for Research were obtained from 977 secondary school students and 6 teachers of English in the 2017-2018 academic year in the province of Zonguldak, Turkey. Stratified purposive sampling was used to determine the students. Purposeful sampling was also used in the selection of teachers (Yıldırım & Şimşek, 2013).

Data Collection Tools

Personal information form and attitude scale towards English course were used as quantitative data collection tools in the research. Interview form was used as a qualitative data collection tool. The personal information form included the attitude scale application directive and demographic information about gender, department, English language, home variables, and class variables. In this research, students' attitudes towards English course were obtained by using "Attitude scale towards English course" developed by Kırkız (2010). The reliability of the 20-item scale applied to the sample group was found to be 0.93. The scale consists of three factors. According to factor analysis, attitudes scale is composed of three sub-dimensions: attitudes about general characteristics and importance of the course, attitudes towards interest pattern and attitudes towards teacher's course style. The answer options for the items in the scale were formed in five-point Likert type scale and the answer options vary between "I completely agree" and "Never agree". The highest score that students can get from the scale is 100 and the lowest score is 20 (Kırkız, 2010). Qualitative data about the study were collected by interview form in the interviews with 6 English teachers working in schools where attitude scale was applied. In the interview form, questions were asked about whether the students' English course, general characteristics and importance of the English course, the attractiveness of the subjects in the English course, whether the attitudes of the teacher towards the course style changed according to gender, department, class level and whether or not someone who knows English at home.

Data Analysis

As the data were not normally distributed, Man Whitney U and Kruskal Wallis H tests were used for non-parametric tests. In the analysis of qualitative data, descriptive analysis method was used.

FINDINGS

According to the descriptive statistics of the participants, the frequency distribution and percentages related to demographic variables stated in the personal information form such as school, gender, class and whether or not someone who knows English at home are given in Table 1.

Table 1: Descriptive statistical data of the participants

Gender	f	%	Someone know English at home	f	%
Female	588	60.6	Yes	399	41.4
Male	382	39.4	No	564	58.6
Total	970	100	Total	963	100
Grade Level	f	%			
9 th grade	179	18.3			
10 th grade	167	17.1			
11 th grade	302	30.9			
12 th grade	329	33.7			
Total	977	100			

Table 1 shows that; Among 977 students who participated in the study and stated their gender, 60.6% of 970 students were female and 39.4% were male students. When the gender variable is examined, it is seen that the number of female students is quite high compared to male students. According to the class variable, it is seen that the highest number of students is in the 12th grade group and the least number of students is in the 10th grade group. The number of students who do not speak English at home is more than those who do not speak

English at home.

The opinions of the students, do the attitudes of the students towards English course change according to gender

The results of the quantitative research findings for the research question that “Based on the opinions of the students, do the attitudes of the students towards English course change according to gender?” are presented at Table 2.

Table 2: Variation of general attitudes of students towards English course by gender

Variables	Gender	n	Mean Rank	Sd	χ^2	p
General attitudes towards the course	Female	588	477,71	1	1,158	0,28
	Male	382	497,49			
Attitudes towards the general characteristics and importance of the course	Female	588	500,73	1	4,432	0,04*
	Male	382	462,06			
Attitudes of subjects towards attractiveness	Female	588	468,89	1	5,336	0,02*
	Male	382	511,06			
Attitudes towards course style	Female	588	457,27	1	15,399	0,00*
	Male	382	528,95			

* $p < 0.05$

According to Mann Whitney U test results, students' attitudes towards English course did not change according to gender ($\chi^2 = 1,158$, $p > 0.05$). However, students' attitudes towards the general characteristics and importance of the English course vary according to gender ($\chi^2 = 4,432$, $p < 0.05$). Accordingly, female students' attitudes towards the general characteristics and importance of the English course are higher than male students. In addition, students' attitudes towards the subjects of interest in the English course vary according to gender ($\chi^2 = 5,336$, $p < 0.05$). According to this, male students find the subjects in the English lesson more interesting than female students. Again, according to the results, the attitudes of the students towards the course of teaching in the English course vary according to gender ($\chi^2 = 15,399$, $p < 0.05$). According to this, male students' attitudes towards the course style of teachers in English lessons are higher than female students.

The attitudes of students towards English course vary according to their grade level

The results of the quantitative research findings for the research question that “Do the attitudes of students towards English course vary according to their grade level?” are presented at Table 3.

Table 3: Variation of general attitudes of students towards English course by the grade level

Variables	Grade	n	Mean Rank	Sd	χ^2	p
General attitudes	9th grade	179	509,06	3	1,413	0,70

towards the course	10th grade	167	480,44			
	11th grade	302	479,62			
	12th grade	329	491,04			
Attitudes towards the general characteristics and importance of the course	9th grade	179	522,18	3	4,025	0,26
	10th grade	167	462,40			
	11th grade	302	487,20			
	12th grade	329	486,10			
Attitudes of subjects towards attractiveness	9th grade	179	475,28	3	5,242	0,26
	10th grade	167	489,28			
	11th grade	302	518,01			
	12th grade	329	469,69			
Attitudes towards course style	9th grade	179	479,96	3	4,871	0,18
	10th grade	167	519,06			
	11th grade	302	465,13			
	12th grade	329	500,58			

* p < 0.05

According to the results of Kruskal-wallis H Test, the attitudes of the students towards English course did not change according to their grade level ($\chi^2 = 1.413$. $p > 0.05$). In addition, students' attitudes towards the general characteristics and importance of the English course did not change according to their grade level ($\chi^2 = 4.025$. $p > 0.05$). In addition, the results showed that the attitudes of the students in the subjects of interest in English course did not change according to their grade levels ($\chi^2 = 5.242$. $p > 0.05$). In addition, the attitudes of the students towards the course style of the teachers do not change according to grade level ($\chi^2 = 4.871$. $p > 0.05$).

The opinions of the students, do the attitudes of the students towards English course change according to the presence of someone who knows English at home

The results of the quantitative research findings for the research question that “Based on the opinions of the students, do the attitudes of the students towards English course change according to the presence of someone who knows English at home?” are presented at Table 4.

Table 4: Variation of general attitudes of students towards English course according to the presence of someone who knows English at home

Variables	Presence of someone who knows English at home	n	Mean Rank	Sd	χ^2	p
General attitudes towards the course	Yes	399	492,49	1	0,973	0,32
	No	564	474,58			
Attitudes towards the general characteristics and importance of the course	Yes	399	513,08	1	8,548	0,00*
	No	564	460,01			
Attitudes of subjects towards attractiveness	Yes	399	467,51	1	1,88	0,17
	No	564	492,25			
Attitudes towards course style	Yes	399	476,06	1	0,315	0,57
	No	564	486,20			

*p<0,05

According to the results of Mann Whitney U test, students' attitudes towards English course did not change according to the presence of someone who knows English at home ($\chi^2 = 0.973$, $p > 0.05$). In addition, according to the results, students' attitudes towards the general characteristics and importance of the English course varies depending on whether or not someone who knows English is at home ($\chi^2 = 8,548$, $p < 0.05$). Accordingly, the attitudes towards the general characteristics and importance of the English course of students who speak English at home are higher than those who do not speak English at home. In addition, the students' attitudes towards the interest of the subjects in the English lesson did not change according to the presence of someone who knows English at home ($\chi^2 = 1.88$, $p > 0.05$). In addition, the attitudes of the students towards the way teachers work in

English lessons do not change according to the presence of someone who knows English at home ($\chi^2 = 0.315$, $p > 0.05$).

The teachers' perceptions of student attitudes in English courses

"Did you perceive changes in students' attitudes towards English course by gender?" In the qualitative data analysis of the question, all the participants stated that the attitudes of female students were more positive than male students. One of the participants said, 'When the attitudes of the students are taken into consideration, the attitudes of the female students to the male students are more positive than the male students. In the question "Did you perceive changes in students' attitudes towards English course according to their different grades such as 9-12?", all of the participants stated that there were changes in student attitudes according to class level and that interest decreased as the level of class increased. This situation can be understood from the following sentences.

"As class grows I think there is an inverse proportion to attitude ratio. The attitude is negative. So when they come to the 9th grade, they are more positive. It's a little less in the 10th grade, a little less in the 11th grade, and a little less in the 12th grade."

In the qualitative data analysis of the question "Did you perceive changes in students' attitudes towards English course depending on whether or not someone knows English at home?", the majority of the participants stated that having English at home affects attitudes positively. This situation can be understood from the following sentences.

"My general opinion of whether someone who speaks English is at home is obviously very effective. I think it affects attitude. In other words, speaking with someone who knows English and having a vision of this family inevitably affects the student inevitably."

DISCUSSION, CONCLUSION AND SUGGESTIONS

In this study, in order to examine the potential of using high school students' attitudes towards English course as an input in educational programs, it was determined by using the attitude scale whether the attitudes of the students changed according to gender, class and whether or not someone who knows English in the family. In addition, the opinions of the English teachers working in schools where attitude scale was applied were taken and the quantitative findings were tried to be supported. The findings of this study are discussed and evaluated with the support of the literature.

According to the quantitative data of the study, it was found that there was no significant difference between the attitude scores of the students towards the English course and the gender variable. Atlı (2008), Burgucu (2011), Sarkmaz (2011), Karabulut (2013), Hovhannisyan (2014), Karataş, Alçı, Bademcioğlu and Ergin (2016) found no significant difference between attitude and gender in their studies. This finding of the research and the studies mentioned in the literature support each other. However, there are studies in the literature that do not support this finding and that there is a significant difference between attitude and gender. In the studies conducted by Hussain, Shahid and Zaman (2011), a significant difference was found between gender and attitude. Kazazoğlu (2011), Salman (2011), Köyönü (2012), Görgün (2013), Delbesoğlu (2013), Kesgin and Arslan (2015), Çelik (2015) in the research conducted by the attitudes towards the English course, it was found that the attitudes of female students were more positive than male students. In the literature, there are studies showing that male students' attitudes towards English lessons are higher than female students. Erbaş (2013) found that male students liked the English lesson more than female students and had higher expectations from the lesson, while Soleimani and Hanafi (2013) found that male students' attitudes were higher than female students.

Quantitative research findings and qualitative research findings differ from general attitudes towards English course. In the qualitative research dimension, the teachers stated that female students' attitudes towards English lesson were more positive than male students. In the research, the relationship between the sub-dimensions of attitude towards English course and gender variable were also examined. According to the quantitative findings of the study, it was found that the attitudes of female students regarding the general characteristics and importance of the English course were higher than male students' attitudes. The teachers who participated in the study stated that the attitudes of female students about the general characteristics and importance of the English lesson were higher than the male students. It is seen that the qualitative and quantitative findings about the general characteristics and importance of the English course support each other. However, it was found that there was a significant difference between the attitudes towards the interest of the subjects in the English course and the way the teacher worked and the gender variable in favor of the male students. However, as a result of the interviews with the teachers, there was no significant difference between the attitudes of the subjects in the

English lesson and the way the teacher worked. It is seen that quantitative and qualitative findings do not support each other regarding the attractiveness of the subjects in the English course and the way teachers work.

In the quantitative data analysis, it was determined that students' attitudes towards English course, general characteristics and importance of English course, attractiveness of subjects in English course and teacher's course style did not change according to grade level. In the literature, there are researches showing that attitudes towards English course change and do not change according to grade level. In the studies conducted by Kazazoğlu (2011) and Salman (2011), there was no significant relationship between grade level and attitude. These findings support the findings obtained in the study. In the study conducted by Kırkız (2010) to investigate the relationship between 8th grade and 11th grade students' attitudes towards English course and their academic achievement, it was concluded that 8th grade students' attitude scores were higher than 11th grade students' scores.

However, in the qualitative data analysis, the teachers who participated in the research stated that the students' attitudes towards the English course, the general characteristics and importance of the English course, the attractiveness of the subjects in the English course, and the attitude of the teacher towards the course style changed according to the grade level.

In the quantitative data analysis, it was concluded that the students' attitudes towards the English course, the attractiveness of the subjects in the English course and the style of the teacher did not change according to the situation of the students who knew English and whether or not someone was at home, but the attitudes towards the general characteristics and importance of the English course changed in favor of the students who knew English at home. . In the study conducted by Kazazoğlu (2011), it was found that the attitudes of the students whose father speaks a foreign language to their mother tongue and foreign language were more positive than the students whose father did not speak a foreign language. In addition, the mother's knowledge of English students. It was determined that attitudes towards English course positively affected.

According to the qualitative findings of the study, teachers stated that the general attitudes of the students who speak English at home were more positive. This finding does not support the quantitative findings. The teachers stated that the attitudes towards the general characteristics and importance of the English course were positive in favor of the students who are a family member who knows English. This data coincides with the quantitative data findings. According to the teachers' opinions about the attractiveness of the subjects in the English lesson and the way the teacher operates the lesson, does not significantly affect the attitudes. These findings support our quantitative data.

Female students' attitudes towards the general characteristics and importance of the English course are more positive than male students. In the design of the curriculum, teachers should take care to create activities in the classroom that will make male students enjoy and appreciate the importance of the English course. The attitudes of male students towards the attractiveness of the lesson are more positive than female students. Therefore, the subjects and activities that will attract the interest of female students can be included in the design of the curriculum. The attitudes of male students towards the way teachers work are more positive than female students. Interesting activities that address different learning styles should be added to the classes in order to increase the attitudes of female students towards the way teachers work. According to the quantitative data, the general characteristics and importance of the English course, the attractiveness of the subjects in the English course and the attitudes towards the course of the teacher change according to gender, structured interviews should be conducted with male and female students in the future studies and the sources of the changes should be investigated.

REFERENCES

- Ataman, O. (2017). Üniversite Hazırlık Sınıfı Öğrencilerinin İngilizce Öğrenmeye Yönelik Motivasyon Düzeyleri ve Tutumları ile Hazırlık Sınıfı Başarı Puanları Arasındaki İlişki, Unpublished Master Thesis, Sakarya University, Sakarya.
- Atlı, I. (2008). Young Language Learners' Attitude Towards English Lessons in Turkish Elementary Schools, Unpublished Master Thesis, Ondokuzmayıs University, Samsun.
- Aydoğdu, Ç. (2014). The Relationship Between Foreign Language Learning Anxiety, Attitude toward English Language, Language Learning Strategies and Foreign Language Achievement, ' Unpublished Master Thesis, Atatürk University, Erzurum.
- Baker, C. (1992). Attitudes and Language, Multilingual Matters Ltd., Clevedon, Philadelphia, Adelaide, Retrieved from <https://books.google.com.tr/books?id=uC24FqNcfXYC>.

- Binbaşıoğlu, C. (1995). Eğitim Psikolojisi, Yargıcı Matbaası, Ankara.
- Burgucu, A. (2011). The Role of Motivation, Attitude and Anxiety in Learning English as a foreign Language, Unpublished Master Thesis, Kafkas University, Kars.
- Çelik, Ö. (2015). The Role of Starting Age to Learn English as a Foreign Language in Young Learners' Attitudes towards English, Unpublished Master Thesis, Çağ University, Mersin
- Chambers, G. N. (1999). Motivating Language Learners (Modern Languages in Practice). Multilingual Matters.
- Delbesoğlu-Özdiç, A. B. (2013). As Predictors of Academic Success in EFL Classrooms, Self Regulation, Self Esteem and Attitude (A Case Study), Unpublished Master Thesis, Gaziantep University, Gaziantep.
- Doğan, C. (2012). Sistematiik yabancı dil öğretim yaklaşımı ve yöntemleri. İstanbul: Ensar Neşriyat, 79.
- Doğan, H. (1997). Eğitimde program ve öğretim tasarımı. Önder Matbaacılık.
- Erarslan, A. (2011). Perceptions and Attitudes of the Preparatory Class Students towards the Writing Course and Attitude -Success Relationship in Writing in the School of Foreign Languages at Pamukkale University, Unpublished Master Thesis, Pamukkale University, Denizli.
- Erbaş, H. (2013). İlkokul ve Ortaokul Öğrencilerinin İngilizceye Karşı Tutumlarının Çeşitli Değişkenlere Göre İncelenmesi, Unpublished Master Thesis, Yeditepe University, İstanbul.
- Gardner, R. C. (2010). Motivation and Second Language Acquisition The Socio Educational Model, PeterLangPublishing, NewYork, Retrieved from <https://books.google.com.tr/books?isbn=1433104598/>
- Gómez B., E., & Pérez, P. (2015). Chilean 12th graders' attitudes towards English as aforeign language. Colombian Applied Linguistics Journal, 17(2), 313-324.
- Görgün, F. (2013). An Analysis of Factors That Influence Turkish EFL Learners' Attitudes Toward English Language, Unpublished Master Thesis, Uludağ University, Bursa.
- Gupta, S., & Gupta, A. (2013). The systems approach in education. International Journal of Management, 1(1), 52-55.
- Hovhannisyan, I. (2014). Learners' attitudes and motivation to learn English: English as a foreign or as an international language. Unpublished PhD dissertation. Department of Theoretical and Applied Linguistics, School of English, Aristotle University of Thessaloniki.
- Hunkins, F. P., & Ornstein, A. C. (2016). Curriculum: Foundations, principles, and issues. Pearson Education.
- Hussain, M. A., Shahid, S., & Zaman, A. (2011). Anxiety and attitude of secondary school students towards foreign language learning. Procedia-Social and Behavioral Sciences, 29, 583-590.
- Ibnian, S. S. (2015). The Relationship between Saudi EFL Students' Attitudes towards Learning English and their Academic Achievement.
- Ibnian, S. S. (2017). Attitudes of public and private schools' students towards learning EFL. International Journal of Education, 9(2), 70-83.
- Karabulut, H. (2013). Attitudes towards Learning English and English Language, Unpublished Master Thesis, Çağ University, Mersin
- Karataş, H., Alçı, B., Bademcioğlu, M. & Ergin, A. (2016). Üniversite Öğrencilerinin İngilizce Öğrenmeye İlişkin Tutumlarının Farklı Değişkenlere Göre İncelenmesi, Educational Research Association The International Journal of Educational Researchers, 7(2), 12-20.
- Kazazoğlu, S. (2011). Anadil ve Yabancı Dil Derslerine Yönelik Tutumun Akademik Başarıya Etkisi, Unpublished PhD Thesis, Ankara University, Ankara.
- Kesgin, N., & Arslan, M. (2015). Attitudes of students towards the English language in high schools. Anthropologist, 20(1-2), 297-305.
- Kirel, S. (2004). Tutum ve tutum değişimi. Ünlü, S.(Der.), Sosyal Psikoloji, 69-81.
- Kırkız, Y. A. (2010). Öğrencilerin İngilizce Dersine Ait Tutumları ile Akademik Başarıları Arasındaki İlişki, Unpublised Master Thesis, Trakya University, Edirne.
- Kocadelioğlu, T. (2013). The Analysis of Students' attitudes to English as a Foreign Language in Primary School, Unpublished Mater Thesis, Necmettin Erbakan University, Konya.
- Köyönü, M. B. (2012). İlköğretim Öğrencilerinin İngilizce Dersine Yönelik Tutumları ile Ders Başarıları Arasındaki İlişkinin İncelenmesi: Kandıra İlçesi Örneği, Unpublised Mater Thesis, Bülent Ecevit University, Zonguldak.
- Küçükahmet, L. (2009). Program geliştirme ve öğretim. Nobel Akademik Yayın.
- Manachon, N. and Suwattana, E. (2015). A Comparative Study of Attitudes Toward English as a Foreign Language learning between upper secondary students in science-mathematics and arts-language programs at the Demonstration school of Ramkhamhaeng University Thailand, Graduate School of Education, Assumption University, Thailand.
- Ming, T. S., Ling, T. S., & Jaafar, N. M. (2011). Attitudes and motivation of Malaysian secondary students towards learning English as a second language: A case study. 3L: Language, Linguistics, Literature®, 17(1).
- Ormrod, J. E. (2016). Öğrenme Psikolojisi, (Çev.: M.Baloğlu), Nobel, Ankara.

- Pan, V. L. (2014). Eğitim Fakültesinde Yabancı Dil Dersi Alan Öğrencilerin Yabancı Dil Dersine Yönelik Tutumlarının ve Sınıf Kaygılarının İncelenmesi, Unpublished Master Thesis, Mersin University, Mersin.
- Salman, R. M. (2011). Attitudes of High School Students Towards English as a Foreign Language in Ağrı, Unpublished Master Thesis, Kafkas University, Kars.
- Sarkmaz, Ö. (2011). Technical and Vocational High School Students' Attitudes to Language Learning in İskenderun, Unpublished Master Thesis, Çukurova University, Adana.
- Şeker, H. (2014). Program Değerlendirme, İçinde: Eğitimde Program Geliştirme: Kavramlar, Yaklaşımlar, Ed. Hasan Şeker, 3.
- Soleimani, H., & Hanafi, S. (2013). Iranian medical students' attitudes towards English language learning. International Research Journal of Applied and Basic Sciences, 4(12), 3816-3823.
- Sönmez, V. (2005). Program Geliştirmede Öğretmen El Kitabı, Anı Yayıncılık, Ankara.
- Sönmez, V., & Alacapınar, F. G. (2015). Örnekleriyle eğitimde program değerlendirme. Ankara: Anı Yayıncılık.
- Ülgen, G. (1997). Eğitim Psikolojisi, Alkım Yayınevi, İstanbul
- Yildirim, A., & Şimşek, H. (2013). Sosyal Bilimlerde Nitel Araştırma Yöntemleri (9. Baskı) Ankara. Seçkin Yayıncılık.

INTEGRATION OF SOFT SKILLS IN THE NORMAL LECTURE TURNS OF BASIC ACADEMIC STUDIES

Eckehard MÜLLER

Center for Teachers Education, and Department of Mechanical Engineering
Bochum University of Applied Sciences, Bochum, Germany
eckehard.mueller@hs-bochum.de

ABSTRACT

Soft skills or better in Europe called key competences are essential for everyone in the working life and often stay in the shadow of traditional lectures. Because they are competences and no qualification, the key competences must be trained in real situations. Therefore, a special situation in the lectures must be created. This paper will show without many efforts you can do it and train key competences.

In relation to the subject of the lecture (Physics, Mathematics, Economic....) you look at great persons like Newton, etc. The work is to write an application for a job of this person. Afterwards you present this application at one or group of head hunters. The head hunter could be the person, who gives the lectures of this special subject. About the experience of the model is reported and all chances and disadvantages connected to the task will be discussed.

INTRODUCTION

Soft skills or key competences (see next chapter) has become the last 20 - 30 years more and more essential, because the working environment has change and is changing. In former times you learned it step by step in the first and/or second job after the university. This situation has rapidly changed. Today the employers demand that the new employees, which has no experience in the job world, should also master key competences. E. g. intercultural competences are in the global working world essential for many people. Appliers for a new job are preferred, which can show personal experience. This could be studying in a foreign country for one or two semesters. Also, social work in a country far away are a proof. E. g., if somebody helps in a children's home in India before going to the university. That is a training by performance. But not all students have such a CV.

Therefore, during the academic courses of studies the "normal" students have to get a basic idea and parallel to the traditional subject they have to be trained to perform better in the new working world. Starting at the beginning of their student life is essential because else they cannot reach the level which is demanded.

BASICS

The term key qualifications were pushed by Mertens (1974) But before we look at this development, some basic definitions must be made concerning knowledge, crafts and skills and on the other side qualifications and competences.

Knowledge and skills are essential components for full participation in society. (OECD 2005a) Additional also crafts must be another component defined as basic manual skills. Participation does not mean that you can work in a normal, not high sophisticated job. In this case you need more than basic knowledge.

In the next step qualifications are to be defined to see the differences and overlaps. One representative definition the following, which has been analogously translated: Qualifications are knowledge, skills, crafts, which should be used for special tasks or jobs. Qualifications are determined from the view of external demands and not from the view of the individuum. They are ancillary to professional competences and the professional decision-making and responsibility. (The original citation is: „Unter Qualifikationen werden Fertigkeiten, Kenntnisse, Fähigkeiten und Wissensbestände im Hinblick auf ihre Verwertbarkeit für bestimmte Tätigkeiten oder Berufe verstanden. Qualifikationen werden aus der Sicht der Nachfrage und nicht aus der Sicht des Subjekts bestimmt. Sie sind den beruflichen Kompetenzen und der beruflichen Handlungskompetenz untergeordnet bzw. sind als deren integrale Bestandteile zu sehen.“ (Heffels 2007)). You can say that they are embedded. This fact is schematically shown in figure 1.

The proof of qualification often is done by written tests or interviews. Sometimes qualification could also be learned on the informal way like experience. Normally the test is performed in a situation, which is not in the real setting.

Like you see in figure 1 competences are the outer circle, which involves all. The European Commission and the OECD defines competences: "A competence is more than just knowledge and skills. It involves the ability to meet complex demands, by drawing on and mobilizing psychosocial resources (including skills and attitudes) in a particular context. For example, the ability to communicate effectively is a competency that may draw on an individual's knowledge of language, practical IT skills and attitudes towards those with whom he or she is communicating." (OECD 2005 b)

The European Commission says: "Competences are defined here as a combination of knowledge, skills and attitudes appropriate to the context. Key competences are those which all individuals need for personal fulfilment

and development, active citizenship, social inclusion and employment.” (EU 2006)

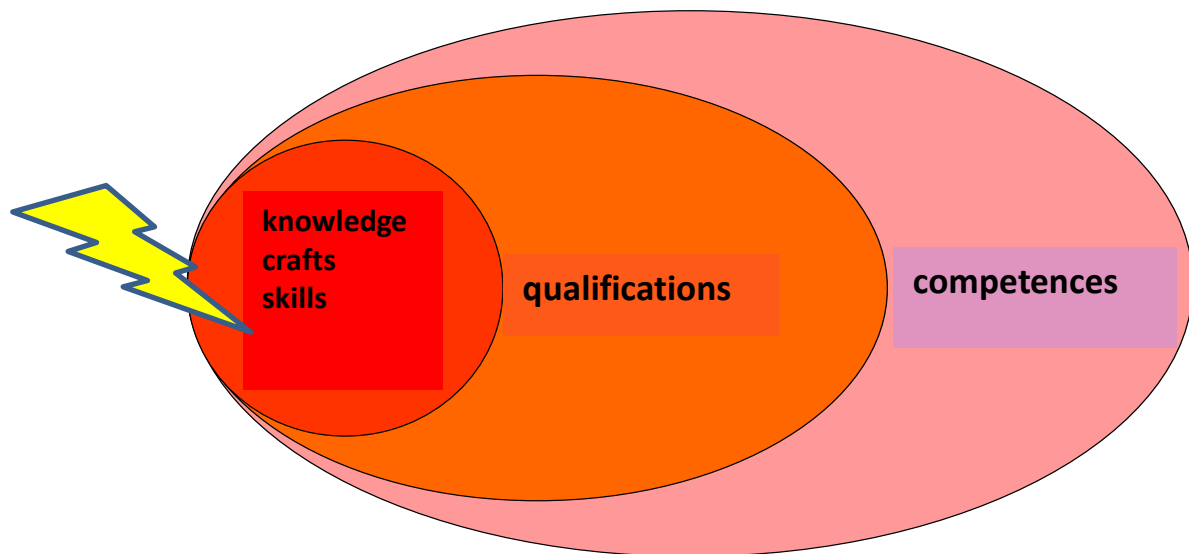


Figure 1: How the different items are embedded. (adapted Erpenbeck 2009)

To make it clearer a simple example of a fire brigade man is shown in figure 2.

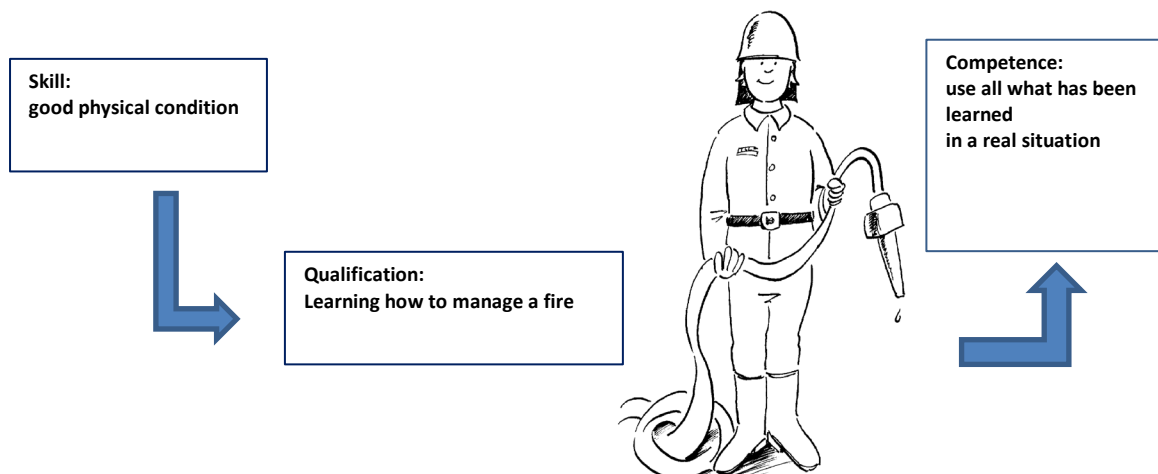


Figure 2: A practical example for everyone

What are the consequences for testing competences? Qualification can be tested e. g. in a written test or by multiple choice, like mentioned above. Competences must be checked in a real situation, because many influences are there, which forces the person to act according the situation. You call it performance test. If you look at figure 2, the fireman has to show under supervision and helping in a real fire situation the acting of himself.

In the next step the contents of key competences must be defined. In the 80th decade last century in Germany key qualifications were pushed (Mertens 1974). Richter (Richter 1995) divided key qualifications into three main dimensions, which up to now you can find as the basic structure (fig. 3): methodical competences, social competences and self-competences.

What are typical key competences in the different fields? In table 1 some examples are shown. Sometimes there a much more competences are defined, but in this case, you lose the overview, they are overlapping, and they are difficult to train. There are extensions to totally other fields like computing, communication in different language, etc. (EU 2006), which are not further discussed here. A more expanded definition is also given by the OECD in the DeSeCo Program (Defining and Selecting Competencies: Theoretical and Conceptual Foundations). (Rychen, 2000). In the international context, this definition is used very often as basic definition, because it was one of the first global definitions, which can also be used. In this paper the above given definitions are used. Some authors

define (mostly as soft skill in a very splitted way, which may be 60 or more (e. g. Schulz 2008, Taylor 2016). This might be good in some cases, but for a basic learning steps the three areas are enough.

Table 1: examples for the different areas of key competences

competences	methodical	social	personal
Examples	problem solving	communication	self-conscious
	time based actioning	project-management	self-management
	presentation	team-management	motivation
	learning techniques	relation-management	stress-management

In Europe is always spoken from key competences. In the US the word soft skills is established. As explained above it is obvious, that soft skills, let's say, is not the best words.

Today key competences are more important than specialized know-how of the working field. This know-how is a requirement. The lonely engineer, worker, etc. is not used anymore, because the products became so complex, that only a group or lots of smaller groups can create the product. A very obvious example are big software programs. E.g. the right communication or project-management is essential for the success. One main part of an application interview is the subject key competences (Cimatti, B., 2016). The OECD expanded the key competences to manage the whole life. (OECD 2005 b) In the future the development will be to broader fields, which are relevant in all situations of a person. A similar classification like (Richter, 1995) in this context is done by (Fugate, 2004).

There are many possibilities to integrate key competences at the university. (e. g. Abbas 2013, Anthony, 2014, Ramlall 2014) Mostly it is done in relation to the later job, which is a main aspect. Now an example is described which can integrated in many subjects at schools and universities.

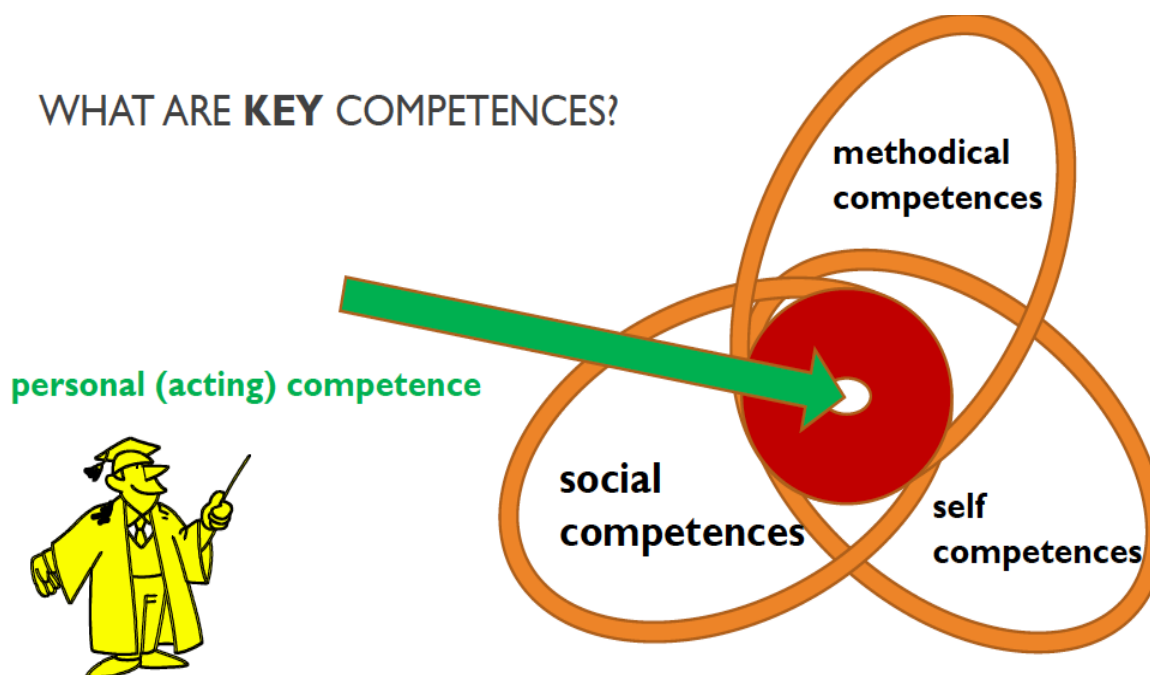


Figure 3: The basic dimensions of key competences (adapted Richter, 1995)

SPECIAL CONSIDERATIONS

The training of key competences should start in the first semester. If the students leave the university, they should be able to manage their life specially in relation to the job. The students have an age between 18 and 22 years, when they enter the university. Half of them have no working experience. Means they are coming directly from school. The other half has already a recognized occupation requiring formal training. The experience for applying for a job in the future is low. That means basic key competences has to be trained.

The basic idea is that a situation is created in relation to the special subject but can be arranged in every subject. The following scenario is played:

The lecturer is a head hunter, who needs a person for a job. The students should apply for this job, but in the role of a famous person of the special lecture. This situation can be done in every subject.

A list of possible persons for some subjects are shown in table 2:

Table 2: Possible persons for the tasks of the student

Subject	Physics	Mathematics	Computing	Economy
Persons	Einstein	Gauß	Zuse	von Mises
	Newton	Mandelbrot	Jobs	Mundell
	Celsius	Eratosthenes	Berners-Lee	Solow
	Planck	Laplace	Ritchie	Marx
	Bohr	Pascal	Zuckerberg	Selten
	Laue	v. Neumann	Hollerith	Hayek
	Hertz	Euler	Wozniak	Frisch

The students have to do the following steps:

1. *choose one famous person*
2. *write a CV of this person*
3. *write an application letter*
4. *sending the letter to the head-hunter*
5. *presenting themselves by slides*
6. *being in an application interview*

It does not matter, if the person is dead or alive. They must make an investigation of this person, which they have chosen. One important item is to find out the real character. This fact must be mirrored specially in the application letter and is essential for the interview. Of course, the head hunter (= lecturer) knows the character of the applying person. This process is an example of a performance test. Is the student afraid in interview and you get the impression that he is shy? Or is he stammering? Or getting nervous, because the beamer drops down? And, and, and,..... You must not create a special artificial and difficult scenario. It should be real life.

REALIZATION

At first there are some additional lectures in the basics tasks like writing a letter and a CV. A special focus was made on the presentation. The real life shows e. g. at conferences that a lot of people make boring presentations. If you are applying for a job, the head hunter has not only this one person. He has to take attention of a bunch of candidates. The strategy is to be kept in mind. One item is an impressive (not a good) presentation which can be remembered within seconds.

One problem is the number of students. If everyone makes the whole procedure as single person, it takes a lot of time for the lecturer. Because it is a basic step to train key competences you can make small group of 4 to 6 students. In the interview everybody has to answer questions to avoid that some are fellow-runners which want to pass with a minimum of effort.

It was performed in two lectures: Physics and computing, but in different degree courses. Physics was in the course in the mechanical engineering section and computing in the course for getting the degree in computer science. In both cases it works. But you see significant differences how the students behave.

Some students from the engineering department dressed better, because they recognized the situation. A lot of computing students were nerds and had no idea that the real world is working a little bit in another way. The self-marketing was no word in their vocabulary. Writing the CV is a method, which both groups learned and applied. In the presentation were slight differences. The engineering group generated more easily interpreted graphic images of their carrier. (Remember, it is the carrier of a great physicist.). Because all the students have not much practice standing before an audience, they behave in the same way with not much self-confidence. Organizing themselves were in the background and was difficult to evaluate.

To look back, what key competence tasks did both groups trained?

- *making a presentation (slides)*
- *presenting before an audience*
- *getting self-confidenceny*
- *writing a CV (application) --> lecturer*
- *organizing themselves (time)*
- *performing self-marketing*

I think it was a great experience for them. If you look realistically it was a small step to their later life.

SUMMERY

In this paper is shown to train key competences must not be combined with big efforts for the lecture. It is a general concept, which can be used in every subject or department. Also, it can be performed in bigger classes. The students are learning in the closed world within the university, which give more self-confidence in the beginning. It is a small but may be first step to prepare them for their later life.

REFERENCES

- Abbas, R., Abdul Kadir, F. A., & Ghani Azmie, I. A. (2013). Integrating soft skills assessment through soft skills workshop program for engineering students at University of Pahang: an analysis. *International Journal of Research In Social Science*, 2(1), 33-46.
- Anthony, S. (2014). Integrating soft skills in the curriculum without sacrificing content. *Journal for Academic Excellence*, 2(4), 1-57.
- Cimatti, B. (2016): Definition, Development, Assessment of soft skills and their Rolle for the Quality of Organization and Enterprises. *International Journal for quality research*, 10(1) 97 - 130.
- Erpenbeck, John (2009): Was „sind“ Kompetenzen? Kompetenz., Band 1, Steinbeis-Edition Bd. 4, Berlin, 16 Stuttgart
- EU (European Union) (2006): Recommendation of the European Parliament and of the Council L of 18 December 2006 on key competences for lifelong learning, *Official Journal of the European Union*, L 394, 11 -18
- Fugate, M., Kinicki, A. J., & Ashforth, B. E. (2004). Employability: A psycho-social construct, its dimensions, and applications. *Journal of Vocational behavior*, 65(1), 14-38.
- Heffels. W. M., Streffer D, Häusler, B. (2007): Macht Bildung kompetent? Handeln aus Kompetenz – pädagogische Perspektiven, *Schriften der KFW HK, Opladen*, Bd. 5, 53,
- Mertens, D. (1974): Schlüsselqualifikationen. Thesen zur Schulung für die moderne Gesellschaft. *Mitteilungen aus dem Arbeitsmarkt und Berufsforschung*, Jhg. 7, H.1, Nürnberg
- OECD (2005 a): The Definition and Selection of Key Competences, <https://www.oecd.org/pisa/35070367.pdf> (3. July 2019). 3
- OECD (2005 b): The Definition and Selection of Key Competences, <https://www.oecd.org/pisa/35070367.pdf> (3. July 2019). 4
- Richter, C. (1995): Schlüsselqualifikationen. Sandmann-Verlag, Alling, 38
- Ramlall, S., & Ramlall, D. (2014). The value of soft-skills in the accounting profession: Perspectives of current accounting students. *Advances in Research*, 2(11), 645-654.
- Rychen, D. S., Salganik (2000), L. H.: Definition and Selection of Key Competences, *The INES Compendium*, Tokyo, GA(2000)12, 61-74
- Schulz, B. (2008). The importance of soft skills: Education beyond academic knowledge. *Journal of Language and Communication*, (6) 2008, 145 – 154
- Taylor, E. (2016). Investigating the perception of stakeholders on soft skills development of students: Evidence from South Africa. *Interdisciplinary Journal of e-Skills and Lifelong Learning*, 12(1), 1-18.

INTERVENTION PROGRAM FOR HELPING PARENTING STUDENTS IN NON-FORMAL AND INFORMAL EDUCATION CENTERS (NF-IEC): THAILAND

Unchalee SANRATTANA

Faculty of Education, Khon Kaen University, 40002 Khon Kaen, Thailand

Pinayo PROMMUANG

Vonchavalitkul University, 30000 Nakhon Ratchasima, Thailand

Correspondence should be directed to unesar@kku.ac.th

ABSTRACT

The number of young pregnant and pregnancy students has been increasing especially in the Northeastern part of Thailand. These group of students need to be educated for being a successful parent and family life. This research aimed to 1) develop the intervention program for parenting students of NF-IEC in the Northeastern Region of Thailand and 2) examine the effectiveness of the intervention program. The conceptual guideline for developing was 1) planning and designing the parenting students' intervention program (PSIP) 2) producing PSIP package drafting and validated by focus group of 15 specialists and 3) enacting PSIP by using an action research to examine the effectiveness. Participation consists of one director, five teachers and 17 volunteer parenting students who have been studying in NF-IEC. Results showed that a validated PSIP consist of pregnancy causes, motherhood's necessary behaviors, and self-efficacy of 50 hours teaching and learning activities. For the PSIP effectiveness showed that there was no significant difference in term of their knowledge. However, volunteer parenting students showed to have high self-efficacy and satisfaction with the participation of PSIP process.

Keywords: intervention program; parenting students; parenting students' intervention program (PSIP); self-efficacy

INTRODUCTION

The social and personal problems resulting from young pregnancy and parenting students are including inadequate prenatal care, early dropping out of schools, poor parenthood practices and incompetent low-wage workers. Studies showed that children born to young parents are more likely to have more negative experiences compared to children born to mature parents (American Academy of Pediatrics, 2001). World Health Organization (WHO) in 2014 made guidelines for early preventing pregnancy and poor reproductive outcomes among adolescents in developing counties targeting six key objectives including one of creating understanding and support to reduce pregnancy of women below the age of 20. In addition, the WHO report sets a target that stamps teenage pregnancies who are 20 years below to less than 10% in any country. However, Thailand's teenage pregnancy rate is higher than that with a rate that is the second highest in Southeast Asia after neighboring Laos (Fernquest, 2013). In 2009, National Statistical Office of Thailand reported that there were 222,866 pregnant teenagers. Among these women, some were students who were studying in the basic education.

In Thailand, pregnancy during studying in basic education level is not allowed. In addition, there would be considerable social pressures due to embarrassment in front of friends in

schools, having no time to school work due to child care at home. However, some pregnant students are back to study by enrolling at Non-Formal and Informal Education Centers (NF-IEC) to achieve their basic education. Although educational managements of the NF-IEC are flexible, many of their programs focus on vocational pathways practice and a little towards life skills development. Hence, their curriculum is appropriate for increasing the employment chances of the teen age pregnant women, but does little to respond to their immediate needs as students and mothers at the same time. In addition a number of parenting students enroll in NF-IEC has been increasing, so there is a need for NF-IEC to have some courses about parenthood practice.

Research of Coleman, P.K. & Karraker, K.H. (1997) said that poor **self-efficacy beliefs contribute** to poor parenting practices and increased maternal depression. Hence programs that assist students in their parenthood practices must cater for their self efficacy in order to be effective. Self-efficacy is the belief in one's own ability to accomplish something successfully. Self-efficacy theory explains that most people generally will only attempt things they believe they can accomplish and won't attempt things they believe they will fail. People with strong sense of efficacy believe they can accomplish even difficult tasks. They see these as challenges to be mastered, rather than threats to be avoided. Efficacious people set challenging goals and maintain strong commitment to them. The perception of efficacy is influenced by four factors: mastery experience, vicarious experience, verbal persuasion, and somatic and emotional state (Bandura, 1997)

From the previous studies concerning teenagers' pregnancy, they found that factors contributing teenage pregnancy were having sex without protection (Anusornthirakul et. al, 2008) and making friends with whom were at risk behaviors (Chewaphansri, 2013). In the research of Cheeraphan, A. (2011) reported that sexual attitudes and behaviors can be influenced by friends as well as the dissertation of Mungmetup, N. (1999), which found that teenagers accepted premarital sex value. Researches on teenagers' mothering behaviours found that teenagers had the motherhood's behaviors at the moderate level (Kritcharoen et. al., 2007) because of loss of knowledge and motherhood skills. Therefore, knowledge of taking care of child was learnt from parents or relatives. Some could not take care of their child. They passed this responsibility to their parents or relatives because of being pressured from economy, society, education and other private needs (Ratchukul, 1998). In addition research of Sanrattana, U. et al (2015) reported the 279 respondents of young pregnant and parenting students in NF-IEC of North-Eastern part of Thailand showed that most pregnant students were 19 years old (38.00%), having first sex at 15 years old (25.10%), having first child at 18 years old (23.70%), making love at first with just knowing man (85.30%), studying in High School at NF-IEC (55.20%), getting marry without the marriage license (39.40%), living with parents (53.90%), working as employees (32.60%), and having income below 5,000 bath per month (39.40%). Besides, the research of Speight (2009) found that pregnant teenagers needed the strengthening of self-efficacy because the teenagers with high self-efficacy would be healthy in nourishing themselves and their children.

From the above mentioned reasons shown that there are young pregnant and pregnancy students in the N-E region of Thailand. The number of that group has been increasing. Effective parenting is no accident, thus education for them is needed through PSIP.

RESEARCH OBJECTIVES

The research aimed to 1) develop and validate parenting students' intervention program for parenting

students through the NF-IEC in the Northeastern Region of Thailand and 2) examine the effectiveness of parenting students' intervention program.

METHODS

The research methods were divided into two phases as follows:

Phase one: Developed parenting students' intervention program (PSIP) based on self-efficacy theory and principle of curriculum development, and then using focus group for validated a PSIP. There were two steps of the program production.

First, drafting of the PSIP consisted of eight components: principle, goals, target groups, topics, and teaching techniques, learning processes in the classroom, teaching media, and assessment.

Second, the drafting PSIP was validated its suitability and congruence by 15 specialists in curriculum and instruction, educational measurement, psychiatrist, obstetrician, nurse, director and teacher in NF-IEC, by means of performing a focus group discussion.

Phase two: Try out and field trial the PSIP; in try out step, there were ten volunteer parenting students who were studying at NF-IEC in Khon Kaen province; in field trial, there were seven volunteer parenting students who were studying at NF-IEC in Kalasin province. All of 17 volunteer parenting students aged between 13-19 years old and had pregnant during studying in public high schools. Field trial used action research based on Altrichter, Kemmis, McTaggart and Skeritt (2002) consisting of planning, action, observation, and reflection. The researcher believed that action research will also empower teachers at NF-IEC in Kalasin province, who were participated in this research projects.

In planning step, the researchers contacted the director of NF-IEC in Kalasin province and asked for supporting in this. Researchers explained aims of this research. After negotiation done the researcher brought PSIP to teachers and explained about the goals, target groups, topics, and teaching techniques, learning processes, teaching media, and assessment of PSIP. Researchers took role of teaching and the teachers took role of observers.

In action, observation and reflection step, Researches teaching aligned with PSIP for seven days. The teachers of NF-IEC observed and took noted, researchers with teachers reflected based on the observation data by using group discussion.

Research Instruments

Phase one, the research instrument for validating the drafting PSIP were the Congruence Form which was gave to 15 specialists during focus group. The focus group discussion was based on two questions. The first question was "did the eight components in PSIP appropriate to help students in NF-IEC such as organization, and comprehensive?" The second question was "did you have any suggestion to improve PSIP?" After discussion the moderator gave the Congruence Form to 15 specialists and allowed time for them to respond. Found that the index of objective congruence values had ranged from 0.60 to 1.0

Phase two, the research instruments to examine the PSIP effectiveness and for observation step in action research spiral, consisting of lesson plans, achievement test, a checklist of motherhood's necessary behaviors, a self-efficacy assessment form and a questionnaire of parenting students satisfaction. More details of research instrument construction were as follows:

1. Lesson plans of 3 learning area in 11 topics for 50 hours were written that covered three main heading topics: factors relating to student pregnancy, motherhood's necessary behaviors, and self-efficacy.

2. Achievement test was the four- multiple choice consisting of 30 questions which covered all of topics in the PSIP. Face validity of a test was evaluated by five specialists in curriculum and instruction and educational measurement and then was tried out with 31 students who were

studying at NF-IEC in Kosumpisai in Maha-sarakham province. The achievement test's difficulty index ranged from 0.43 to 0.73 and had the power of discrimination values ranging from 0.30 to 0.60.

3. Checklist of motherhood's necessary behaviors were developed from the book of Ginott (2008), psychologist. The characteristics of this checklist were self-evaluation concerning the practice of motherhood's necessary behaviors, and there were two choices (practicing or not practicing) and had 42 items of questions. Face validity of the checklist was evaluated by five specialists. Its index of objective congruence ranged from 0.60 to 1.00.

4. Self-efficacy assessment form was a five-rating scale questionnaire that was face validity by five specialists as afore- mentioned.

5. Parenting students' satisfaction form was a five-rating scale questionnaire consisting of three main headlines: topics, handout of, and learning activities procedures containing 16 items of questions.

RESULTS

The written PSIP

The necessary contents knowledge and learning experiences needed for drafting PSIP was found as follows: 1) factors relating to student pregnancy pregnancy causes were: having sex without protection, mental factors, early maturity, peer pressures and sexual worldview; 2) motherhood's necessary behaviors that were : good relationships among mother and child, and moral teaching of mother to child; and 3) self-efficacy consisting of life-planning, the most of proud, learning the success from others' successors, and training to face with unsatisfactory behaviors or emotions of others that devalue ones' self-efficacy.

This drafting PSIP contained of 11 topics of 50 hours and was written on eight components: principle, goals, target groups, topics, teaching techniques, learning processes, teaching media, and assessment.

The PSIP effectiveness

Action research was used to examine the effectiveness of PSIP and the result shown as follow;

In planning step, the researchers did meeting with director and teachers in NF-IEC at Nong Krung Sri about the purpose of this research and asked for supporting to further trial the PSIP. A director was well co-operated and being needed innovation or something new for parenting students who were studying in NF-IEC at Nong Krung Sri. Moreover the director had a willing to help by teaching some topics and agreed to study the lesson plans and gave feedback. The teachers would observe the teaching activities in every period. The researchers negotiated, discussed mutual benefits and took care of the expenses.

In action step, the researchers adjusted a classroom to fit the activities and informed learning objectives, activities, teaching media and assessment forms to the teachers before starting learning activities in every period. In the first two days the learning area of comprehensive knowledge was pregnancy causes. The parenting students were quite silent and shy, not expressing their ideas. These were because of the content and they might not know each other. They were not asking any question. This shows that they were passive learners rather than active learners. Thus the researchers adapted the activities by adding group dynamic and games at the beginning of the periods. Fortunately after finishing the 11 lesson plans of 50 hours, students dared to express their ideas in front of the classroom or within the group. In the last two days the activity was outdoor trips by visiting the counseling centre for teenage parent at Kalasin Hospital in practicing to face with unsatisfactory behaviors and emotion of others that devaluated ones' self-efficacy. Another outdoor trip was meditation practice, held at Baan Nongsuang Forest Temple. From the analysis of the data found that they had good attitude to the application of meditation in daily life. However, from the observation found that they could not meditate long.

In observation step, by using the instrument found the information as follows:

1. Achievement or Knowledge

Before teaching, researchers gave parenting students to make the pre-test with 30 Items of question, as well as, they made the posttest immediately again after finishing the last lesson.

Table 1 Achievement score of pre-test - post-test and individual achievement scores of each volunteer parenting students in the overall picture

Volunteer parenting students	Pre-test		Post-test		Mastery Criterion (80%)
	Score	Percentage	Score	Percentage	
P 1	17	56.67	24	80.00	= 80
P 2	7	23.33	12	40.00	< 80
P 3	21	70.00	21	70.00	< 80
P 4	20	66.67	18	60.00	< 80
P 5	19	63.33	18	60.00	< 80
P 6	19	63.33	16	53.33	< 80
P 7	19	63.33	18	60.00	< 80
Mean	17.43	58.10	18.14	60.48	< 80
SD	4.76		3.76		

Table 1 shown that there was only one Parenting Student (P1) who reached to the master criterion at 80%. The rest six Parenting Students couldn't reach to the criterion. Most of the students had a little progress when compared post-test and pre-test scores. It might because of they have negative experiences of testing in the Basic Education Schools before came to studied in NF-IEC. In the Basic Education Schools, most of them were experience failure. In addition this test score did not necessary for them to receive a diploma from NF-IEC.

Table 2 Comparisons of pretest and posttest scores of parenting students

Parenting students' learning achievement	N	MR	SR	Z	Sig
Pretest < Posttest	4	2.50	10.00		
Pretest > Posttest	2	5.50	11.00	-0.105	0.916
Pretest = Posttest	1				

Table 2 shown that the comparison of the pretest and posttest's scores by using Wilcoxon match signed ranked test was not significant difference in knowledge.

2. Motherhood's necessary behaviors,

In this learning area, parenting students knew each other more because they had done a group dynamic activity before starting learning. Therefore, they dared to share their ideas during learning. They scores as shown in table 3

Table 3 Number and percent of pretest-posttest scores of motherhood's necessary behaviors in the overall picture.

Motherhood's necessary behaviors	Full scores	Scores of motherhood's necessary behaviors			
		Pre-test		Post-test	
		Score	%	Score	%
1. Making good relationships with child	12	8.43	70.24	8.43	70.24
2. Teaching morality to child	19	10.29	54.14	11.86	62.41
3. Sexual communication with child	11	6.57	59.74	7.29	66.23
Total	42	25.29	60.20	27.57	65.65

Table 3 shown that post-test percentage of the topics of 'good relationships among mothers and child' was 70.24%. On the other hand, teaching morality to child was 62.41% and sexual communication with child was 66.23% which were not too high. In the overall picture, parenting students followed motherhood's necessary behaviors 65.65% which did not reach to 80% as the criterion specified. However, when compared post-test and pre-test their had progress scores. Post-test were higher than pre-test in all aspects.

3. Self-efficacy

Parenting students had self-efficacy at the high level that was reached to the criterion specified. When analyzing individual aspects, they were healthy of body and mind higher than the rest four aspects: hearing a happy speech, learning from others' experience of success, and sharing their experience of success respectively (see table 4).

Table 4 Self-efficacy comparisons by mean and standard deviation of pretest and posttest of parenting students in the overall picture.

Parenting students' self-efficacy	Pre-test			Post-test		
	Mean	SD	level	Mean	SD	level
1. sharing their experience of success	2.83	1.66	Moderate	3.48	0.68	High
2. learning from others' experience of success	2.85	1.33	Moderate	3.83	0.83	High
3. hearing a happy speech	3.40	1.52	Moderate	3.85	0.67	High
4. healthy of body and mind	3.38	1.48	Moderate	4.18	0.72	High
Total	3.07	1.40	Moderate	3.77	0.65	High

Table 4 shown that parenting students were encouraged to share their ideas by teachers helping them during performing activities. After finishing the lesson, they dared to express their ideas in front of the classroom or within the group. However, they were not asking any question. This shows that they were passive learners rather than active learners.

4. Satisfaction with PSIP participation

In the overall picture, parenting students satisfied with the activities at the high

level that was reached to the criterion specified, especially in the application of knowledge into daily life for protection of repeating pregnancy. In the partial aspect, they satisfied with the learning documents especially in learning area one, comprehensive knowledge of teenagers' pregnant factors, as well as learning area two, motherhood's necessary behaviors.

Table 5 Mean and standard deviation of parenting students satisfied with PSIP

Item	Mean	SD	Level
Learning benefit from PSIP			
1. Protection of repeating pregnancy	4.65	0.862	Very high
2. Motherhood Awareness	4.12	1.054	High
3. Perceive one own self-efficacy	4.24	0.752	High
4. Be able to apply knowledge and attitude into daily life	4.76	0.562	Very high
5. Be able to be a good model	4.00	0.707	High
Teaching material and handout			
1. Guideline about learning how to learn	4.12	0.781	High
2. Learning area one Comprehensive knowledge of teenagers' pregnant factors	4.53	0.717	Very high
3. Learning area two Motherhood's necessary behavior	4.65	0.786	Very high
4. Learning area three Self-efficacy	4.59	0.772	Very High
5. Activity and learning process	4.40	0.606	High

In reflection step, during and after field trial of the PSIP researchers used all of the information to think critically and the result was as follows:

1. PSIP structure

This PSIP of 50 hours consisted of three main topics: factors relating to student pregnancy, motherhood's necessary behaviors, and self-efficacy. These topics were suitable for young pregnant or parenting students and would be an elective course.

2. PSIP Effectiveness

2.1 Knowledge; parenting students had little progress because most of them were failed from the assessment system in public high school. They lacked skill in doing the test and denied to the tests or did not use their full potential. They did not value the education evaluation system. So the course of studies for this group of students should design focus on more activities and practicing than lectured. Assessment should focus on formative assessment rather than summative assessment.

2.2 Motherhood's necessary behaviors; parenting students have higher score when compared with knowledge but could not reach 80 % as the criterion specified. However, when compared post-test and pre-test their had progress scores. Post-test were higher than pre-test in all aspects. This learning area should be closed to and could suddenly be applied to their daily life in raising their children at home.

2.3 Self-efficacy; parenting students shown a lot of progress in this learning area, they dared to express their ideas in front of the classroom or within the group. Feel comfortable to speak to teachers and researchers. Activities designed were based on Bandura's Self-efficacy theory which includes mastery experience, verbal persuasion, vicarious experience and emotional state.

CONCLUSION AND DISCUSSIONS

The study of the necessary information from literature reviews and 15 specialist for the PSIP production and validation were found as follows:

1. The PSIP consisted of eight components: principle, goals, target groups, topics, teaching techniques, learning processes in the classroom, teaching media, and assessment. These components are suitable because it can be expected students and teachers to do. A simple model should at least consist of aims, contents, organization of content, way of teaching, technology, and examination. The aims of a model are the major role in shaping content, organization of the content, choosing ways of teaching and educational media; and to know a result of teaching, examination is a tool to tell it (R.W. Tyler, 1950)

Next, the PSIP should be focused on developing motherhood's necessary behaviors, self-efficacy and comprehensive knowledge of teenagers's pregnant factors. This is because mothers are the most influential people in children lives. Much of the previous has concluded that the authoritative type of parenting yield the healthiest and most emotional and mentally stable children. So, young mothers should learn about how to manage their motion, especially during in the periods of a three-old-child when a high level of self-esteem is an essential element for psychological development and then parents' behaviors contribute profoundly to the development of child's self-esteem (Troshikhina and Manukyan, 2016). Again, McDonnell and Velentino (2016) found that mother's history of adversity is associated with depressive symptoms before and after giving birth, and with their infants' maladaptive symptoms. In 2015 Cheng, et.al found clearly that the mechanisms of mother's adversity may be reciprocal effects in next two generation relationships. Indicated the concrete finding about the negative effects of not ready young mothers transferred to their children such as Tery and Manlove (2000) revealed that 22% of adolescent females that were born to a teenage mother will become teen parents themselves. Cowen's studies (2001) found that 40% of mothers who were abused or neglected as children maltreated their own children, another 30% provided borderline care. Therefore, giving information to young mothers by using education is necessary as well as motivating them to have self-efficacy to be a good mother in responsibility of taking care of their child, and the last thing is to give them to know factors of young pregnancy which will benefit for them to transfer the good information to their child to prevent the repeated crisis experience like their mother in the past.

Next, the PSIP should allow parenting students practice the critical thinking and reflecting through educational media such as VDO and learning by group discussions. This is because only teaching by talking in front the classroom is an abstract. Using VDO in teaching help them to understand clearly about a issue and motivate them in discussing about that issue. As Berk (2005) surveyed 12 strategies in teaching effectiveness, VDO is one of the tools in effective teaching that is used for formative and summative evaluation.

Lastly, the PSIP should support lifelong learning from learning documents provided for group learning and for self-learning at home. This is because parenting students are positive about their full-time education; however, most had not enjoyed school and their attendance had been poor. As Dench, Bellis, and Tuohy (2007) interviewed with 51 young mothers and 15 professionals working with young mothers. They reported that young mothers referred to not getting on with their teachers, or to feeling that teachers were not interested in their progress. Some had disliked certain subjects, or just generally found school boring. A number reported being bullied at school. Others had had their education disrupted for family or personal reasons. Pregnancy and becoming a mother had further disrupted their education. Those at college had often decided, or been persuaded, not to continue or return. A number of factors were identified that present barriers to participation in further education or training for young mothers. These include: cultural influences and a general lack of aspirations; the desire to be a good mother; previous educational experiences; a lack of clear goals for the future; lack of access to appropriate advice about learning opportunities; financial constraints; social isolation; learner support issues. The study also identified a number of factors that can encourage engagement in further learning. These include: the provision of a range of flexible learning opportunities and the motivation to provide a better life for their child. Therefore, supporting lifelong learning by providing

learning documents for group learning and for self-learning at home may be a better channel for supporting their learning.

2. Fifteen specialists agreed with three learning areas that comprehensive knowledge of teenagers' pregnant factors, motherhood's necessary behaviors, and self-efficacy. These three learning areas would strengthen them to be a good mom and strong citizen of social and country. The lessons how to be mom, making good relationships with child, teaching morality to child, and sexual communication with child would give parenting students learn about positive sides and negative sides in different kinds of motherhood. If they do not know their duty roles as well as motherhood's necessary behaviors, it will bring about a bad relationship between mothers and children because they will give all responsibilities of taking care of the children to their grand-parents. This in line with Somsri, S., *et.al.* (2011) found that parenting teenagers in Pichit, Nakhonsawan, Uthaitani, Lob Buri, Angthong, Sing Buri and Chainat took care of their child at the moderate level because they worked at days and were back home at nights. They wanted knowledge of taking care of their child and their working outdoor affecting to the relationships between mothers and children. In the research of Wichaiya, W., (2012) studying about seven parenting teenagers' experiences that had unwanted pregnancy were found that even if they were unwanted mothers, they needed to strengthened self-efficacy.

3. The results of field trial the PSIP were found that parenting students' achievement test did not reach to 80% as the criterion specified. This is because 1) the criterion given by the researchers is higher than their potentiality because parenting students had ever failed in the formal education before. It is in line with their formative assessment (multiple choice test) in the learning area one obtaining 51.89% as well as in the learning area two having 45.71%. It is also in line with the study of Khamsan, S. (2011) reported that students' learning achievement at Klongkhung Non-Formal and Informal Education Center in Kampaengpet were below 50% of all subjects in the semester 1/2010. The center planned the strategies to develop the students in the semester 2/2010 and had followed its results. It was found that there were only one subject "Sufficiency Economy Subject", reaching to 51.63%, but the another subjects were still below 50%.

4. It was found that in the overall picture parenting students followed the motherhood's necessary behaviors 65.65% which did not reach to 80% as the criterion specified. It can be discussed that these parenting students were not ready to be mothers. Therefore, to develop the motherhoods' necessary behaviors must be trained in a longer time about providing knowledge, transforming attitudes and practicing skills of necessary motherhood's behaviors. About the finding of this research which did not reach to 80% as the criterion specified, it is in line with the research of Meyer, Jain, and Davis (2011) who studied 82 risk students from an alternative school located in a rural community of a northwest state. Participant included 37 females and 45 male ranging from 13 to 20 years of age. Sixty-five of the participants came from a home with a female primary caregiver, while 17 were from a family with a male primary caregiver. Fifty had a one-parent family, 27 had a two-parent family, and five were not living with a parent. They divided the participants into two groups 39 participants as experimental group and another 43 participants as control group. They called the Parenthood Education Program (PEP) which was designed as a pre-pregnancy prevention strategy to teach pro-social parenting skills, a realistic picture of child raising including financial, time, and emotional demands, child development, goal setting, proactive family planning strategies, and learning opportunity for the development of an established parenting program. They reported that among experimental group and control group had significant at the alpha level .05 by control group having score higher than the experimental group that finding was in the opposite direction that originally hypothesized.

5. For parenting students' self-efficacy was at high to highest levels in the overall picture which reached to the criterion given. This result can be explained that they learnt how to set their goal and

learnt a way to success their goal by application of other successors' techniques. During of performing the activities in the classroom, teachers were friendly and spoke supportively to make students happy in learning and understanding the lessons. Besides, they saw a cripple man video struggling for existence and saw a video of a business man who had ever failed in business but never discouraged. They also learnt to think back to their past experiences of success and practiced meditation to have awareness and strong mind to struggle for existence. These activities supported self-efficacy that is in line with the theory of Bandura's self-efficacy (2006) stating that the most effective way of creating a strong sense of efficacy is through mastery experiences. Successes build a robust belief in one's personal efficacy. This research finding was in line with Meyer, Jain, and Davis (2011) Their findings reported that general self-efficacy among two groups had significant at the alpha level .05 by experimental group having score higher than the control group. Concerning meditation practice may be one of major activities that enhance parenting students' self-efficacy because six hours were allowed them do activities at a temple: three hours of practicing group meditation, and another three hours listening to a sermon delivered by a senior monk. This finding was in line with Sanaei et.al (2014) who studied effectiveness of eight hours of mindfulness training on self-efficacy of 30 women patients infected by breast cancer. They reported that mindfulness has been affective on increasing self-efficacy of the patients. Link's dissertation research (2013) on the relation between mindfulness and self-efficacy towards coping with nagative affect in recovering alcoholics found that higher levels of mindfulness may also have greater self-efficacy towards successfully managing negative effect. Champika and Carolyn (2013) found that mindfulness and self-efficacy (as well as self-compassion and gender) could predict a positive well-being, and reduced depression, anxiety, and stress.

6. The result of the satisfaction with PSIP participation found that parenting students satisfied with PSIP participation at high to highest levels. This result is in line with the criterion given and can be explained that parenting students were served well during the program participation such as teachers helping them during group learning, getting a supportive speech from the teachers etc. These are basic needs that they were fulfilled during the program participation. It is in line with Maslow's Hierarchy of Needs (1943 cited in Saul McLeod,2013) stated that people are motivated to achieve certain needs. When one need is fulfilled a person satisfied and seeks to fulfill the next one and so on. The model can be divided into basic (or deficiency) needs (e.g. physiological, safety, love, and esteem) and growth needs (self-actualization). It is to be said that parenting students were fulfilled their basic needs during participations in the program.

In Summary, even if the PSIP Effectiveness in terms of Knowledge does not reach to the master criterion at 80%, as well as motherhood's necessary behaviors has a little bit positive progress. One the other hand, self-efficacy and satisfied with the PSIP are from high to very high level. The researches assume that the PSIP is suitable for training the parenting students because the result of the PSIP in terms of self-efficacy is high which effects diversely to motherhood's behaviors and knowledge in the positive way in the future. Like Bandura (2006) found that possessing a strong sense of self-efficacy can contribute to psychological well-being. Fry and Debates (2002) found that self-efficacy inversely predicted psychological distress. Endler et. al. (2001) found that self-efficacy can reduce anxiety, and Chen et. al (2010) indicated that self-efficacy can reduce depressive symptoms.

REFERENCES

- Altrichter, H., Kemmis, S., McTaggart, R., & Zuber-Skerritt, O. (2002). The Concept of Action Research. *The Learning Organization*, 9(3), 125 – 131.
- American Academy of Pediatrics. (2001). Care of adolescent parents and their children. *Pediatrics*, 107(2), 429-439.
- Bandura, A. (2006). Adolescent Development from an Agentic Perspective. In F. Pajares and T. Urban (Eds.), *Self-efficacy beliefs of Adolescents* (pp. 4-8). Greanwich: Information Age Publishing.

- Bandura, A. (1997). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215.
- Berk, R., A. (2005). Survey of 12 Strategies to Measure Teaching Effectiveness. *International Journal of Teaching and Learning in Higher Education*. 17(1), 48-62.
- Champika K. S. And Carolyn J. W. (2013). Mindfulness, Self-compassion, Self-efficacy, and Gender as Predictors of Depression, Anxiety, Stress, and Well-being. *Springer-Mindfulness*. DOI 10.1007/s12671-013-0247-1.
- Cheeraphan, A. (2011). *Factor affecting sexual behavior of adolescents in the Secondary Schools under the General Education Department*, Khon Kaen University. Master of Arts Thesis in Development Sociology, Graduate School, Khon Kaen University.
- Chen, J., Lui, T., Zheng, M., and Chen, C. (2010). Relationships between Self-esteem, Self-efficacy, Self-concept, and Depression. *Chinese Journal of Clinical Psychology*. 18, 799-801.
- Cheng E., Palta M., Poehlmann T., J. and Witt W. P. (2015). The Influence of Children's Cognitive Delay and Behavior Problems on Maternal Depression. *Journal of Pediatrics*, 167 (3), 679-686.
- Chewaphansri, K. (2013). Adolescent pregnancy risk factors: a case study of pregnant adolescent who applied the pregnancy checkup with public health center 34 Phosri, Department of Health, Bangkok. *Vajira Medical Journal*, 57(1), 37-43.
- Coleman, P.K., & Karraker, K.H. (1997). Self-efficacy and parenting quality: Findings and future applications. *Developmental Review*, 18, 47-85.
- Cowen, P. S. (2001). Effectiveness of a Parent Education Intervention for at-risk Families. *Journal of the Society of Pediatric Nurses*, 6, 73-82.
- Dench, S., Bellis, A., and Tuohy, S. (2007). *Young Mothers not in Learning: A Qualitative Study of Barriers and Attitudes*. UK: Institute for Employment Studies.
- Endler, N. S., Speer, R. L., Johnson, J. M., and Flett, G., L. (2001). General Self-efficacy and Control in Relation to Anxiety and Cognitive Performance. *Current Psychology*, 20, 36-52.
- Fernquest, J. (2013, March 8). **Teen pregnancy: Growing problem in Thailand**. Retrieved from <http://www.bangkokpost.com/learning/learning-from-news/339506/teen-pregnancy-growing-problem-in-thailand>
- Fry, R. S. And Debates, D. L. (2002). Self-efficacy Beliefs as Predictors of Loneliness and Psychological Distress in Older Adults. *The International Journal of Aging and Human Development*, 55, 233-269.
- Ginott, H.G. (2008). *Between parent and Child*. Phranee Phurisit (Translation), Somchai Banchamitr (Editor). Nontaburi: Bee Media.
- Khamsam, S. (2011). *Strategy for the development of students' quality of Khongkhung Non-formal and Informal Education Center, Khamphaeng Phet province*. Thesis master education in education administration, Graduate studies, Kamphaeng Phet Rajaphat University.
- Kritcharoen, S., Pol-In, K., Ingkhathawornwong, T. & Sretawewat, C. (2007). *Parent's sex teaching and children's sex learning needs*. Faculty of Nursing, Prince of Songkla University.
- Link, C. J. (2013). *The Relation Between Mindfulness and Perceived Self-efficacy towards Coping with Negative Affect in Recovering Alcoholics*. Dissertation of Doctor of Psychology. Graduate School of Education and Psychology: Pepperdine University. UMI 3595199.F
- McLeod, S. (2013). *Maslow's hierarchy of needs*. Retrieved From <http://www.simplypsychology.org/perspective.html>
- McDonnell C.G., and Valentino K. (2016). Intergenerational Effects of Childhood Trauma: Evaluating Pathways among Maternal ACEs, Parental Depressive Symptoms, and Infant Outcomes. *Child Maltreat*, 21 (4), 317-326.

- Meyer, B. W., Jain, S., and Davis, K., C. (2011). The Effect of Parenthood Education on Self-Efficacy and Parent Effectiveness in an Alternative High School Student Population. *The Professional Counselor*, 1(1), 29-40.
- Minet, S. B. (1985). *An Infant/Toddler program for high risk parents and their children*. CA: Elementary and Early Childhood Education Clearinghouse. Eric No. ED 261806.
- Mungmetup, N. (1999). *Gender relation and pre-marital in adolescence*. Dissertation for the doctor of education degree in Development Education, Graduate Study, Srinakharinwirot University.
- National Statistical Office of Thailand. (2009). *Number and percent age of women aged 15-49 years, by age at first birth, age group, level of educational attainment, area and region, whole kingdom*. Retrieved from National Statistical Office of Thailand website: <http://www.nso.go.th>.
- PhraKru Sutheevorasarn, Prommuang, P., Phramaha Kittimedhi, N., Ketchan, T. et. al. (2016). *The Training Curriculum Development as Gentle Men and Gentle Ladies for University Students by means of Buddhist Critical Thinking. Proceedings, the 9th International Conference on Educational Research*: 12-13 November 2016, Faculty of Education, Khon-Kaen University, Thailand.
- Ratchukul, S. (1998). *Unwanted pregnancy and the decision of abortion*. Dissertation for the doctor of education degree in Development Education, Graduate Study, Srinakharinwirot University.
- Sanaei, H., Hossini, S., A., and Jamshidifar, Z. (2014). Effectiveness of Mindfulness Training on Self-efficacy of Patients Infected by Breast Cancer. *ScienceDirect-Social and Behavioral Science*. 159, 436-429.
- Sanrattana, U., Art-In, S., Junpeng, P. & Prommuang, P. (2015). *Educational Model for Students at Risk*. Proceeding of the 6th World Conference on Learning, Teaching and Educational Leadership, WCLTA, Paris, France 29-31 October 2015.
- Somsri, S., Kengkasikit, B., Puangsawan, B., Phadunglerk, Y. & Tonglao, S. (2011). *Pregnancy and adolescents' behaviors of taking care of children who have premarital sex and need to help in Pichit, Nakhonsawan, Uthaitani, Lob Buri, Angthong, Sing Buri, and Chainat*. Office of Academic Support 8 Lob Buri, Bureau of Social Welfare Services, Ministry of Social Department and Human Security.
- Terry, E., and Manlove, J. (2000). *Trends in Sexual Activity and Contraceptive Use among Teens*. Washington, DC: National Campaign to Prevent Teen Pregnancy.
- Troshikhina, E. G. and Manukyan, V. R. (2016). Self-Esteem and Emotional Development of young Children in connection with Mother's Parental Attitudes. *ScienceDirect-Social and Behavior Sciences*. 233, 357-361.
- Tyler, R. W. (1950). Basic principles of curriculum development. Chicago: University of Chicago Press. *Performance Improvement Quarterly*, 3(1), 65-70.
- Wichaiya, W. (2012). *The Teenage Mother: Lived Experiences and Gender*. The 1st National network seminar, 18 December 2012, Thammasat University.
- World Health Organization (WHO). (2014) Department of Reproductive Health and Research. *Adolescent pregnancy*. Retrieved from www.WHO_RHR_14.08_eng.pdf?jsessionid=54FFEDABFAF90F4B00250618B47E9E86

ACKNOWLEDGEMENT: The research was funded by the National Research Council of Thailand.

INTRODUCTION TO PROBLEMATICS OF UNIVERSITY STUDIES OF SPACE HOLISTIC ECONOMICS FROM THE VIEWPOINT OF DOCTORAL STUDIES

Tomáš R. ZEITHAMER

Faculty of Informatics and Statistics, Department of Mathematics, Economic University in Prague
 Ekonomická 957, 140 00 Prague, Czech Republic
 E-mail: zeith@vse.cz

ABSTRACT

This paper is one of the outcomes of the preparatory work on a research project exploring the effects of solar activity on Earth's economy and extraterrestrial economy from a global perspective. In addition to the global effects of solar activity, the work deals with the gradual transformation of teaching terrestrial economics to teaching extraterrestrial economics. Regardless of the level of development of artificial intelligence, the second half of the twenty-first century will require from economists a holistic approach to the concept of extraterrestrial economics, i.e. the approach of holistic economics within the study requirements for the future doctoral degree graduates. The equation of the field of retail gravitation is derived by the Einstein's methodology modified for the description of the field of terrestrial as well as extraterrestrial retail gravitation.

Keywords: Cognitive informatics, Holistic economics, Physical economics, Physical informatics, Quantum cognition, Space holistic economics

INTRODUCTION

The colonization of the solar system will require a profound change in the education of economists because economists, through their decisions, will have a significant impact on the financing of basic and applied research. It will therefore be necessary for economists to be educated in the fields of science related to the development of space trade. This can be illustrated by the following example: During long-term flights of spacecrafts to transport people or cargo, as well as when moving people or cargo to or from these spacecrafts, solar activity and its manifestations on the orbital trajectory of the Earth around the Sun will have to be reliably predicted from the knowledge of physical mechanisms responsible for solar and geomagnetic activity.

For these reasons the interdisciplinary project **Economics of Sun-Earth Relationships** (ES-ER) is being prepared as a part of the international research and educational program **Holistic Space Economics** (HSE). The ES-ER project examines globally the effects of solar activity on terrestrial economics and economy as well as the transformation of terrestrial economics into extraterrestrial economics including the gradual transformation of the educational process in terrestrial economics into the educational process within extraterrestrial economics in the framework of doctoral studies.

In this paper the metric theory of the retail gravitation is derived on Einstein's manifold. This paper is based on papers (Zeithamer and Pospíšil, 2018, 2019). The paper is one of the outputs for the preparation of the ES-ER project.

THE STUDY - THE EQUATION OF THE RETAIL GRAVITATIONAL FIELD

The quantification of the phenomenon of retail gravitation, published by John William Reilly in 1929 in the United States (Reilly 1929), had a surprising analytical similarity to Newton's law of gravitation, i.e. the volume of retail trade attracted into the city with a large population (from the vicinity of the city) was directly proportional to the population of this city and inversely proportional to the square of the distance from this city.

Reilly's law of retail gravitation [Reilly 1929, 1931] waited 86 years for the direct derivation from Newton's law of gravitation and for the first time it was derived directly from Newton's Law of Gravitation by Thomas R. Zethamer in 2015 (Zeithamer 2015, 2016 a, 2016 b, Zeithamer & Pospíšil 2017).

In this paper, the geometric description of retail gravitation is realized on a four-dimensional (space-time) differentiable manifold, in which the square of the distance ds between two infinitely proximate points $K = [x_0, x_1, x_2, x_3]$ and $K' = [x_0 + dx_0, x_1 + dx_1, x_2 + dx_2, x_3 + dx_3]$ (where $x_0 = ct$, t is time, c is the velocity of light) is expressed by a quadratic form

$$ds^2 = g_{\mu\nu} dx^\mu dx^\nu, \quad \mu, \nu = 0, 1, 2, 3. \quad (1)$$

And so the quadratic form (1), which defines the metrical properties of four-dimensional space-time differentiable manifold, is not necessarily positive as in the case of the geometry of three-dimensional space, but has the signature +2 or -2. That is to say that if the coordinates are chosen so that at one particular point of the differentiable space-time manifold the signature is +2, i.e.

$$ds^2 = -dx_0^2 + dx_1^2 + dx_2^2 + dx_3^2, \quad (2)$$

then in every case three of the signs will be plus and one minus. The phenomena of retail gravitation must also be placed to the account of geometry and the laws by which population affects economic measurements are no other than the laws of retail gravitation.

Let us consider a currency units moving freely past a city with great population in Riemann manifold. In the Reilly's empirical research of retail gravitation the city with great population is replaced by a financial volume of retail trade drawn to the city with great population and then, since the currency units are no longer moving freely, one finds that their trajectories are no longer a straight lines. The space-time manifold is assumed to be a Riemann space with metric tensor g of Lorentzian signature and in such a space it is natural to suppose that the trajectories of a freely moving currency units are modeled by a geodesics.

If there is no field of retail gravitation present, and if an inertial coordinate system is being used, the geodesic trajectories of a freely moving currency units should change to a straight lines. This is only possible if a coordinate system can be found in which the Christoffel symbols and therefore the partial derivatives of the metric tensor vanish at all points of the manifold. The Riemann space then must be a Minkowski space with metric tensor field η and that relative to an orthonormal basis it has components

$$\eta_{ij} = \begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & +1 & 0 & 0 \\ 0 & 0 & +1 & 0 \\ 0 & 0 & 0 & +1 \end{bmatrix}. \quad (3)$$

Even in a Minkowski space the Christoffel symbols will not, in a general coordinate system, vanish. In a general coordinate system the trajectories of the freely moving currency units will be given by the equation

$$\frac{d^2 x^\nu}{ds^2} + \Gamma_{\mu\kappa}^\nu \frac{dx^\mu}{ds} \frac{dx^\kappa}{ds} = 0, \quad \mu, \nu = 0, 1, 2, 3, \quad (4)$$

where the presence of the term involving the Christoffel symbol indicates the existence of an inertial force of retail gravitation and the use of non-inertial coordinates while

$$\Gamma_{\mu\kappa}^\nu = \frac{1}{2} g^{\nu\lambda} \left(\frac{\partial g_{\lambda\mu}}{\partial x^\kappa} + \frac{\partial g_{\mu\lambda}}{\partial x^\kappa} - \frac{\partial g_{\mu\kappa}}{\partial x^\lambda} \right) \quad (5)$$

are signs for Christoffel symbols $\left\{ \begin{smallmatrix} \nu \\ \mu\kappa \end{smallmatrix} \right\}$.

In the presence of a field of the retail gravitation the metric tensor field g must be determined by the distribution of population which is the source of the field of the retail gravitation. The field of retail gravitation is described by a scalar potential ϕ satisfying Poisson's equation

$$\Delta\phi = -4\pi E\rho, \quad (6)$$

where ρ is the density of the population distribution and E is a constant of the city economic equipment. In the special theory of relativity applied to retail gravitation ρ is just part of the energy-momentum tensor field T of the population distribution and so one might expect $T^{\mu\nu}$ to appear on the right-hand side of the field equations of general relativity applied to retail gravitation. The components $g_{\mu\nu}$ of metric tensor field g are the analogues of the scalar potential and so again one might expect the left-hand side of the field equations to involve a tensor field of valence two and this tensor field is constructed from the components $g_{\mu\nu}$ and their first and second partial derivatives (for the reason that Laplacian Δ involves second or first and second partial derivatives in dependence on type of system of coordinates). In the absence of external forces, the energy-momentum tensor field has zero divergence, a condition which can be written in tensor form as

$$T^{\mu\nu}_{;\mu} = 0. \quad (7)$$

In accordance with Einstein, the tensor field G with components $G^{\mu\nu}$ is defined in the same analytical form through the tensor field of Ricci for the case of retail gravitation, i.e.

$$G^{\mu\nu} = R^{\mu\nu} - \frac{1}{2} g^{\mu\nu} R, \quad (8)$$

which is linear in the partial derivatives of the metric tensor, also has zero divergence so that the field equation for retail gravitation may be postulated in the form

$$G^{\mu\nu} = HT^{\mu\nu}, \quad (9)$$

where $H = H(E)$ is a constant. In any region of space that is not occupied by population, the tensor field T with components $T^{\mu\nu}$ becomes zero so that (8) gives

$$G^{\mu\nu} = R^{\mu\nu} - \frac{1}{2} g^{\mu\nu} R = 0, \quad (10)$$

where

$$R = R^{\nu}_{\nu} = g^{\kappa\nu} R_{\kappa\nu}. \quad (11)$$

Contracting on μ and ν in equation (10) yields

$$R - \frac{1}{2} 4R = 0 \quad (12)$$

so that $R = 0$. It follows that the Ricci tensor itself must be zero

$$R^{ij} = 0. \quad (13)$$

FINDINGS - THE CRITERION OF THE OCCURENCE OF THE RETAIL GRAVITATION FIELD

The possibility to introduce such coordinates for which all components (5) (or all Christoffel's symbols) are zero, characterizes the Euclidean space which is defined by this property for any number of N dimensions. However, not only the metric form but also the equation of geodesics in the curvilinear coordinates in the Euclidean space formally do not differ from the equations of the geodesics in the general Riemann space. This raises the question of how to distinguish the curved Riemann space from the flat euclidean space without the empirical search for the Cartesian coordinate system with the constant components of the metric tensor field? The solution to this task concerns the basic geometric characteristics of the space that can not depend on the choice of the reference system. For this reason, the problem can only be solved by expressing the curvature of the space with a tensor field whose components disappear in the whole space only when it is Euclidean. Then, all the components of the tensor field searched in each reference system will be zero. By this tensor field, which makes it possible to decide whether it is a flat space or a curved space independently of the choice of the coordinate reference system, is Riemann tensor field of curvature whose components in arbitrary coordinates are of the form

$$R^{\nu}_{\kappa\lambda\mu} = \frac{\partial \Gamma^{\nu}_{\kappa\lambda}}{\partial x^{\mu}} - \frac{\partial \Gamma^{\nu}_{\kappa\mu}}{\partial x^{\lambda}} + \Gamma^{\nu}_{\kappa\sigma} \Gamma^{\sigma}_{\mu\lambda} - \Gamma^{\nu}_{\lambda\sigma} \Gamma^{\sigma}_{\kappa\mu}. \quad (14)$$

Despite the rather complicated mathematical expression of the components of the tensor field of curvature, it is clear from (5) that this tensor field has all components of zero if the components of the metric tensor field are constant, i.e. independent of coordinates. This is true for Cartesian coordinates that exist only in Euclidean space, and therefore in flat space all components of the tensor field of curvature are zero in all (that is, also curvilinear) coordinates. The inverse theorem also holds that the space in which all components of the Riemann's tensor field of curvature in any coordinate system are equal to zero, is a Euclidean space. The fact that space is curved or not is unambiguously determined by the Riemann tensor field of curvature with the components $R^{\nu}_{\kappa\lambda\mu}$.

The occurrence of the retail gravitation field is linked to the non-zero population of settlement units, i.e. to the average number of inhabitants of villages, towns, cities, metropolises. The curvature criterion of the metric space

mentioned in the previous paragraph is used to determine the presence of retail gravitation in the model space by the calculation of metric tensor field from the economic surveys of retail gravitation.

CONCLUSION

This paper is the output of the preparatory work for the upcoming project "Economics of Sun-Earth Relationships" and it is at the same time pioneering of the new direction of research in the field that is entitled space holistic economics (or astrobioeconomics) (Zeithamer and Pospíšil, 2018, 2019). The methodology developed by Professor Albert Einstein in the theory of relativity in the time span of 1905 to 1916 (Einstein, 1914, 1915, 1916 a, 1916 b) was applied to describe the field of retail gravitation. The equation of the field of retail gravitation is derived. A quantitative criterion for determining the presence of retail gravitation was established, i.e. the occurrence of a retail gravitation field is equivalent to the non-zeroing of the Riemann curvature tensor field of curvature for retail gravitation in a model space.

ACKNOWLEDGEMENTS

I would like to express my thanks to the National Library of Technology (NLT) of Czech Republic and to a great number of libraries of Institutes of the Czech Academy of Sciences (CAS) as well as to libraries of Czech Technical University and Charles University and also of the Library of the Institute of Clinical and Experimental Medicine (LICEM) for outstanding help during preparation of this paper. My acknowledgement is also addressed to Managing Director Mr. Jiří Břichnáč and to the firm Tomados Ltd. for technical assistance and financial support, without their contribution would not be possible to finish the article. I am also very grateful to prof. Ing. Jiří Pospíšil, CSc. for financial support, as well as scientific and human assistance. For the opportunity to lay the foundations of a discipline "Space Holistic Economics" and to initiate and carry out basic research in this new field of science I also thank two faculties of the University of Economics in Prague, the Faculty of International Relations and the Faculty of Informatics and Statistics. This paper is dedicated to Mrs. Věra Ruml Zeithamer, Mr. Josef Ruml Zeithamer, Mrs. Anna Ruml, Mr. František Ruml, Ing. Milan Pospíšil, RNDr. Jiří Mrázek, CSc. and prim. MUDr. Karel T. Veselý, CSc. ,

REFERENCES

- Einstein, A., (1914). Die formale Grundlage der allgemeinen Relativitätstheorie. *Sitzungsber. k. preuss Akad. Wiss.*, Vol. XLI, (pp. 1030-1085).
- Einstein, A., (1915) Die Feldgleichungen der Gravitation. *Sitzungsber. k. preuss Akad. Wiss.*, Vol. XLVIII – XLIX, (pp. 844-847).
- Einstein, A., (1916 a). Die Grundlage der allgemeinen Relativitätstheorie. *Ann. Phys.*, Vol. 49, (pp. 769-822).
- Einstein, A., (1916 b). Näherungsweise Integration der Feldgleichungen der Gravitation. *Sitzungsber. k. preuss Akad. Wiss.*, Vol. XXXII, (pp. 688-696).
- Reilly, W. J., (1929). Methods for the Study of Retail Relationships. *University of Texas Bulletin*, No. 2944, Nov.
- Reilly, W. J., (1931). *The Law of Retail Gravitation*. 1st ed., New York: USA, Knickerbocker Press.
- Zeithamer, T. R., (2015) Methodology of Theoretical Physics in Economics: Vector Theory of Retail Gravitation Law. In: *Proceedings of The International Scientific Conference INPROFORUM 2015*. 05. 11. 2015 – 06. 11. 2015, České Budějovice {on line}. České Budějovice: Czech Republic, University of South Bohemia, (pp. 199-203).
- Zeithamer, T. R., (2016). Theoretical Background for the Globalization of Retail Gravitation. In: T. Klieštík (Ed.) *Proceedings of the 16th International Scientific Conference on Globalization and Its Socio-Economic Consequences*, 05 – 06 October 2016, Rajecké Teplice. Žilina: Slovak Republic, University of Zilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, (pp. 2482-2489).
- Zeithamer, T. R., & Pospíšil, J., (2017). Stationary Fields of Retail Gravitation in Mechanisms of Globalization Relating to the Sun-Earth Relations. In: T. Klieštík (Ed.) *Proceedings of the 17th International Scientific Conference on Globalization and Its Socio-Economic Consequences*, 4th – 5th October 2017, Rajecké Teplice. Žilina: Slovak Republic, University of Zilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, (pp. 3053-3060).
- Zeithamer, T. R., & Pospíšil, J., (2018). Fundamentals of the Tensor Theory of Utility upon the Riemann Manifolds. In: *Proceedings of The International Scientific Conference INPROFORUM 2018*. 01. 11. 2018 – 02. 11. 2018, České Budějovice {on line}. České Budějovice: Czech Republic, University of South Bohemia, (pp. 199-203).
- Zeithamer, T. R., & Pospíšil, J., (2019) Space-Time Theory of Retail Gravitation in Economics of Sun-Earth Relationships. In: *Proceedings of the 18th Conference on Applied Mathematics, APLIMAT 2019*, Slovak Republic: Bratislava, Slovak Technical University, (pp. 1345-1349).

INVESTIGATION AND EVALUATION OF THE OPINIONS OF THE TRNC PRIMARY SCHOOL ADMINISTRATORS FOR THEIR SUBSTANCE AND UNDERSTANDING OF KNOWLEDGE MANAGEMENT

Tolga Küçük

tolgakucuker@hotmail.com

Hasan Eriş

Cyprus International University, Faculty of Education, Lefkoşa, TRNC

heris@ciu.edu.tr

Abstract

Information is at the center of the process of economic and social transformation that is taking place at the global level and plays a key role in the struggle of corporations and societies to gain a superiority to each other. The most valuable production factor in the information economy is interest. Therefore, effective management of information in terms of organizations is considered as one of the most important elements of achieving long-term competitive advantage. The benefits of knowledge management to the organization are discussed in detail both in theory and in practice. The aim of this study is to determine the opinions of the administrators of the TRNC primary school on the knowledge management infrastructure and the degree of understanding they have. In the study, quantitative data were used and the research design was determined as a general screening model. An application study consisting of 88 primary schools and 202 school administrators was conducted in TRNC. Data; t Test and F Test techniques. In the study, there was no significant difference between the school administrators' views on knowledge management according to the variables of gender, age, the last school completed and the duration of service in the current school.

Keywords: Information, Knowledge Management, Primary School, School Manager.

INTRODUCTION

Educational organizations are not only to use information, but also to develop, produce, renew and disseminate it. Education organizations, which are so intertwined with knowledge and have such tasks, should be able to respond to the demands and expectations of individuals and society and give special importance to knowledge management in the 21st century in order to educate the generations to compete. What we know most about the issue of knowledge management is the way we know and how to use it and how to improve it. Educational organizations must use the information effectively because of the mission they undertake, to produce new information and to share this information. In this context, a solid infrastructure and understanding of knowledge management becomes inevitable. Meder states in his study called *Information Society and Social Change* that in 2001 that information society brings many important opportunities and benefits to humanity. However, he emphasized that this distinction between developed and underdeveloped countries was shelved by mentioning that this situation did not spread equally and fairly to all social strata. Today, in all the developing countries, including our country, it is one of the issues that should be examined urgently in the social sciences. One of the most important issues that should not be overlooked in these studies is that the information society has achieved the balance between the existence of the information society and the provision of the necessary infrastructure for the equalization of information to all people. In his study in 2005, Terzi emphasized that a new paradigm based on information and information technologies has started to emerge in the twenty-first century, which is now at the stage of information society from the industrial society stage, in every field where the old rules and principles are losing their validity. Again, in terms of understanding the basic paradigm of the information society in which there is no complete transition according to Tailor, it seems very important to be able to design and manage the organizations and communication forms that will exist in this society while establishing a new social order based on knowledge. In his doctoral thesis on knowledge management in 2009, Eriş studied the knowledge management in two sub-dimensions: educational and managerial, and revealed that school administrators and teachers' school administrators were more competent in managerial knowledge management. This shows us the need for more pre-service and in-service studies for knowledge management infrastructure and understanding in education. Zaim *Infrastructure of Knowledge Management and Knowledge Management Performance* done in 2010 is one of the most important results. There are concrete factors such as technology and organizational structure within the infrastructure elements as well as abstract factors such as corporate culture and leadership. However, it can be seen that abstract or concrete factors directly and indirectly affect the performance of knowledge management. Because it is not possible to obtain results from knowledge management processes without providing adequate infrastructure elements. In this study, firstly, the factors related to knowledge management were investigated and these five factors were determined. These factors; technology, leadership, human capital, corporate culture and organizational structure.

The subject of knowledge management has been increasingly on the agenda of organizations and nations since the 1990s as a result of technological developments, globalization and increasing importance to human

resources. As a key to development and progress, knowledge management has become the number one issue of all kinds of organizations, whether for profit or not, from private or public sectors. The importance of knowledge in the life of individuals and societies has led to the emergence of a multidisciplinary, comprehensive and growing new field in the management literature called knowledge management in order to make the best use of information. Educational organizations, which are knowledge-based institutions, have to serve both their own goals and community goals by effective knowledge management, processing, developing and disseminating information (Özmen, 2002). Bursalıoğlu (2001) classifies the qualifications required of school administrators as technical competences, human competencies and conceptual competences in general.

Technical competencies: Technical competences are technical knowledge and skills in the field of activity. The technical knowledge and competences related to the methods, techniques, processes and processes used to fulfill the task requirements constitute the technical activities of that task.

Human Competences: Human competences can be considered as competences for understanding and motivating individuals and groups. Effective working and creating joint efforts, assumptions about others, beliefs and attitudes, their use of the methods and limits to see, individual differences should be seen as characteristics of human relations (Basar, 2000).

Conceptual Competences: To be able to see the school administrator within the society, within the education system and within universal dimensions; To be able to see all the parts that integrate the school in interaction, to follow the theoretical developments in the field of education, to comprehend and to be able to evaluate the formal education situations faced by this theoretical and conceptual perspective. This ability requires the knowledge of the scientific disciplines that will bring theoretical ability to the field of education, especially management theory, organization, human behavior and philosophy of education (Kabadayi, 1982).

A school administrator should manage to establish a knowledge-based organizational culture at his school to create a successful knowledge management system (Kesen, 2006). Lee (2007), in his PhD thesis about 150 principals, found that school administrators should have the following components in order to achieve success in knowledge management practices in education: Leadership, Culture, Technology and Measurement and Evaluation. When these components are effectively used for knowledge management strategies within the organization, there will be a higher probability that organizational goals will be realized (Lee, 2007). In order for a school administrator to establish a successful knowledge management system in his / her school, an environment should be prepared to create a knowledge-based work environment. Some of the factors that are constantly emerging in the most successful organizations are as follows (Skyrme, 2000 Akt: Celep & Çetin, 2003): A strong link to what the business sector has to do, A compelling vision and structure, Knowledge leadership, Continuous learning, Extremely well-developed information-a communication infrastructure and systematic information processes.

Objective and Significance

The opinions of the administrators about the level of knowledge management infrastructure and understanding of the Turkish Republic of Northern Cyprus constitutes the problem of the research. The opinions of the administrators working in primary schools about the knowledge management infrastructure and understanding of the schools,

- a. their genders,
- b. their ages,
- c. recently graduated school,
- d. is there any difference in terms of the duration of service in the school?

The main purpose of this research is to determine the opinions of the administrators of the Turkish Republic of Northern Cyprus on the level of knowledge management infrastructure and understanding of the primary schools. This study shows that the opinions of the primary school administrators on the knowledge management infrastructure and understanding of the schools have an important contribution to the education management literature. As this will increase the efficiency in education and training activities, it is thought that this study will be important for the other researches to be done.

METHODS

Research Model

The descriptive survey model was used in this study. To determine the specific characteristics of a group, studies aimed at collecting data are called screening research (Büyükoztürk & others, 2008). Screening models are research approaches that aim to describe a situation that has existed in the past or is still present. In such researches, the subject, subject, or object, which is the subject of research, is tried to be depicted in its own conditions and as it is. There is no attempt to change and influence them in any way (Karasar, 2007).

Population and Sampling Model

The universe of research; In the 2011-2012 academic year, primary school administrators in public schools in Northern Cyprus are composed of managers. The total number of state primary schools in Northern Cyprus constitutes the universe is 88. The universe information in these schools is shown in Table 1 according to the data obtained from the Ministry of National Education.

Table 1: Research population

Unit	N
Number of School	88
Number of School Administrator	202
Total (School Administrator)	202

The aim of the study is to determine the competencies of primary school administrators working in Nicosia, Famagusta, Girne, Güzelyurt and Yeni İskele regions in Northern Cyprus, and their competencies for knowledge management infrastructure and understanding.

Table 2: Research population and sampling model evaluation

Unit	Population (N)	Sampling (n)
Number of School Administrator	202	190

Since the number of school administrators that make up the universe is not very high and the data to be obtained are thought to be more meaningful, all managers are included in the sample.

Data collection tool

Celep's (2008) scale was used to measure the opinions of school administrators working in primary schools in Northern Cyprus in order to measure their views on the knowledge management infrastructure and understanding of educational organizations.

Data Analysis

In the analysis of the data obtained, t-test was used in case of two independent variables and ANOVA was used in more than three.

FINDINGS

The findings are presented below in accordance with the research sub-problems:

Table 3: According to “Gender” variable, Primary School Administrators’ opinions to Infrastructure of Knowledge Management and t Test Results

Gender	N	Ort.	Ss	t(df=196)	P
Female	86	4.07	0.32	1.732	.085
Male	112	3.98	0.39		

When Table 3 is examined, there is no significant difference between the opinions of the administrators working in primary schools regarding the knowledge management infrastructure and understanding. ($t_{df=196} = 1.732$, $p = .085$; $p > 0.05$).

Table 4: According to “Age” variable, Primary School Administrators’ opinions to Infrastructure of Knowledge Management and Results of Variance Analysis

Age	N	Average	Ss	F (2,194)	p	η^2
31-40	18	3.90	0.38	.895	.410	.009
41-50	114	4.03	0.35			
51-60	66	4.03	0.37			

When Table 4 is examined, there is no significant difference in the results of one-way analysis of variance in order to examine the difference between the opinions of the administrators working in primary schools on their knowledge management infrastructure and understanding. ($F_{(df=2,194)} = .895$, $p = .410$, $\eta^2 = .009$; $p > 0.05$).

Table 5: According to “Recently graduated school” variable, Primary School Administrators’ opinions to Infrastructure of Knowledge Management and Results of Variance Analysis

Recently graduated school	N	Avg.	Ss	F (2,195)	p	η^2
Teacher's Academy	138	4.03	0.37	.419	.658	.004
4-year Education Institute. college or associate degree	34	3.99	0.37			
Master's Degree	26	3.07	0.34			

According to Table 5, there is no significant difference in the results of one-way analysis of variance applied to examine the difference between the opinions of the administrators working in primary schools on the infrastructure and knowledge of knowledge management. ($F_{(df=2,194)} = .419$, $p = .658$, $\eta^2 = .004$; $p > 0.05$).

Table 6: According to “Duration of service at school” variable, Primary School Administrators’ opinions to Infrastructure of Knowledge Management and t Test Results.

Year	N	Average	Ss	F (6,191)	p	η^2
1	40	4.10	0.33	.697	.653	.021
2	60	4.00	0.34			
3	46	3.95	0.42			
4	27	4.04	0.34			
5	13	4.03	0.31			
6	12	4.02	0.49			

When Table 6 is examined, there is no significant difference in the results of one-way analysis of variance in order to examine whether there is a difference in terms of service management in the schools in which they work. ($F_{(df=6,191)} = .697$, $p = .653$, $\eta^2 = .021$; $p > 0.05$).

CONCLUSION AND RECOMMENDATIONS

There is no significant difference between the views of the school administrators according to gender, age, the last school completed and the length of service in the school. Primary school administrators should be given more practical training in the field of knowledge management both before and during the service. According to the independent variables, there is no need to differentiate or individualize the education to be offered, since there is no significant difference in the opinions of school administrators. A general education can be offered to raise awareness among school administrators about knowledge management. It is important to ensure that in-service trainings to be carried out are in line with the infrastructure of the schools and that school administrators are aware of direct knowledge management with a practical understanding. In-service trainings should be ensured in order to improve the personal and professional characteristics of the school administrators in order to influence the teachers they work with in the context of knowledge management.

REFERENCE

- Başar, Hüseyin. “Likert Error in Research” 2006. <http://yunus.hacettepe.edu.tr/~okulda/Likert.doc>
- Başar, Hüseyin “Okulda Denetim” Ankara, Pegem Akademi, 2000.
- Bursalıoğlu, Ziya “New Structure and Behavior in School Management” Ankara, Pegem Yayıncılık, 2000.
- Büyükoztürk, Şener., Çakmak, K Ebru., Akgün, E Özcan., Karadeniz, Şirin., Demirel, Funda., “Scientific Research Methods” Ankara, PegemA Yayıncılık, 2008.
- Celep, Cevat., Konaklı, Tuğba., Keleş Ay, Funda., “Teachers' Perceptions of Knowledge Management Characteristics in Schools,” 17. National Educational Sciences Congress, Sakarya Üniversitesi, 2008.
- Eriş, Hasan. “Comparative Evaluation of Knowledge Management Competences of Primary School Administrators” (Unpublished PhD Thesis) Nicosia: Near East University, 2009.
- Kabadayı, Reşide. “Leadership Behaviors of School Principals and Motivation of Teachers” Ankara: H.Ü. (Unpublished PhD Thesis), 1982.
- Karasar, Niyazi. “Report Preparation in Research” Ankara, Nobel Yayın Dağıtım, 2007.
- Kesen, İsmet. “Knowledge Management Competencies of Primary School Administrators” (Unpublished PhD Thesis) Ankara: Hacettepe Üniversitesi, 2006.

Lee, Young Hae. *“Department Chairs’ Perceptions of Knowledge Management Strategies in Colleges of Education: Measurement of Performance and Importance by Organizational Factors”* (Yayınlanmamış Doktora Tezi), USA: Northern Illinois University, 2007.

Meder, Mehmet. “Information Society and Social Change ”, Pamukkale University Journal of Faculty of Education, Sayı:9, 2001

Özmen, Fatma. " Information Management and Educational Organizations in the 21st Century ” 2003, http://aof20.anadolu.edu.tr/bildiriler/Fatma_Ozmen.doc.

MEASUREMENT OF HIGH SCHOOL STUDENTS' PERCEPTIONS OF INDUSTRIAL CHEMISTRY COURSE LEARNING ENVIRONMENT

Serpil ÖZKURT SİVRİKAYA

Kocaeli University, Kocaeli Vocational School, Chemistry Technology Department

s_sivrikaya@yahoo.com

ABSTRACT

The aim of this study is to measure the perceptions of vocational high school students towards the learning environment of industrial chemistry course. The study was conducted in five vocational high schools in Kocaeli. 193 students participated in the study. Quantitative method was adopted in the research. Industrial chemistry learning environment scale was used in the research. The reliability coefficient of the scale was calculated as 0.78. The scale consists of 37 questions. In the scale form, there are four demographic questions such as gender, maternal education, father education and class. SPSS 21 program was used in the analyze. It will be examined whether there is a relationship between the demographic characteristics of students and their perceptions about the learning environment of industrial chemistry course.

Keywords: industrial chemistry course, learning environment, vocational high school students

INTRODUCTION

Research on the learning environment seems to have started since the late 1960s. The learning environment has become the subject of research in which researchers deal with the classroom environment and examine the effects of this environment on students' perceptions and attitudes (Çakıroğlu et. all., 2003).

The learning environment is a process that includes “identifying the teaching approach in which learning will be realized effectively and designing, planning and conducting the teaching staff to comply with this situation” (Keser and Akdeniz, 2002).

The place where the educational activities are carried out, the environment in which the communication and interaction is carried out in line with the educational purpose of the elements that are included in the scope of the building and the training organization, personnel, tools and equipment are defined as the “educational environment” (<http://formasyon.erdogan.edu.tr>).

The rich design of the learning environment is important in terms of facilitating the student's learning, making their own choices in the learning process, and providing learning efficiency (Cengizhan, 2008; Uluyol and Karadeniz, 2009). Learning environments improve students' ability to reason while giving them the chance to analyze and criticize (Günhan, 2006). In this respect, learning environments are a concept that needs to be emphasized in science learning, especially in science and mathematics education.

The capacity of the students should be taken into consideration when designing the learning environment, especially when determining the tools and equipment to be used (Öztürk and Güven, 2012). In addition, it is important for teachers to prepare learning environments that motivate learning and to increase their equipment continuously (Güneş, 2008).

When all these statements are taken into consideration, the assessment of the learning environment is an essential element for the development of education and training. How the students perceive the classroom environment, the curriculum used in education affects teachers' self-learning environment (Yeşilyurt et. all., 2013).

As a result of the literature review, it was seen that there were not many studies in which students' perceptions of industrial chemistry classroom learning environment were measured. The aim of this study is to examine the relationship between gender, class and parental education level which is thought to affect students' perceptions of industrial chemistry learning environment.

RESEARCH METHOD AND FRAMEWORK

Quantitative research was conducted to determine the factors that affect students' perceptions about the industrial chemistry course learning environment.

The universe of the study consists of 5 high schools providing education in Kocaeli. The sample of the study consists of students who prefer to participate in voluntarily. 223 questionnaires were distributed to students. However, 193 were included in the analysis. The sample consisted of 193 students. Data were collected in the spring half of 2018-2019.

The first part of the research consists of industrial chemistry classroom learning environment scale and the second part is composed of demographic questions of students. Industrial Chemistry Classroom Learning Environment Scale (ICCLE); Hofstein et al. (2000). The scale was translated into Turkish by Tosun et al. (2009). The scale consists of thirty-seven items and is 4-point Likert type. Demographic questions Demographic questions were divided into four groups as gender, parent education level and class.

The data were analyzed with SPSS 21 program and significance level was determined as 0.05. According to factor analysis results, Kaiser-Meyer-Olkin (KMO) coefficient was 0.835; X^2 is 2163,817. The degree of freedom of the Barlett Sphericity test was found to be 666, with a p value of 0,000. The results show that sufficient sample volume is reached. According to the results of the normality test, the data ($p = 0.001 < 0.05$) were distributed normally.

FINDINGS

The highest factor load value of Industrial Chemistry Classroom Learning Environment Scale was 0,632; the lowest factor load value is 0.554. Factor load value up to 0.30 'can be specified as a sufficient size (Büyüköztürk, 2002). The total variance ratio explained by the scale is 58,063.

The Cronbach Alpha α coefficient of the Industrial Chemistry Classroom Learning Environment scale was determined by Tosun et al. (2009) found it to be 0.78. As a result of the reliability analysis, Cronbach Alpha α coefficient value was found to be 0.864. Cronbach Alpha value was between 0,41 $< \alpha < 0,60$, the scale had low reliability, 0,61 $< \alpha < 0,80$, the scale had medium reliability, 0,81 $< \alpha < 1,00$, the scale had high reliability. It can be said that (Yaşar, 2014). As the scale α coefficient is over 0.70, the reliability of the scale is within the “reliable” limits (Büyüköztürk, 2002).

Table 1: Explanatory Values of the Scale

Scale items	Mean	SD	Scale items	Mean	SD
ICCLE 1	2,16	,797	ICCLE 20	2,59	1,835
ICCLE 2	2,29	,848	ICCLE 21	2,65	2,378
ICCLE 3	2,18	1,265	ICCLE 22	2,49	,952
ICCLE 4	2,59	,914	ICCLE 23	2,53	,989
ICCLE 5	2,48	,941	ICCLE 24	2,44	,934
ICCLE 6	2,20	,875	ICCLE 25	2,53	,957
ICCLE 7	2,06	,881	ICCLE 26	2,44	,900
ICCLE 8	2,30	,903	ICCLE 27	2,41	,886
ICCLE 9	2,26	,901	ICCLE 28	2,37	,911
ICCLE 10	2,72	,985	ICCLE 29	2,57	1,730
ICCLE 11	2,37	1,231	ICCLE 30	2,31	,912
ICCLE 12	2,23	,920	ICCLE 31	2,45	,918
ICCLE 13	2,39	,901	ICCLE 32	2,46	,962
ICCLE 14	2,15	,905	ICCLE 33	2,39	,930
ICCLE 15	2,45	,962	ICCLE 34	2,38	,956
ICCLE 16	2,18	,931	ICCLE 35	2,30	,948
ICCLE 17	2,24	,882	ICCLE 36	2,22	,883
ICCLE 18	2,36	,898	ICCLE 37	2,29	,930
ICCLE 19	2,39	,907			

Explanatory values of the scale are shown in Table 1. The lowest mean value of the scale items was 2,06; the highest is 2,65. When the standard deviation value of the scale items were examined, the highest value was 2,378; the lowest was ,797.

Table 2: Demographic Variables

Variables	N	%	Variables	N	%
<i>Gender</i>			<i>Father education status</i>		
Male	50	25,9	Primary edu	105	54,4
Female	143	74,1	High school	71	36,8
<i>Mother education status</i>			Graduate	12	6,2
Primary edu	138	71,5	Postgraduate	5	2,6
High school	48	24,9	<i>Class level</i>		
Graduate	3	1,6	1.class	21	10,9
Postgraduate	4	2,1	2.class	37	19,2
			3.class	97	50,3
			4. class	38	19,7

When the demographic variables of the students were examined; 25.9% were male and 74.1% were female students; 71.5% of the students had primary school education, 24.9% had high school education, 1.6% had graduate

degree, 2.1% had postgraduate education, 54.42% had fathers education level of primary education, 36%, 8 of them were high school, 6.2% were graduate and 2.6% were postgraduate. It was determined that 10.9% of the students were in the first class, 19.2% were in the second class, 50.3% were in the third class and 19.7% were in the fourth class.

Table 3: Gender with Industrial Chemistry Classroom Learning Environment Analysis (t-test)

Scale	Gender	N	SD	t	F	p
Industrial Chemistry Classroom Learning Environment	Male	50	17,02	,858	,619	,432
	Female	143	15,97			

According to the results of t-test, it was found that the variances were equal in terms of gender and industrial chemistry learning environment. According to this result, there was no significant difference between gender and industrial chemistry learning environment ($p = 0,432 > 0.05$).

Table 4: Mother Education Status With Industrial Chemistry Classroom Learning Environment Analysis (anova)

Scale	Mother Education Status	N	SD	F	p
Industrial Chemistry Classroom Learning Environment	Primary edu	138	87,70	,851	,468
	High school	48	87,45		
	Graduate	3	99,66		
	Postgraduate	4	95,75		

According to the results of the Anova test ($p = 0,468 > 0.05$), it was found that there was no statistically significant difference between mother education level and industrial chemistry learning environment.

Table 5: Father Education Status With Industrial Chemistry Classroom Learning Environment Analysis anova)

Scale	Father Education Status	N	SD	F	p
Industrial Chemistry Classroom Learning Environment	Primary edu	105	87,4571	,187	,905
	High school	71	88,7324		
	Graduate	12	86,8333		
	Postgraduate	5	91,6000		

According to the results of Anova test ($p = 0,905 > 0.05$), it was not found statistically significant difference between father education level and industrial chemistry learning environment.

Table 6: Class Level with Industrial Chemistry Classroom Learning Environment Analysis anova)

Scale	Class Level	N	SD	F	p
Industrial Chemistry Classroom Learning Environment	1.class	21	14,98	1,316	,270
	2.class	37	16,10		
	3.class	97	15,95		
	4. class	38	17,50		

According to the results of the Anova test ($p = 0,270 > 0.05$), it was found that there was no statistically significant difference between classroom level and industrial chemistry learning environment.

DISCUSSION AND CONCLUSION

Industrial chemistry classroom learning environment scale includes the students' relationship with the educator, classroom environment, students' attitudes towards the course, and opinions about various elements such as tools and materials used in the course. No significant relationship was found between gender, parental education level and class level, which were thought to affect students' perception of learning environment.

The number of students in the learning environment and the capacity of the technology used in the learning environment can also change the students' perception of the learning environment. The learning environment can be examined at the same time from the eyes of both teachers and students. This study was applied to students

studying at secondary education levels. For future research, it is recommended that the learning environment be implemented in universities that are thought to be structured more appropriately for diversity and professional competence.

Students may also be asked what they can suggest or think about in order to enrich the learning environment and make it more interesting. In this respect, qualitative research is also recommended.

REFERENCES

- Büyüköztürk, Ş. (2002). Faktör analizi: temel kavramlar ve ölçek geliştirme kullanımı. *Kuram ve Uygulamada Eğitim Yönetimi*, Güz(32), 470-483.
- Cengizhan, S. (2008). Modüler öğretim tasarımının farklı öğrenme stiline sahip öğrencilerin akademik başarılarına ve öğrenme kalıcılığına etkisinin belirlenmesi. *Eğitimde Kuram ve Uygulama*, 4(1), 98-116.
- Çakıroğlu, J., Telli, S. & Çakıroğlu, E. (2003). Turkish high school students perceptions of learning environment in.
- Güneş, G. (2008). Yeni ilköğretim matematik dersi öğretim programının öğretme öğrenme ortamına yansımaları. *Basılmamış Doktora Tezi*, Karadeniz Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Trabzon.
- Günhan, B. C. (2006). İlköğretim II. kademede matematik dersinde probleme dayalı öğrenmenin uygulanabilirliği üzerine bir araştırma. *Basılmamış Doktora Tezi*, Dokuz Eylül Üniversitesi, Eğitim Bilimleri Enstitüsü, İzmir.
- Öğrenme Ortamı (2019). <http://formasyon.erdogan.edu.tr/Files/ckFiles/file/s%C4%B1n%C4%B1f%20y%C3%B6netimi.pdf>, (access date: 01.08.2019)
- Keser, Ö. F. & Akdeniz, A. R. (2002). Bütünleştirici öğrenme ortamlarının çoklu araştırma yaklaşımlarıyla değerlendirilmesi. V. Fen Bilimleri ve Matematik Eğitimi Kongresi. <https://docplayer.biz.tr/15859564-Bütünleştirici-ogrenme-ortamlarinin-coklu-arastirma-yaklasimiyla-degerlendirilmesi.html>
- Öztürk, T. & Güven, B. (2012). Etkili bir matematik öğrenme ortamının sahip olması gereken özelliklerine ilişkin öğretmen görüşleri. http://kongre.nigde.edu.tr/xufbmek/dosyalar/tam_metin/pdf/2410-30_05_2012-16_42_19.pdf
- Tosun, C., Şenocak, E. & Taşkesengil, Y. (2009). Endüstriyel kimya dersi öğrenme ortamı ölçeğinin Türkçe' ye uyarlanması çalışması. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 10(2), 111-117.
- Uluyol, Ç. & Karadeniz, Ş. (2009). Bir harmanlanmış öğrenme ortamı örneği: öğrenci başarıları ve görüşleri. *Yüzüncü Yıl Üniversitesi, Eğitim Fakültesi Dergisi*, 6(1), 60-84.
- Yaşar, M. (2014). İstatistiğe yönelik tutum ölçeği: geçerlilik ve güvenirlik çalışması. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 36(2), 59-75.
- Yeşilyurt, S., Gül, Ş. & Koca, H. (2013). Biyoloji dersi öğrenme ortamı ölçeği (bdöoö): geçerlik ve güvenirlik çalışması. *Kastamonu Eğitim Dergisi*, 21(1), 223-236.

METAPHORS ABOUT THE TREATMENT OF PATIENTS WITH JOINT, NEUROLOGICAL AND SPORTS DISORDERS DURING REHABILITATION

Ayla Tekin Orha

Kocaeli University School of Medicine Anatomy Department
aylatekin@hotmail.com

İsmail Sivri

Kocaeli University School of Medicine Anatomy Department
ismailsivri@gmail.com

Esra Kayabaşı

Kocaeli University School of Medicine Anatomy Department
nesrakayabasi@gmail.com

Buket Rende

Kocaeli University School of Medicine Anatomy Department
buketrende@hotmail.com

Tuncay Colak

Kocaeli University School of Medicine Anatomy Department
tuncaycolak@live.com

Belgin Bamaç

Kocaeli University School of Medicine Anatomy Department
bbamac@hotmail.com

Barış Zorbozan

Kocaeli University School of Medicine Anatomy Department
baris_zorbozan@hotmail.com

Gazmend Rahova

Kocaeli University School of Medicine Anatomy Department
grahova41@gmail.com

Burhan İnân

Kocaeli University School of Medicine Anatomy Department
fztburhaninan@icloud.com

Alper Talu

Kocaeli University School of Medicine Anatomy Department
alper_ast@hotmail.com

Ebuzer Akbaş

Kocaeli University School of Medicine Anatomy Department
fztebuzer65@gmail.com

ABSTRACT

Metaphors can transfer information from a traditional similar field to a new and unknown area. Metaphors are particularly effective in understanding abstract concepts that can be learned indirectly. The health field, like other areas, uses metaphors to provide an understanding of complex concepts.

In this study, the metaphors about “treatment” of 114(Female: 40; Male 74) participants who ongoing treatment in a physical therapy center was analysed. The comparison of the metaphor was made between joint disorders, neurological disorders and sports disorders patient. Among the 114 participants, the most frequent metaphor encountered was “pain / pleasure” (26.3%, n=30). In both women (27.5%, n=11) and males (25.7%, n=19) the most highly expressed metaphor category was “pain/pleasure”. In this context, there is no difference between the most expressed metaphor categories among genders. There was a difference in the distribution of metaphor categories among disease groups. The most encountered categories, were “Exploring/Uncovering” for 30% of the orthopaedic (joint disorder) patients, were, “Pain/Pleasure” for 27.1% of neurological patients and “Disappearance/Unknown situation” for 35.7% of the sportive patients.

Metaphors are a way for the therapeutic therapist to communicate a complex psychological concept and theories for patients and also to coexist in processes. A metaphoric language used under appropriate conditions can affect the patient's motivation and ability in the rehabilitation process. It is considered that metaphors indicating the patients' perspectives on treatment should be taken into consideration when planning rehabilitation programs for orthopaedic joint disorders, neurological and sportive patients

INTRODUCTION

Metaphors are concepts that we frequently use in our understanding of the world we live in, to express ourselves differently in society and to convey our thoughts in a different way, but we do not realize much when using them.

Metaphors are generally consisted of information transformation from similar area to genuine, and mostly unknown area. Metaphors are one of the powerful mental tools that unconsciously construct, direct and control our thoughts about the occurrence of events and people (Çolak, 2015). The use of personal metaphors is a method of restructuring (Boylstein et al. 2007).

Metaphors first came into being with the “mental metaphor theory” developed by Lakoff and Johnson in the 1980s. According to this theory, if our concept system is largely metaphoric, our way of thinking and the situations we experience are in a sense metaphoric.

Metaphors are particularly effective in understanding abstract concepts that can be learned indirectly (Lakoff and Johnson 1980). Metaphor is, for many people, is a poetic imagination and retoric demonstration trick; in other word, it is not an issue of usual language, but rather of unusual language. The essence of the metaphor is to understand and experience one kind of thing according to another (Lakoff and Johnson 2005). In traditional social psychology, metaphor is a good way to express non-verbal thoughts (Kramsch 2003). Metaphor is more than a way of speaking. It can also be a powerful learning model (Baker ve Partyka 2012).

Just like other fields, the field of health uses metaphors to understand complex concepts (Neilson 2015). The aim of this study was to determine the metaphor perceptions of patients who had rehabilitation after joint, neurological and sports disorders. There was not enough metaphor studies related to the health field in literature searches (Neilson 2015, Mancopes ve Schultz 2008, Schwartz 2015) and there was no study measuring metaphor perceptions developed by rehabilitation patients about their treatment. The treatment process of patients receiving rehabilitation is a long and extremely difficult period. Therefore, it is important to determine the reflection of this process in patients metaphorically and to determine the reasons for using the metaphors they have expressed to explain the process. In this study, we think that it will help to understand the perspectives of patients who have been rehabilitated after joint, neurological and sporting disorders and the reasons for their view. In this respect, we believe that our study will also contribute to the literature on producing solutions by making suggestions in the planning of treatment.

METHOD

Working Group

Our study was approved by the Non-Interventional Clinical Research Ethics Committee of the University. A total of 137 patients who were treated in Physical Therapy and Rehabilitation Hospital participated in our study voluntarily. At the same time, Metaphors, where the bond between the subject and the source are unclear, unused or irrelevant, were eliminated at this stage (n = 23). The study was continued with a total of 114 patients. Among the patients who participated in the study; they were asked to state their diagnosis, age, educational status, gender, occupation, disease duration, and complaints. Patients are classified as orthopedic, neurological and sportive groups. 25.43% of the patients are in the orthopedic group, 62.28% are in the neurological group and 12.29% are in the sports group. 35.1% of the participants were female and 64.9% were male.

In this study, it was requested that the patients undergoing rehabilitation produce a metaphor including their thoughts and feelings about their treatment.

Data Collection

In order to facilitate the production of metaphors to the participating patients, the metaphor was explained and examples were given to them. In the distributed form patients were asked to complete the sentences like “Treatment is similar to , because” by producing metaphors. In order to understand the metaphor more clearly and to categorize it easily, patients were asked to provide a justification for the concept of “Because” (Çolak 2014).

Data Analysis

The metaphors developed by 114 orthopedic, neurological and sportive patients in the Physical Therapy and Rehabilitation Hospital were analysed and interpreted in three stages (Wells 2015).

Description of metaphors and elimination phase: In the identification and elimination of metaphors, it was examined whether the metaphors produced by the participants were expressed clearly or not. At the same time, metaphors, where the bond between the subject and the source was unclear, unused or irrelevant, were eliminated at this stage (n=23). Finally, 114 metaphors which meet the criteria were included in this study.

Stage of classification, and categorization: Metaphors were classified and categorized using 6 different conceptual categories. These categories were : 1. Disappearance/Unknown status 2. Hopeless struggle, 3. Pain/pleasure, 4. Exploration/Uncovering, 5. Guidance/Investment in knowledge, and 6. Finding a Solution (Aktekin 2010).

Stage of validity and reliability: In the validity and reliability stage, metaphors were divided into 6 different categories using different studies. (Aktekin 2010, Colak 2014). The created metaphors did not fall into the common category, or definitions. Metaphors which fall into two different categories were eliminated (n=23).

FINDINGS

86 metaphors collected from participants were categorised in 6 groups and the reasons for these metaphors was noted. The distribution of metaphor types by other categories, respectively; Missing/Unknown status (n=13);

Desperate challenge (n=7); Bitterness/Pleasure (n=30); Discovering/Revealing (n=24); Guidance/Investment to the knowledge (n=25); Finding a solution to a problem (n=15). The division of metaphors by categories are demonstrated in Table 1.

Table 1: Categorical distributions of metaphors

Metaphor Categories (n=6)	Frequency (n=86)	Metaphor
1. Disappearing / Unknown situation	N=13 %11,4	Process(2), Cope(1), Forget(1), In Need(1), Sleep(1), Penalty(2), Patience(3), Cartoon(1), Activity(1), Start(2), Target(1), Renewal(2), Medicine(1), Grow Stronger(1),
2. Desperate challenge	N=7 %6,1	Chance(1), Obligation(1), Difficulty(1), Be bored(1), Knit(1), To Be Limited(1), Boring(1)
3. Bitterness/Pleasure	N=30 %26,3	Snowball(2), Be drowned(1), War(1), Food(3), Bitterness(5), Heal(6), Torture(6), pain(1), Innovation(1), Cleaning(1), Motivation(1), Independence(1), Health(3), Relaxation(2), life water(1), love(1), life (3), lose(1), Comfort(1)
4. Discovering/Revealing	N=24 %21,1	Construction (1), Freedom (2), Gift (1), Sun (1), Time (2), Grow (1), Produce (1), Step (4), Learn (2), Recognize (1), Sport (7), Fix (1), Run (1), Walk (2), Born (1)
5. Guidance/ Investment to the knowledge	N=25 %21,9	Childhood (1), hold(1), friend(3), Breakfast (1), Hope (6), Interests(1), Training(1), Continuity (1), Discovery(1), Design(1), Occupation (1), Treatment (1), Movement(2), Healing(2), Medicine(1), Chauffeur(1), Talking(1)
6. Finding a solution to a problem	N=15 %13,2	Effort(1), Happiness (3), Rejoining (1), Love(1), Work(2), Irrigate(1), Development(1), Solution(1), Laugh(1), Live(1), Get better(1), Repair(2), Accomplish (1), Success(1)

The most produced metaphor related to treatment was in the “Pain/Pleasure” category with 26.3%. Metaphors of “healing and torture” were the most mentioned in this category (n=6). In all categories the most commonly used metaphor word was “sports” from “Discover/Reveal” category (n = 7).

Table 2: Metaphor category distribution by gender

Metaphor Categories	Number and percentage of gender in categories	
	Female %35,1 N:40	Male %64,9 N:74
Disappearing / Unknown situation	N=6 %15	N=7 %9,5
Desperate challenge	N=4 %10	N=3 %4,1
Bitterness/Pleasure	N=11 %27,5	N=19 %25,7
Discovering/ Revealing	N=7 %17,5	N=17 %23,0
Guidance/ Investment to the knowledge	N=7 %17,5	N=18 %24,3
Finding a solution to a problem	N=5 %12,5	N=10 %13,5

When metaphors were examined considering the gender distinction between men and women; Bitter/Pleasure is the category with the most metaphor on both sides (M: 25.7% n = 19; F: 27.5% n = 11). The distinctions of other categories according to gender are given in table-2.

Table 3: Distribution of orthopedics, neurology and sportive patients by metaphor categories

Metaphor Categories	Distribution of orthopedics, neurology and sporting patients		
	Orthopedics	Neurology	Sportive
	%26,3 N=30	%61,4 N=70	%12,3 N=14
Disappearing/Unknown situation	%13,3 N=4	%5,7 N=4	%35,7 N=5
Desperate challenge	%0,0 N=0	%8,6 N=6	%7,1 N=1
Bitterness/Pleasure	%26,7 N=8	%27,1 N=19	%21,4 N=3
Discovering/Revealing	%30 N=9	%17,1 N=12	%21,4 N=3
Guidance/Investment to the knowledge	%20 N=6	%25,7 N=18	%7,1 N=1
Finding a solution to a problem	%10 N=3	%15,7 N=11	%7,1 N=1

When metaphors were examined in three different points in orthopedics, neurology and sporting patient groups, there are numerical differences in “Pain/Pleasure category which has the highest number of metaphors. 26.7% of the metaphors they produced about treatment in the orthopedic group and 27% in the neurology group were in the “Pain / Pleasure category; In the sport group, this rate declines to 21.4%. On average (n = 114); the relevant category has a frequency of 26.3% N = 30. In addition, none of the patients in the orthopedic group produced a metaphor for the desperate struggle category.

CONCLUSION

Metaphors are concepts that we frequently use in our understanding of the world we live in, to express ourselves differently in society and to convey our thoughts in a different way, but we do not realize much when using them. Metaphors generally involve the transfer of information from a similar domain to a new and often unknown domain. Metaphors are one of the powerful mental tools that unconsciously construct, direct and control our thoughts about the occurrence of events and people (Çolak 2015). Metaphor-related studies are available in the literature to explain and better understand complex and abstract concepts in different fields (Çolak et al. 2016a, Çolak et al. 2016b).

The field of health uses metaphors to provide an understanding of complex concepts such as other fields (Neilson 2015). In this context, the metaphor perceptions of patients who were rehabilitated after joint, neurological and sporting disorders were tried to be determined. There are metaphor studies related to the field of health in literature searches (Neilson 2015, Mancopes and Schultz 2008, Schwartz 2015).

In this study, metaphors of 114 participants were examined. There was a difference in the distribution of metaphors between categories. Among the metaphor categories, 26.3% (n=30) of the 114 participants stated that the highest metaphor frequency category was “pain / pleasure. This metaphor category was the most metaphor category expressed between genders, 27.5% (n=11) of women and 25.7% of men (n=19). Two genders expressed the most this category.

In our study, according to metaphors about treatment of patients who were rehabilitated after joint, neurological and sporting disorders, the most expressed metaphor category in orthopedic patients was “discovery / revealing” with 30%. Since the functional limitations of orthopedic patients returned as regaining mobility at the end of the rehabilitation process, they were thought to express this metaphor the most. The least metaphor category of orthopedic patients was, “Disappearance/Unknown” status with 13.3%. The minimum “disappearance / unknown status” metaphor category was expressed with 5.7% of neurological patients. Since orthopedic and neurological patients have a long rehabilitation process and are likely to gain functionality, they have expressed the least “disappearance / unknown status” category. The most metaphor categories expressed by neurological patients were, “pain / pleasure” (n=27) at 27.1%. These patients lose their identity after the illness and enter a new identity formation process. As the metaphor used to describe the paralysis experience changes, the self-perception changes (Boylstein et al. 2007). The reason that neurological patients express this metaphor category the most maybe that the rehabilitation process is long and challenging and the process of accepting the change of self-perception is long, but it is thought that individuals will be able to continue a more comfortable and active life after rehabilitation.

The most common metaphor categories of sports patients were “disappearance/unknown” status with 35.7%. The reason for this category being expressed the most can be that if the rehabilitation of sports patients does not achieve the expected success, the difficulty of returning to their professional life may lead to an unknown situation. The least metaphor categories of these patients were expressed as “Hopeless Struggle (n=7) with 7.1% and Investment in Guidance / Knowledge. It is thought that these patients have high hopes for the future related to the rehabilitation process and it is less necessary for them to invest in knowledge for a new beginning in their lives.

Met Disappearance / unknown condition, which is the most metaphor category expressed by sporty patients, was the least expressed in neurology and orthopedic patients. The reason for this is the fact that the anxiety that sportive patients may endanger their professional lives at the end of the rehabilitation process is interpreted as more expressed in this metaphor category of sport patients. Neurological and orthopedic patients should be able to express at least this category and know that they will make functional progress at the end of rehabilitation process and continue to live a more comfortable life.

Metaphors convey the potentially complex psychological concepts and theories of the therapist to patients during the treatment process and at the same time offer a way to become part of the change process. A metaphoric language used under appropriate conditions may affect the patient's motivation and ability in the rehabilitation process. It was concluded that the metaphors showing the treatment perspectives of patients should be taken into consideration when planning rehabilitation programs of joint, neurological and sporting patients.

REFERENCES

- Aktekin, M. & Aktekin, NC. (2010). Anatomi öğrenmenin kaçınılmaz acısı. *XIIIth National Congress of Anatomy with International participation*, Kyrenia, Turkish Republic of Northern Cyprus.
- Baker S. ve Partyka L. (2012). Relative Importance of Metaphor in Radiology versus Other Medical Specialties. *University of Medicine and Dentistry of New Jersey*, New Jersey Medical School RadioGraphics 32:235–240.
- Boylstein C, Rittman M, Hinojosa R. (2007)Metaphor shifts in stroke recovery. *Health Commun* 21(3): 279-87.
- Colak S. (2014). “Metaphoric Perceptions Of Physical Education And Sports Students To The Concept “Computers Education”. INTE 2014, *International Conference On New Horizons In Education*. Paris, France
- Colak S. (2015).Metaphoric Perceptions of School of Physical Education and Sport Students to the Concept “Computers Education”. *Procedia-Social and Behavioral Science*, 174, 3210-3213.
- Colak S, Yener MD, Colak E, Tasdemir R, Colak T, Bamaç B, Son M. (2016a). (“ The Postgraduate Students Masters, PhD) Metaphors About Education of Statistic” *SHS Web of Conference*, 31, 01007
- Colak S., Güzelordu D., Yener MD., Taşdemir R., Topal A., Bamaç B., Çolak T. (2016b) “ Metaphors about computer education of first year nursing students”, *SHS Web of Conference*, 26, 01057
- Kramsch C. (2003) Metaphor and the subjective construction of beliefs. In: Kalaja, P. and Barcelos, A.M.F. (eds.). Beliefs about SLA: New research approaches. Springer, pp.109-128.
- Killick S, Curry V, Mylese P. (2016) The mighty metaphor: a collection of therapists’ favourite metaphors and analogies. *The Cognitive Behaviour Therapist*, vol. 9, e37, page 1 of 13
- Lakoff G ve Johnson M. (2005) Metaforlar hayat anlam dil, (Çev. G Y. Demir), *Paradigma yayıncılık*, İstanbul.
- Lakoff G. ve Johnson M. (1980) Metaphors we live by. Chicago: *University of Chicago Press*.
- Mancopes R ve Schultz F. (2008). Processing of metaphors in transcortical motor aphasia. *Dement Neuropsychol* 2(4): 339-348, Universidade do Vale do Itajai (UNIVALI).
- Neilson S. (2015) Pain as metaphor: metaphor and medicine *Med Humanit*, 42(1): 3-10 Department of English and Cultural Studies, McMaster University.
- Schwartz E. (2015). Metaphors and medically unexplained symptoms. *The Lancet*, 386(9995), 734-735
- Wells Ş.Y. (2015). “A Study of Trainee Visual Arts Teachers Metaphorical Perception of the Concept of ‘The Teacher’ and ‘The Artist’ ”. *Journal of Education* 30(3): 160-175, Hacettepe University

ON THE ROLE OF PLAY IN MATHEMATICS

Rüveysa AKKAŞ DEDE

Institute of Science, Mathematics Education Department, Kocaeli University
ruveysaakkas@gmail.com

ABSTRACT

In this paper, it was given some perspectives of the researchers on the role of play in mathematics and mathematics education. According to many researchers, mathematics and play have a rich connection on children education life. Understanding of the role of play in education is not easy and sometimes could appear complex. For mathematics teaching, teachers' don't have a unique definition of play, so they couldn't know the meaning of play in their teaching. Many researchers focused the question that "what is the role of play for education?" The main result came from the past researches is that play has an efficient role to help the learners exposing their learning style. To reach the essential aim of the play in education, it is important that "play" should be organized and selected by learners and not be serviced by trainers. In other words, play should come from learners' own interests and social environments.

It was focused that the role of play in mathematics and the connection between play and basic mathematical concepts as numbers, shapes, measurement and classifications. Also, it was dealing with a way of play which helps learners' learning of the language of mathematics by the view of some mathematics teachers.. We believe that the approach in this study gives a theoretical support for case studies. Moreover, this paper provides a perspective for learners' understanding style and their ability to organize mathematical symbols and mathematical ideas.

Key words: mathematics, play, education, learning

INTRODUCTION

Play is accepted as an important element of children education program and pedagogical development. As a tool for learning of children, play is also recognized a concept that they show their special way of teaches (Wood, 2007). But, teachers usually have difficulties to explain the connection play and mathematics in that they use this role of play to make easier understanding of concepts of mathematics. Van Oers (1996) stressed that the advantage of play to facilitate students' mathematical thinking directly depends on teachers' applications for this connection. According to Ginsburg (2006), this way of teachers needs mathematical background, information of the nature students' play, especially the way of play which develops mathematical learning and understanding (Bobis at al. 2010).

Many researchers expressed that play couldn't be defined by its subject. For example, McLane (2003) stayed that play is a special situation for elements, thinking and applications but it is not elements, thinking and applications themselves. In other words, play is a very special correlation of thinking and doing. He explains this situation as expressed by the words "what if" and "in which point, some special steps are applied". We can say that for this special approach that many alternative and possible answers come as a true result of the problem. So, the application steps of play give students a rich tool that it has not an absolute control of the mathematical context.

It has been conducted some researches on play and math learning. We can summarize briefly as below (Ryan & Goffin, 2008; Bobis at al., 2010);

- children go to any school with little background about mathematics and play connection
- there is a positive correlation between early play habits and later mathematical accomplishment
- children usually have the capacity of engaging in mathematical concepts and play

According to these researchers, teachers should have an active role to conduct the teaching of mathematical context with play.

PLAY ACTIVITIES WITH MATHEMATICAL SUBJECTS

By the analyzing of some researches on play and mathematics, we shorted the following relations between mathematics and play activities. Each of them was determined by the observation of students in their learning activities with the careful studies of teachers or mathematics education researchers. The main characteristic specialties of these subjects were their observation numbers and indexing in many research papers (Babis at all. 2010).

Numerical Studies

Many researches have been operated about academic differences in elementary school students' mathematical achievement (Okamoto, Miura, Suomala & Curtis, 1996; Mullis, Martin, Gonzalez, & Chorostowski, 2004). Also, many countries participated to comparisons studies about children's mathematical developments (Stevenson, Lee, & Graham, 1993; Stigler & Perry, 1990). But, we observed that preschool students' numerical skills didn't study much.

It could be easily expressed that numbers were the most usually repeated, mentioned, analyzed concepts in the educational studies focused by the author. These studies usually conducted with children that the age interval was (5, 9). In the numerical categories, it was added forward and backward counting series, representing of objects by numbers and counting operations for quantification (Burton, 1994).

Shape Models

The abilities of young children with geometrical figures were expressed the simple definition of geometrical properties of familiar figures and names of famous and simple shapes (Pound, 2006; Mulligan, Mitchelmore & Prescott, 2006; English, 2004). Studies with geometrical shape are one of the most widely papers in mathematics educational literature. The subjects for shape commonly used are the classification of figures as shape, the determination of the name of shape and the observation of the similarities and differences of the figures.

Measurement of the objects

Exploring measurement of concrete objects were the most widely studied category of educational studies in the context play and mathematics cooperation (Wellman & Gelman, 1992; Spinath, 2005). Exploration of volume for some well-known objects, using of different measuring equipment and measurement of length for simple subject were the most focused studies at the literature.

Classification of the Similar Items

Mathematical classification activities has a powerful effect to develop children's' skills and mental developments. Classification or composing of groups with some similarities of the objects should be given the children in early years to characterize the mathematical objects, concrete and simple answers for problems which has daily activities application and to classify all kind of objects as cities, students, animal and flowers (Babbington, 2003). The basic idea for the classification that teachers transform to their students is group of objects has different group selection by means of your own special target to make group. We can say that classification activities with play are a basic step for students to construct mathematical patterns.

TEACHERS' IDEAS ON PLAY AND MATHEMATICS

A special way of education is analyzing in this study that a balanced coordination of play and mathematics. The best thing that children like to do is play and they learn everything through play and they always need help of another person to accomplish what they learn. Also, we believe that play is a sociological and pedagogical instrument for children education especially for mathematic teaching and learning to accomplish the aim of the education. One of the main aims of the study is to give teachers' ideas on the effect of play to learn mathematics by the view of their mathematic lecture experiences. For this reason, we conducted some interviews with the two elementary school mathematics teachers.

Teachers' first stressed point in these interviews was that play is an effective part of learning mathematics. They accepted play as a main part of education. In this education, play has a special role on teaching that they (play and mathematical subject) enrolled together to complete the lecture program.

Teacher A: In my mathematic lectures, play was an essential part of the teaching. Most of my students understand some mathematical concepts fully when I give some play modification of the lecture. Maybe sometimes it took much time to complete the curricula with play activities but I believe that this is not waste of time.

Teacher B: Using of play and mathematics together has a clear meaning in my teaching that listening of the students, follow and observe their actions than help them if necessary to accomplish the study. For this reason, teacher first needs to understand what children try to do than he/she can guide. As a guide, teacher doesn't have an active role in the play activities of the student. When I understand that the child feel and connect the role of play with the mathematical concept, I accept it as teaching with play activities reach the target.

On the role of teachers at this special teaching as a part of the play and a teacher of mathematics the following expressions were presented by the participants. Such a multi designed teaching; the experience of teachers has a big effect on the student's accomplishment. The teachers having this effective role are able to organize the education with their pedagogical experiments which play has the most important role of students' learning. Also,

teachers have a good motivation for the development of the students' abilities such as advancing of their confidence.

Teacher A: students always want to play the games they know before than doing mathematics. It is easy for them because they know the some basic information and rules about natural numbers and operations (as plus and minus) which teacher are planning to use these knowledge in the teaching. Also, they want to repeat the play activities before going to next step of teaching category.

Student B: When students understand well the concept via plays than feel happy and they want to try to teach the concept to friends with the play activities that were used in the learning steps. Children believe that they will have good experience of mathematical concept by repeating the game activities. They believe that accomplishing all the activities by themselves from start to end would give them a powerful confidence for mathematical concepts.

Another important point about the observation of the teacher that students who were enrolling with the play activities could make adoption of their mathematical knowledge to their special educational activities as portfolio studies or homework activities. The teachers believe that the development was the because of this teaching strategy. Also, the teachers had aware of the difference that some of the students were able to manage the information and the abilities had got via the play materials adopted into the game.

Teacher A: Step by step I aware of that we as teacher should separate the games and we don't use them at the same time because of that we organized play A and then showed play B later as next step activities which they like it also, then students were getting play B to connect to play A. At the end of the activities, they were doing the all steps of the play activities.

Teacher B: Our teaching activities with plays make them some positive effects on their learning activities with play. Sometimes the activities which they made by themselves were not the same the activities which we they showed them before.

In all above from the expressions, it can be extracted that students were motivated to play activities. In these activities, teachers' role was to follow their steps and connect play with mathematical concept at an appropriate time. So, they were able to control students' role to enhance students' learning.

THE DEFECTIVENESS OF PLAY IN THE EDUCATION PROGRAMS

Many schools administrators are not aware of the role of play for learning and teaching all over the world. For this reason, this defectiveness causes students' learning of mathematical concepts out of the effective role of play in education. According to school administrators, they accept that play for learning activities is not an important and necessary activity, and also they express that teach with play take much time, so they couldn't finish school curricula at the end of the semester. These expressions are not valid and true as educationally. But, it has turned out to be the students' mathematics education without play. These misconceptions also change families' ideas about play and mathematics and they also could not want to play activities in school activities (Blair, Gamson, Torne and Baker, 2005).

In many countries, curricula and teaching criteria don't have play activities for mathematics education. Also some these programs have little play activities for learning and teaching standards. An interesting point and a contradiction is that they have at their registered material some expressions on the role of play activities to students' development as an effective method.

As an additional reason, we can say that lack of educational personal especially teachers backgrounds for learning and teaching with play activities. They don't have enough information about the adaptation of play activities in their mathematics lectures and applications. Also, these teachers usually believe that equipment for teaching mathematics are only mathematics books, notebooks, students' portfolios, and sometimes technological materials. Maybe, if they know the role of play activities has powerful effects on the teaching and learning mathematics and its desirable motivational power on the students learning, they could add it to their educational materials and methods. According to some teachers, they sometimes want to add play activities to their school activities but they don't have necessary material for play activities in their school. Additionally, they believe that learning and teaching with play activates not necessary and applicable in crowded classrooms (Holton, Ahmed, Williams, & Hill, (2001).

The volume and big capacities of classrooms in the school that has negative effects on student's free behaviors are other reasons for the defectiveness of play in the program. For example, if there are more than thirty or thirty-five

students at an inadequate classroom, this is a difficult to transform teachers' necessary experiences to students with material used in play activities. The disadvantage of big classrooms is that helping of teachers to students' play activities with dialogs is not easy.

CONCLUSION

When we teach mathematics with play, children begin to learn and understand quickly mathematics language of the basic math concepts as numbers, shapes, classifications and the other concepts. They can compose simple number sequences, and make simple planning with times. Teachers can help children to develop math language with play activities as short-long, full-empty and especially using the materials from the environment of children. To reach better results in teaching and learning mathematics, we need to use play in mathematics education effectively. For this reason, administrators of schools and education system need to support play activities in mathematics. And finally, mathematics teachers, especially early childhood education and at first years of elementary schools should be professional at learning and teaching with play activities.

REFERENCES

- Blair, C., Gamson, D., Thorne, S. and Baker, D. (2005). Rising Mean IQ: Cognitive Demand of Mathematics Education for Young Children, Population Exposure to Formal Schooling, and the Neurobiology of the Prefrontal Cortex, *Intelligence*, V33 N1, Elsevier.
- Bobis, J., Dockett, S., Hunting, R.P. at al., (2010). Playing with Mathematics: Play in Early Childhood as a Context for Mathematical Learning. *Mathematics Education Research Group of Australasia*, Paper presented at the Annual Meeting of the Mathematics Education Research Group of Australasia (33rd, Freemantle, Western Australia, Jul 3-7, 2010).
- Burton, L. (1994). *Children learning mathematics: Patterns and relationships*. Hemel Hempstead: Simon and Schuster Education.
- English, L. D. (2004). Mathematical and analogical reasoning in early childhood. In L. D. English, (Ed.), *Mathematical and Analogical Reasoning of Young Learners* (pp. 1-22). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Ginsburg, H. P. (2006). Mathematical play and playful mathematics: A guide for early education. In R. M. Golinkoff, K Hirsh-Pasek, & D. Singer (Eds.), *Play=learning* (pp. 145-165). New York: Oxford University Press.
- Holton, D., Ahmed, A., Williams, H., & Hill, C. (2001). On The Importance Of Mathematical Play. *International Journal Of Mathematical Education In Science And Technology* , 32 (3), 401-415.
- McLane, J. B. (2003). "Does not." "Does too." *Thinking about play in the early childhood classroom*. Erikson Institute Occasional Paper Number 4.
- Mulligan, J. T., Mitchelmore, M. C., & Prescott, A. (2006). Integrating concepts and processes in early mathematics: The Australian Pattern and Structure Mathematics Awareness Project (PASMAT). In J. Novotná, H. Moraová, M. Krátká & N. Stehlíková (Eds.), *Proceedings of the 30th annual conference of the International Group for the Psychology of Mathematics Education* (Vol. 4, pp. 209-216). Prague: Program Committee.
- Okamoto, Y., Miura, I., Suomala, J., & Curtis, R. (1996, April). Developmental differences in children's cognitive representation of number and their understanding of place value: A cross-national comparison. Paper presented at the annual meeting of the American Educational Research Association, New York.
- Mullins, I. V. S., Martin, M. O., Gonzalez, E. J., & Chorostowski, S. J. (2004). Findings from IEA's Trends in International mathematics and science study at the fourth and eight grades. Chestnut Hill, MD: TIMSS & PIRLS international study center, Boston College.
- Pound, L. (2006). *Supporting mathematical development in the early years* (2nd ed.). Berkshire, United Kingdom: Open University Press.
- Ryan, S. & Goffin, S. (2008). Missing in action: Teaching in early care and education. *Early Education and Development*, 19 (3), 385-395.
- Spinath, B. (2005). Development and modification of motivation and self-regulation in school contexts: Introduction to the special issue. *Learning and Instruction*, 15, 85-86.
- Stevenson, H., Lee, S., & Graham, T. (1993). Chinese and Japanese kindergartens: Case study in comparative research. In B. Spodek (Ed.), *Handbook of research on the education of young children* (pp. 519-535). New York: Macmillan.
- Stigler, J. & Perry, M. (1990). Mathematics learning in Japanese, Chinese and American classrooms. In J. Stigler, R. Shweder, & G. Herdt (Eds.), *Cultural psychology: Essays on comparative human development* (pp. 328-353). New York, Cambridge University Press.
- Van Oers, B. (1996). Are you sure? Stimulating mathematical thinking during young children's play. *European Early Childhood Education Research Journal*, 4(1), 71-87.

- Wellman, H. M., & Gelman, S. (1992). Cognitive development: Foundational theories of core domains. *Annual Review of Psychology*, 43, 337-375.
- Wood, E. (2007). New directions in play: Consensus or collision? *Education 3-13*, 35 (4), 309-320.

ON THE USE OF E-PORTFOLIO OPINIONS OF SCHOOL ADMINISTRATIVE CANDIDATES

Hasan Eriş

Cyprus International University, Nicosia, TRNC

Osman Vaiz Cyprus International University, Nicosia, TRNC

Cyprus International University, Nicosia, TRNC

Akış Yeşilada Vaiz

Cyprus International University, Nicosia, TRNC

Derya Eriş

Cyprus International University, Nicosia, TRNC

Özhan Güvenç

Cyprus International University, Nicosia, TRNC

Summary

Teachers have to make use of the opportunities of the information society in order to enable them to realize the most effective learning in line with the expectations of the information society and to renew themselves.

In line with the developing and changing technology every day, training programs develop and change itself. Portfolio evaluation, which is one of the alternative measurement and evaluation methods, develops aspects of taking responsibility and cooperation in the student's own learning process, while e-portfolios carried out in electronic environment with the help of technology enable the development of technological skills and away from portfolio presentation.

The aim of this study is to determine the opinions of the school management candidates for the use of e-portfolio applications in schools and professional development as a performance evaluation tool.

The study group of the study consisted of 127 teachers (school management candidates) working in schools affiliated to the Ministry of National Education of Northern Cyprus and participating in in-service training courses in 2017-2018 Fall academic year.

Research is an action research which is one of the qualitative research methods. Participants were selected for purposeful sampling from non-random sampling methods.

Within the scope of the in-service training course in which the research was conducted, e-portfolio was used as an assessment tool, and school administrators were informed about the application and use of e-portfolio method.

At the end of the training, semi-structured interview questions were asked to the research participants and their opinions about the e-portfolio method were applied.

As a result of the research, the school management candidates stated that e-portfolios are an effective and efficient alternative evaluation approach because of the ease of use and storage of the course and the possibility of monitoring the learner development easily.

Key words: e-portfolio; school management candidate; alternative assessment

INTRODUCTION

In general, the electronic portfolio is defined as a scalable and comprehensive method for documenting the personal development of an organization for defined goals and objectives, evaluating the effectiveness of commercial activities, supervising projects, supporting learning, professional development, auditing and participating in public companies.

The e-portfolio is developed in many fields and sectors, it is used for different users for different purposes and provides many advantages (Buzzetto-More, 2010).

In education, e-portfolio, from the student's point of view, develops an academic e-portfolio, enables students to learn to make themselves more autonomous in the learning process and to encourage decision-making under the guidance of the teacher.

E-portfolios allow students to be more active participants and organize their own learning processes. It is often used as an evaluation system integrated into the teaching and learning process (Barberà et al., 2006).

Within the files presented by the student, they are necessarily subjected to a process of reflection and realization that establishes a relationship between what is taught and what is learned. This allows the learner to determine his or her own learning process and study rhythm by assessing what and how he / she has learned.

It constantly leads to the use of e-portfolios as a tool for the evaluation and evaluation process within formative and summarizing systems. The student becomes the main focus of the learning-teaching and evaluation process, recognizing his own progress and assuming which aspects will be mastered and which aspects should be improved.

In this context, we need to keep in mind that e-portfolios are often used as an evaluation tool and that the reflection process is often gone. Therefore, the use of portfolios to improve the work of teachers and students is used as an assessment and reflective tool.

This includes a number of examples that allow the student a period of time to achieve a specific goal (Barberà et al., 2006). The teacher ensures that the student shows the level of learning while following the process.

In the electronic portfolio literature, e-portfolio (Ergün, 2012), electronic portfolio, digital portfolio (Zubizarreta, 2009) or web foil (web-based portfolio), computer-aided individual development file (Baki and Birgin, 2004) and electronic development file (Kazan, 2006) can also be called.

Moreover, the e-portfolio, which is used in blended or distance courses, has become an innovative tool that improves the continuous monitoring of students through counseling and follow-up. It can classify existing education e-portfolios in two different ways:

1. Allow interaction between different content, scope and evaluation. Therefore, these tools are designed as an educational tool, teaching and assessment, conducted and managed by the teacher / school head.
2. According to autonomy, these are self-management tools that own their own learning processes.

Using E-Portfolio

After deciding to implement the use of e-portfolio in the educational process for students, it is necessary to plan and organize the work of the portfolio (Prendes Espinosa and Sánchez Vera, 2008). Six steps for the implementation of the e-portfolio are recommended:

1. Giving information at the beginning of the process. Clearly communicating the purpose of the portfolio, the criteria set for production and evaluation, to all students participating in the process.
2. Limiting the number of components.
3. Define the evaluation criteria of the portfolio.
4. Teaching and facilitating self-reflection and self-evaluation processes. This is an important step because students often do not have enough information on how to deal with them,
5. Specifying the appropriate time for the portfolio,
6. Provide advice and prepare students for the process for the portfolio.

When creating e-portfolios, evidence of the course syllabus and / or educational programming, nature, types, timing, teaching-learning activities should be planned in advance. It is common to use e-portfolios with online or mixed learning tools. In this case, e-portfolios focus on monitoring students' work based on the progress that students have developed during their work. (Barberà et al., 2006).

Therefore, the achievement levels of the students at the same level show the support of e-portfolios for the development and progress of education. Therefore, with the support of teachers or school administrators who continuously give feedback to students by using e-portfolio, it enables students to gain and guide their professional skills. Such e-portfolios are generally defined by three non-consecutive complementary stages (Barberà et al., 2006):

- Presentation and content: This stage shows the personal and academic records of the students.
- Evidence collection, selection, reflection and publication: This stage requires self-regulation of the learning process by providing evidence. The key element at this stage is the reflection of why the student chooses this evidence and chooses its relationship with learning.
- Assessment: The assessment of the evidence presented by the student is continued by the teacher or administrator. It is important that the criteria are known from the beginning of the teaching-learning process.

Students need to know their proficiency levels in relation to learning assessment. They also have better measurable visions of visions once they determine their assessment criteria and their success levels. Therefore, one of the key points of electronic portfolios is the external feedback that the student needs to receive, and if it has sufficient details, the automation of communication encourages the development that students need to develop immediately. The pedagogical use of e-portfolios is often an important process for teachers and administrators, while focusing on the student's perspective or use (Prendes Espinosa and Sánchez Vera, 2008).

Parents have been involved in student learning outside the classroom at all levels of education since the preschool period and have proven to be effective in the process of preparing e-portfolio (Buzzetto-More, 2010).

In the process of implementing e-portfolios in education, it has some advantages over classical portfolios. These; time, storage facilities, ease of transportation, contributions to education (Kutlu, Dogan and Karakaya, 2009). And also; It is emphasized that it affects students' motivation positively in terms of teaching understanding and teaching environment it presents to the student (Gürol & Demirli, 2006).

Students have the chance to submit their work, even when they are away and outside the school. Likewise, teachers can control the work from any place and time (Wade, Abrami & Sclater, 2005). It provides access to information without time and environment limitation (Aktürk, Şahin & Sünbül, 2008).

Although e-portfolios offer a different perspective to the teacher, they offer a critical reflection on their own teaching, an exchange of experiences with others, and an effort to assist new teachers or to assist in early teaching practices.

To summarize, teachers or school administrators can use the e-portfolio to:

- Train and evaluate professional performance and its reflection in teaching work.
- Encourage professional discussion about teaching procedures.
- To ensure that families actively participate in education.

E-Portfolio can eliminate some difficulties and limitations compared to classical porphyria, and can produce different limitations. In fact, e-portfolios can eliminate the concept of time and place due to their technology support, and different results can occur if each student does not have equal access to technology. In addition, each student's level of information and communication technologies use and skills may be at the same level, which leads to the disadvantage of self-expression, preparing the e-portfolio.

The aim of this study is to determine the opinions of the school managers about the use of e-portfolio.

METHOD

The research carried out within the scope of certain professional development courses aimed at obtaining the opinions of the school management candidates is a research in the action model. Prospective school managers were selected by means of purposeful sampling from non-random sampling methods. In addition to the semi-structured interview technique which is one of the qualitative research approaches, the candidate candidates applied the e-portfolio method within the scope of the course and their opinions were analyzed.

The study group of the study consisted of 127 teachers (school management candidates) working in schools affiliated to the Ministry of National Education of Northern Cyprus and participating in in-service training courses in 2017-2018 Fall academic year.

FINDINGS

Findings Related to E-Portfolio and Importance

What do you think is the e-portfolio? And why is it important? . The opinions of the participants are given under the frequency and themes indicated in Table 1.

Theme	Featured Reviews	Views
Observing student development	<ul style="list-style-type: none"> • See what an individual can do • Facilitates access to information. • Provides efficient use of the Internet. 	63
Facilitating the evaluation process	<ul style="list-style-type: none"> • Facilitates teacher access. • Evaluation is faster and more effective. • Supports healthy decision-making. 	57
Develop creativity	<ul style="list-style-type: none"> • Supports creativity. • Has the opportunity to compare. • Provides professional and educational development. 	34
Provides success	<ul style="list-style-type: none"> • Increases self-discipline and responsibility. • The student also observes his / her own development. 	42

Findings Regarding the Scope of the e-Portfolio

The participants were asked what are the points to be considered while preparing the e-portfolio and their opinions are given in table.2.

Theme	Featured Reviews	Views
Student potential	<ul style="list-style-type: none"> • Considering the current situation and requirements of the student • Information should be conveyed to the student accurately and clearly • Student's age, level of development and cognitive intelligence should be taken into consideration 	46
Parent participation	<ul style="list-style-type: none"> • Enabling parent participation in the process • Parent should be informed 	32

It should be for evaluation purposes, not grade	<ul style="list-style-type: none"> • Must be for student development • Necessity and order should be clearly stated • Regular and sequential recording • Target and purpose should be specified 	78
---	---	----

Findings Related to Problems in Preparing E-Portfolio

The participants were asked to state the problems they experienced during the preparation of the e-portfolio and their answers were as indicated in Table 3.

Theme	Featured Reviews	Views
Loading	• No Problems	17
	• Slow loading	68
	• Insufficient memory	
	• File size	
Lack of sufficient resources	<ul style="list-style-type: none"> • Inability to reach the desired resource easily • Subject complexity • Inadequate information 	32
Use of technology	• Difficult to find context	44
	• Merge files	
	• Not knowing the method to be used	
	• Internet disconnection	
	• Limited knowledge of computer use	

Findings of the Skills Acquired by the e-Portfolio Process

Within the scope of the research, pre-service teachers gained certain observations and experiences by applying the e-portfolio process. The participants were asked which skills they contributed to the development and their opinions were examined.

Theme	Featured Reviews	Views
Ability to use technology	<ul style="list-style-type: none"> • Editing files • Using a computer • Presentation preparation 	78
Self-control and creativity	• Observing the student's development and improving the process	38
	• Increases awareness of responsibility	
	• Improves cognitive and social skills	
	• Improves research and thinking skills	
Research skills	• Access the information about the research topic	29
	• Access to different sources	
	• Finding appropriate activities for research	

RESULT

School management candidates agree that e-portfolios are an effective and efficient method because of their ease of use and storage, and the ability to easily monitor the course and learners' development. Korkmaz and Kaptan (2005) emphasized that participants increased their ability to evaluate their professional development through e-portfolio process.

In their study, Gürol and Demirli (2006) found that e-portfolio process positively affected students' motivation both in terms of their teaching understanding and the teaching environment they offered to students.

In some studies conducted in the literature, it is stated that learners cannot use e-portfolio process effectively in line with the problems experienced in accessing and using the internet. In this study, it was concluded that the participants had more problems in terms of loading and inadequacy than access. In addition, it has been emphasized in the studies that e-portfolio studies have pros and cons according to their application forms (Sanalan & Altun, 2002).

Nowadays, it is essential to include the developing and developing technology in the training and evaluation process. However, for this to be carried out efficiently and effectively, the necessary infrastructure must be provided and learners should have equal conditions.

REFERENCE

- Aktürk, A.O., Şahin, İ., Sünbül, A. M. (2008). Opinions of Pre-service Computer Teachers on Web Based Teaching, İnternational Educational Technology Conference, Anadolu Üniversitesi, Eskişehir.
- Baki, A., Birgin, O. (2004). Computer Aided Individual Development File Applications, The Turkish Online Journal of Educational Technology, 3(3).
- Barberà, E., Bautista, G., Espasa, A., & Guasch, T. (2006). Portfolio electrónico: desarrollo de competencias profesionales en la red. RU&SC. Revista de Universidad y Sociedad del Conocimiento, 3(2), 55–66.
- Buzzetto-More, N. (2010). Understanding E-Portfolios and their Applications. En N. Buzzetto-More (Ed.), The E-Portfolio Paradigm: Informing, Educating, Assessing, and Managing With E-Portfolios (pp. 1–18). Santa Rosa, CA: Informing Science Press.
- Ergün, M. (2012). Improving Teaching Effectiveness at Afyon Kocatepe University, Afyon Kocatepe Üniversitesi Sanal Eğitim Bilimleri Kütüphanesi, online: www.egitim.aku.edu.tr/Tebliğ16.doc.
- Gürol, M., Demirli, C. (2006). Student Motivation in E-Portfolio Process, VI. International Educational Technology Conference, Eastern Mediterranean University, Gazimağusa, KKTC.
- Kazan, Z. (2006). Designing the Electronic Development File for Educational Purposes and Evaluating its Use in Teaching Practice Course, Master's thesis, Ankara University Institute of Educational Sciences, Ankara.
- Korkmaz, H., & Kaptan, F. (2005). A Study on the Use of Electronic Portfolio to Evaluate the Development of Students in Science Education. TOJET: The Turkish Online Journal of Educational Technology, 4(1).
- Prendes Espinosa, M. P., & Sánchez Vera, M. M. (2008). Portafolio electrónico: posibilidades los docentes. Pixel-Bit. Revista de Medios y Educación, 2008(32), 21–34.
- Sanalan, V, Altun, A. (2002). Electronic Portfolio As A Database Application. Erzincan Üniversitesi Eğitim Fakültesi Dergisi, 4 (1), 11-21. Retrieved from <http://dergipark.org.tr/erziefd/issue/5989/79682>
- Wade, A., Abrami, P. C., & Sclater, J. (2005) An electronic portfolio to support learning. Canadian Journal of Learning and Technology, 31(3).
- Zubizarreta J. (2009). The Learning Portfolio: Reflective Practice for Improving Student Learning (Second Edition). Published by Jossey Bass. United States of America.

PERCEPTUAL LEARNING EXPERIMENTATION ON THE TEACHING OF MANUFACTURING PROCESSES CONCEPTS FOR DESIGN STUDENTS

Ivan SANTOS

Arts and Design Institute, Juiz de Fora Federal University, Brazil
ivan.santos@design.ufjf.br

Sebastiana LANA

Design School, Minas Gerais State University, Brazil
sebastiana.lana@gmail.com

ABSTRACT

The primary objective of this research is to test the use of perceptual learning techniques for the teaching of concepts in design. The essential task of the experiment is the correct association of a target stimulus, that is, previously selected by the researcher, to a determined number of similar stimuli. The experiment had 29 participants, 04 professional designers that established the base parameters for the experimentation, 19 design students, and 06 laymen on the subject people used as a control group. The research relies on the execution of a rapid and visual learning test of 20 formal concepts used to teach manufacturing processes in industrial design courses. Study participants initially are exposed to a prior visual or target stimulus for 5 seconds. Subsequently, the subjects chose from 20 visual stimuli referring to formal typologies presented every 3 seconds each. Thus, one cycle counted with the 5 seconds of the target image, besides the 20 images, that took exactly 1 minute. Participants did seven complete cycles and should indicate five typologies similar to the target stimulus. This research model is a replica of the classic study developed by Eleanor Gibson, from scribbles and also handwritten letters "D & V." Differentially, this experiment was carried out with the exposure of the stimuli in a video. Also, there were two different ways of collecting data in this research project: some participants experimented with digital forms, others on paper, with different variables selected for each group. Another important distinction is that in this study, there were no clues or confirmations on correct answers. As a result of data, the percentage of correct answers increased in all groups. Design students, in general, as predicted based on literature, achieved better results with a 30% increase in the percentage of visual pattern recognition in the paper experiment, and a 50% increase in the digital execution of the same experiment. The control group, in turn, achieved a percentage increase of 11% in paper execution, and a surprising 40% in the digital version, surpassing the assimilation rate of the design students who carried out the paper test. Unlike other experiments of this nature, where the stimuli were much more straightforward, no subject was able to finalize the test sessions with 100% accuracy. Still, in general, it was proved that the design students achieved better results than the laymen, due to prior knowledge and visual repertoire. Although the experiment has a small number of participants, it is possible to investigate in depth the results for the impact of the study of perceptive discrimination, and the development of derived educational technologies.

INTRODUCTION

Perceptual learning is the method known to be used by many language teaching software and applications, such as Duolingo and Rosetta Stone, which have abandoned the concept of traditional formal instruction to foster direct experience in language learning. Because of this approach, these digital learning platforms have reached impressive milestones, serving millions of people through direct, fast, and effective practice. By way of example, Duolingo offers 85 different language courses and is a company created in November 2011 that has reached over 300 million users (Data as of January 31, 2019, provided on the company's website). In addition to its efficient use for learning different languages, Google also, for example, already uses the same learning resource to provide free courses in digital marketing, content production, data analysis understanding and other topics related to its platform. Other websites and applications also use perceptual discrimination to quickly and effectively teach memorization concepts and techniques, as well as advanced use for teaching chess and math.

In this study, an experiment based on this theory will be presented, revealing the main concepts and mechanisms of this learning instrument in the context of design pedagogy. The primary objective of this research is to test the use of perceptual learning techniques for the teaching of concepts in design. The essential task of the experiment is the correct association of a target stimulus, that is, previously selected by the researcher, to a determined number of similar stimuli.

The most appropriate description for a technical presentation of the theory of perceptual discrimination, however, is directed to the researcher who organized and presented this critical resource to the academic community. Gibson (1969) stated that "perceptual learning is a process of differentiating distinct characteristics of objects, permanent characteristics of spatial layout, and invariable events." The Perceptual Learning Institute states on its official website that the process involves incredible improvement in individual responsiveness to the environment. In 1978,

similarly, Westheimer stated that throughout an organism's life, perceptual discrimination occurs successively and naturally, leading to functional and structural changes of neurons in the sensory cortex. As will be shown, in laboratory experiments, observations are more apparent that the use of this learning instrument improves the pattern recognition performance of interval tasks. In all cases presented, the individual who is repeatedly exposed to stimuli and information presents improved performance for the trained skill. Geller (2011) points out that perceptual discrimination can be defined as the process of changes induced by experience or practice in collecting information.

Carey (2014) presents a collection of studies to reveal the idea that the brain can be understood as a pattern-recognizing machine and, when properly focused, can quickly deepen one's understanding of a principle. In even more detail, Gibson (1969) reports that the three essential elements that guarantee the productive outcome of the practical application of the theory structured by it are:

1. The Specificity of Discrimination (What is Learned)
2. Attention Optimization (How Learning Occurs)
3. Increased Economy (Speed in Identifying Stimuli)

In a thorough review of the theory and its applications over time, Adolph and Kretch, (2015), reveal that the first paper published on the subject was a 1952 paper by Eleanor Gibson. From this year on, Gibson would produce numerous works until his last book published in 2002. In more than 70 years of research, according to the authors, Gibson and other associate researchers have presented how perception can be improved with experience. Her work was primarily characterized by the well-informed presentation of data, which was inspired by real situations and accurate simulations, even when it was necessary to take a chance into account. The work published in 1969 framed the vision of the ecological approach to perception and development culminated in the launch of the book entitled 'The Principles of Perceptive Discrimination and Development', cited 365 times in the first ten years, according to the mentioned in-depth review study.

Adolph and Kretch claim that this work presents the main ideas that underlie this whole field of research related to the areas of education, cognitive science, and psychology. Describing the theory in detail, Gibson would have triumphantly started a new field of inquiry, in which perceptual discrimination would be the key to knowing and understanding where it begins. The authors also emphasize the innovative character of the approach adopted, capable of providing an impact structure for hundreds of works related to the theme, even in the first decade after. During the 1990s, until 2002, the year of its last publication, Gibson would present the hallmarks of human behavior, in the practical investigative field and the theory of perceptive discrimination, they would be:

1. The agent - "who is the self in control."
2. Prospecting - "what is the prospective direction of the activity."
3. Flexibility - "how to transfer media and strategies to new situations."

These experiments are the initial applications that underpinned the theory of perceptive discrimination as predicted by Gibson. These studies used cards with visual stimuli and were applied to subjects of different age groups. They were generally asked to recognize similarity patterns after being presented to a target stimulus, or there is a guiding image. After this initial exposure, which lasted 5 seconds, participants were asked to identify four similar visual elements out of 20 cards presented every 3 seconds, one by one. After the sessions, Gibson computed the data and compared the unconscious learning agility between the different research subjects. Detailed information about the experiments, both in their scribble and handwriting form of the letters 'D' and 'V' is reported in Carey (2014), and in Adolph and Kretch (2015): "in some of the his early studies, (Gibson, 1949) found that children between 3 and 7 years old can learn to distinguish normal letters - like a 'D' or a 'V' - from deformed ones (...), they had no idea what letters they represented; they were not making associations between stimulus and response. Still, they quickly developed a knack for spotting subtle differences in the figures they had studied. It was this work that led to the classic scribble experiment Gibson conducted in 1949." (Carey, 2014)

The purpose of the experiments was to test how fast subjects could distinguish similar scribbles. Thirty-two participants, adults, and children, one at a time, were presented with a specific doodle printed on a card. This "target scribble" was presented for 5 seconds to the participant. The researchers then individually presented 34 other similar cards, one at a time for 3 seconds each. Participating subjects should point out four cards that would be exact replicas, among the other 30 cards contained imperfect copies. Results achieved by the experiment it was reported that "adults need to scan the cards three times on average to get the answer right and identify the four replicas without a single mistake. Older children, between 9 and 11 years old, need five cycles to approach perfection — the youngest, between 6 and eight years old, seven times" (Gibson, 1949). The authors also point out that, "the participants were not making stimulus-response associations, so psychologists assumed a high degree of learning had occurred. Nor

was his brain - according to the famous argument of the English philosopher John Locke in the seventeenth century - it was a blank slate or "tabula rasa," which passively accumulated sensations. No, the brain was equipped with modules designed to make essential and subtle differentiation and to organize these different symbols into categories "(Carey, 2014).

There are four underlying mechanisms linked to perceptual discrimination (Gibson, 1969). They are:

1. Attention weighting: From this mechanism, we can adapt perception, with increased attention directed to relevant rather than irrelevant characteristics, for the given scenario.
2. Stimulus recording: which may be of the integer type, of specific characteristics, or of topological or superficial recording. In this mechanism, specialized receptors are stimulated in the brain, and information or specific pieces of information are recognized quickly from repetition. This mechanism, according to Goldstone (1998), is responsible for increasing the influence of speed and accuracy in information processing.
3. The differentiation: can occur in full, partial or dimensions of the stimulus in question, and also from categories. The Institute of Perceptive Discrimination points to the latter form of differentiation as the most commonly encountered in situations of expertise in particular areas.
4. Unity: According to Goldstone (1998), Kellman (2002), and Carey (2014), unitization is the ability to detect complex information units. It requires fast, fluent, and efficient processing of the subject evaluated. It refers to the multimodal information mentioned above, perceived by experts from various areas.

THE STUDY

The primary objective of this research is to test the use of perceptual learning techniques for the teaching of concepts in design. The essential task of the experiment is the correct association of a target stimulus, that is, previously selected by the researcher, to a determined number of similar stimuli. The experimental study seeks to make visible and quantifiable data related to the subjective capacities of the subjects to learn new information and concepts even without the correct orientation. Thus, we understand that the research has a qualitative basis, but presents quantitative characteristics in the form of its presentation of the collected data.

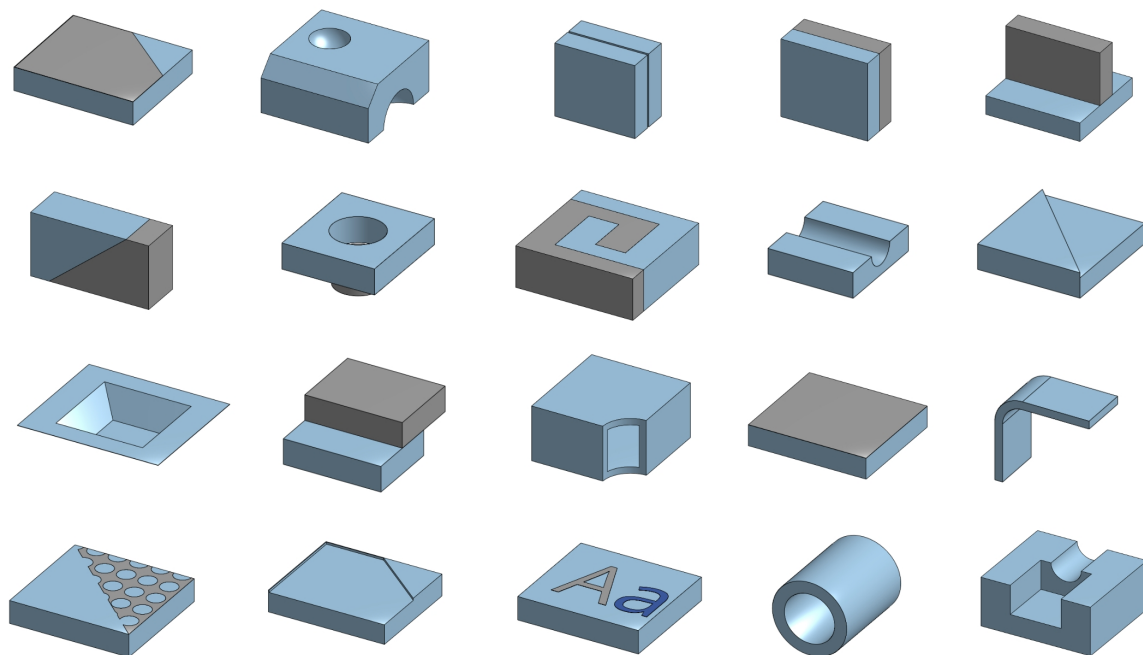
As hypotheses for this study, it was foreseen the possibility of success concerning learning and assimilation of basic concepts and information by the brain, which could be understood as natural or spontaneous. The experiment had 29 participants, four professional designers that established the base parameters for the experimentation, 19 design students, and 06 lays on the subject people used as a control group.

The research relies on the execution of a rapid and visual learning test of 20 formal concepts used to teach manufacturing processes in industrial design courses. Study participants were exposed to a prior visual or target stimulus for 5 seconds. Subsequently, the subjects chose from 20 visual stimuli referring to formal typologies presented every 3 seconds each. Thus, one cycle counted with the 5 seconds of the target image, besides the 20 images, that took exactly 1 minute. Participants did seven complete cycles and should indicate five typologies similar to the target stimulus.

This research model is a replica of the classic study developed by Eleanor Gibson, from scribbles and also handwritten letters "D & V." These experiments grounded the whole theory and experimental field of perceptual discrimination. Differentially, this experiment was carried out with the exposure of the stimuli in a video. Also, there were two different ways of collecting data in this research project: some participants experimented with digital forms, others on paper, with different variables selected for each group. Another important distinction is that in this study, there were no clues or confirmations on correct answers.

The images presented to the subjects are organized in Figure 01 and refer to representations of 3D shapes, used to teach basic categories of patterns in industrial manufacturing processes. Organized in four categories which are forming, cutting, joining and finishing, the twenty utilized visual concepts embrace most of the product design industrial processes. The forming typologies are bulk, internal, hollow, continuous, sheet and bend. In the cutting category the external, internal, channel and surface. The typologies from the joining group are formed, scarf, overlap, tee and butt. Finally, the finishing processes typologies are appearance, information, preparation, colour and protection.

Figure 1: Visual concepts of manufacturing processes typologies



FINDINGS

In Table 1, it is possible to acknowledge that all groups of participants improved in subsequent rounds of perceptual discrimination assessment, whether in paper form applications or digital form applications. The professionals were the only group that could correctly answer all the questions. By the fifth round, they could all quickly pinpoint all the images. In general, the average of the right answers of this group was superior to the average of the two other studied groups.

For both design students and laypeople, the digital version of the experiment, which contained the names of the concepts associated with each 3D representation, was the one that was able to improve results most significantly. For students, this improvement was not so salient as the second group, but for laypeople, the result was much more impactful.

Table 1: Percentage of correct answers of participants per round

round	Professionals	Students		Laymen	
	Paper	Paper	Digital	Paper	Digital
1	56	66	60	60	66
2	81	86	67	60	70
3	62	81	90	60	76
4	87	83	90	60	96
5	100	83	87	66	96
6	100	80	87	66	66
7	100	80	86	66	66
average	83,71%	79,85%	81%	62,57%	76,57%

Although the initial hit averages of both groups were identical in the first round of the experiment, the groups achieved yield improvements in different ways. The student group, for both types of stimuli, managed to get out of an initial average of 63% hits and reach a maximum average of 88%. His test performance improvement was 80.42% at the end. In this sense, we see that even without the correct answer instructions, students were able to improve on average 17% on overall tests. (Table 2)

The lay participants in the study also obtained an average of 63% in the initial round. Their performance improved to the point of reaching a maximum average of 81%, and an overall average of 69.57%. It is essential to point out that although student performance was better than the laypeople, as predicted in the literature, the result of such a rapid and challenging experiment demonstrates the potential of the technology, capable of increasing the recognition

of visual concepts for laypeople in a few minutes.

Table 2: Comparison between the initial, top and overall averages of participants performance

	Students	Laymen
Initial average	63	63
Top average	88	81
Overall average	80,42	69,57

Participants who conducted the research activities in digital format had access to the names of formal concepts and typologies of manufacturing processes. The performance of these participants was much higher than the others who performed the paper experiment. In the case of design students, the difference between initial round results, and the one with the best results was 9 in 30. Thus, rising from 18 hits to 27 hits, i.e., 50% percent increase, is the best result of the whole experiment. The laymen also managed to achieve impressive performance improvement in digital experiments, up 40%, from 10 up to 14 correct answers in the best round.

Participants who performed the physical format research activities had access to their responses from previous rounds. Students who took the physical format tests had the first performance of 43 correct answers on 65 questions. In the highest-scoring round, these participants scored 56 points, a percentage increase of 30%. The other group, in turn, achieved a percentage increase of only 11%, from 9 to 10 hits in 15 questions.

Table 3: Performance percentage increase by stimulus type

	Students correct answers		Laymen correct answers	
	Paper	Digital	Paper	Digital
First Round	43/65	18/30	9/15	10/15
Top-score	56/65	27/30	10/15	14/15
Percentage Increase	30%	50%	11.11%	40%

CONCLUSIONS

Although the experiment has a small number of participants, it is possible to investigate the results for the impact of the study of perceptive discrimination and the development of derived educational technologies. Digital forms were quite superior in increasing the subjects' learning performance than the paper format. Apparently, seeing the names of the typologies aside the images can contribute more to the pieces of information assimilation than being able to see previous answers. As seen in the literature, especially in Gibson's works, the brain does learn automatically. All groups in both stimulus modes were able to improve their performance, even not receiving positive notifications when correctly associating the images.

REFERENCES

- Adolph, Karen & Kretch, Kari. (2015). Gibson's Theory of Perceptual Learning. International Encyclopedia of the Social & Behavioral Sciences. 10. 10.1016/B978-0-08-097086-8.23096-1.
- Carey, Benedict. (2014). How We Learn: The Surprising Truth About When, Where, and Why It Happens. Print.
- Geller, E.H., (2011). Perceptual Learning: Application to Education Accessed 8 March 2012 from <http://www.psychologyinaction.org/2011/06/20/perceptual-learning>.
- Gibson, E.J. (1952) The role of shock in reinforcement. Journal of Comparative and Physiological Psychology. 45: 18-30. PMID 14907929 DOI: 10.1037/h0057667
- Gibson, J. J., & Gibson, E. J. (1955). Perceptual learning: Differentiation or enrichment? Psychological Review, 62(1), 32-41. <http://dx.doi.org/10.1037/h0048826>
- Gibson, E.J. (1969). Principles of perceptual learning and development. East Norwalk, CT, US: Appleton-Century-Crofts.
- Kellman, P.J. (2002). Perceptual learning. In R. Gallistel (Ed.), Stevens' handbook of experimental psychology, Third edition, Vol. 3 (Learning, motivation and emotion), John Wiley & Sons, 259-299.
- Robert L. Goldstone (1998). Annual Review of Psychology 49:1, 585-612
- Mckee, S.P. & Westheimer, G. Perception & Psychophysics (1978) 24: 258. <https://doi.org/10.3758/BF03206097>

PHILOSOPHICAL MUSINGS ON BEING, CULTURE AND EXPERIENTIALITY

Matti ITKONEN

University of Jyväskylä, Finland

matti.t.itkonen@jyu.fi

ABSTRACT

Being is like a large looking glass, reflecting nested levels of existence. The idea of mirroring also implies a series of recurring reflections. A culture contains an image of itself that repeats its totality in the form of a diminished image. Internationality and nationality need each other. A one-sided emphasis on one's own history directs the gaze excessively inwards and simultaneously the future is closed off. Nevertheless, internationality needs a core of nationality. Understanding the importance of respecting the past and valuing a diversified future produces a harmonious image in the mirror of time. Being continues uninterruptedly from the bygone into new ages. Even though the harsh wind of change gusts across the landscape of humanity, there is nevertheless a place of shelter to be found in the essence of culture. It is an essential element in delivering a quality ideal of hospitality. It requires in-depth professionalism to be able to function so that selfness remains as selfness and otherness as otherness. Without mutual respect it cannot be done. At the banquet of life, everyone is an invited guest. How then do we read the signs of the times? How do we interpret the messages of the mirror of being? Life is a present tense narrative in whose words temporal dimensions reside. Language means being at home and in the world. Philosophy speaks the language of being. Each and every one of us should pause to listen to it.

THE WIND-RIPPLE OF BEING

1986 saw the posthumous publication of Pentti Saarikoski's book *The Philosophy of Poverty*. It includes the dramatic texts 'Loon Field', 'First Spring Catch' and 'Maria and Metodius', as well as a preface written by Saarikoski's widow, Mia Berner. From the perspective of our current deliberations, the key characterization can be found in Berner's shortish introductory chapter: "The name of the radio play *Loon Field* refers to the calm area of a lake's surface that is untouched by a breath of wind. The call of the loon echoes above the play's oppressive denouement" (Berner, 1986, p. 7.) Although a storm rages elsewhere, the essential core remains calm, unrippled, and perhaps even silent. This is a good place to start.

It's as if Kalastajatorppa, Fisherman's Croft, has two dimensions: the innermost part is Finnishness and the outermost part internationality. So, according to *mise en abyme* thinking, you could say that Kalastajatorppa is gazing into a mirror. Within the outer circle there is a smaller circle which repeats the pattern of the outer circle. In other words, submerged within the international Kalastajatorppa, there is immersed a smaller national Kalastajatorppa. And this gives rise to Kalastajatorppa's existential-spatial depth of being. (For more on the idea of *mise en abyme*, see also Makkonen, 1991, pp. 17–21; Rojola, 1995, pp. 32–65; Tiede, 2016.)

Yet the dimensions are not separated from each other, rather they inextricably reflect one another. Without national excellence, there cannot be international superiority. Or, to reverse the expression, national brilliance is not possible without international distinction. Without the past, the future dries up. Yet, the past in itself cannot create a present or future distinguished by a high level of hospitality and vocationally-refined professionalism. A blustery fringe has thus to be created around the tranquil centre. In other words, when you have the ability to look inwards, you can also turn your gaze outwards, beyond the horizon.

Perhaps it would be worthwhile also adding the dimension of double consciousness to that *mise en abyme* idea. Language alone is clearly not enough to give an in-depth characterization of the whole idea. It feels absolutely necessary to include a photograph.



Photograph 1: The camera that sees timelessness.

Photograph One shows the wind of time as it whistles its way across the water's surface. Somewhere, amidst that frantically forward-rushing ripple, there is a tranquil point: the loon field. There is also an element of dual consciousness associated with it. The researcher knows he is using the concept of the loon field in a symbolic sense. He is also aware of the fact that simple word-conveyed reality results in an overly vague expression of the situation. Therefore, I too have endeavoured to choose photographs rich enough in content. In other words, I have consciously put myself in the place of both narrator and reader. My author's roguish bravado leads me to make this kind of postmodern choice. So, in addition to writing, I am also able to comment on the role of the narrator and reader. The procedure means that at one and the same time I am researcher, narrator, reader, as well as recipient. By acting in this way, I might also be able to appear simultaneously as an employee and customer of Kalastajatorppa.

If we want the camera to achieve timelessness, it must look at the landscape from above: the bird's eye view. Then the camera is like the sky over the landscape during the cosmic age: it sees everything, and in it the full scope of being is mirrored. The structure could be called the intersection of time levels. From the perspective of service-mindedness and hospitality, it could also be termed the golden age of professional expertise or ideal presentness. In "loon field" terms, it would mean that even though the ideals of hospitality vary in different ages, there is always a windless core of quality. Without it, excellence vanishes. Then nothing else is required because non-existence always means ineptitude. (On the theme of time, see e.g. Itkonen, 2016a; 2016b; 2017.)

The Finnish version of Göran Schildt's interesting book *Diana's Island* was published in 1977. It contains a memorable description of Elysium or the ideal time. Schildt's text raises a whole host of other thoughts: "The Garden of Eden and the paradise of the blessed, happiness of the past and greatness of the future are mental pictures whose content originates in the misery of the present. They readily blend into one, so that the future transmutes into a return to the fountainhead. Just as for Christians sinlessness is dimly visible at both vanishing points of the time-perspective, Marx teaches us that mankind's starting point and terminal stage is a classless, collective society of happiness. [...] Someone sufficiently dedicated to the search for paradise cannot but understand the present only as a temporary, insignificant and degenerate by-product, resembling the shadow of a cloud passing over the landscape" (Schildt, 1977, pp. 229 and 233.)

Photograph One was taken in 1964. It's like a beautiful existential idyll, entirely free of evil, ugliness and dissent. If each moment of examining the picture means – to extend Schildt's thinking - the vanishing point of the time perspective, the beginning and the end are revealed in the picture. Nevertheless, I wouldn't regard the image's present moment as a mere "degenerate by-product" of temporality. On the contrary, I would argue that in every present moment there is the eternity of enlightened professionalism to be discovered.

TIMELESS KALASTAJATORPPA

According to postmodern or metafictional thinking, the choice of "Timeless Kalastajatorppa" as the main heading and title of this subsection was deliberate (for interpretation, see e.g. Haapala, 1991). The choice could also be considered a tribute to Peter von Bagh, and especially to his beautiful film reportage *Helsinki Forever* (2008). It's a story displaying a touching urban utopia, where existence is restored to some kind of "dreamlike original state" (docpoint, 2017; see also elonet, 2017). In Photograph One, Kalastajatorppa is in a timeless original state, which at the present moment in no way means transience. It is more of a question of permanence with which new presents are compared.

It is possible to claim that cohesion and wholeness is the ideal state of being. At different times, it must be possible to attain this ideal state of being in different ways. In other words, you have to know the tradition and believe in it. In addition, you must also be able to act as the herald of a new age: as a messenger of the future who is clear about things even before they arrive in the present. However, in describing the present moment I would nevertheless deviate from Schildt's use of 'vanishing point' and would instead use the phrase 'point of fulfilment'. It's true, though, that constant and fast-paced ephemerality belong to the nature of the present moment. Transience also means that the new is only new for a fleeting moment and in the very next moment will become old. Timelessness means the ability to create something in reality that is inaccessible to change. It is, of course, not beyond the passage of time, but it is able to remain fresh regardless of various fluctuations. Perhaps the appropriate term in this context would be "ever-currency" or "ever-verdancy". It perhaps also means the idea of upholding quality or a high level of quality. However, it cannot mean complete self-identity because being identical would mean that something earlier is precisely replicated sometime later. It could be a matter of also restoring the spirit. Then people would have the chance to come face to face with the spirit of a place – Kalastajatorppa – amidst freshly-felt present moments.

The impressive milieu shown in Photograph One could be a symbol of the whole essence of the hospitality ideal, while nevertheless also including features of an idyll. This is indeed how it has to be. A high level of excellence includes the possibility of some kind of yearning or enthusiastic anticipation. Then, in each and every present, the past and the future must be included as strong existential elements. Alongside observation, there always exist the dimensions of longing and dreaming. It opens up the way to go beyond everyday life: to experiencing something that gives strength to face difficult times. It's called an experience, a Kalastajatorppa experience.

PROLEGOMENA: THE CLOSING WORDS OF THE CLOSING WORDS

In 1945, the future professor of philosophy, Jussi Tenkku, published an interesting book entitled *Naked Man through the Looking Glass of a Time of Flux*. In it he commendably ponders the nature of technology and technicized culture. In particular, Tenkku seems to pay attention to the problematic nature of replicated recurrence: "The harsh battle of life has often forced people to value highest what is useful and economical. It is precisely here where the main focus of the whole of technical culture lies. Intellectual life is assigned to be a means to serve practical living. According to this, science and art must be evaluated from the perspective of their practical benefit. It is best to standardize furniture and produce works of art as serial products. Science and art are thought to be generated by money or by authoritative commands that can predict even the results in advance." (Tenkku, 1945, p. 108.)

The idea of self-aware being is now becoming evermore multilevelled and complex. The heading of this section, "Prolegomena: the closing words of the closing words", also points to the same thing. If the timeless essence of Kalastajatorppa was embedded in Photograph One, then included in these closing words of the closing words is a thumbnail picture of the whole idea of experimentation, of the closing words themselves and of the researcher's postmodernist role. It is nevertheless not just a matter of hedging the issue with the emphasis on wasteful self-efficacy. The aim is rather to do justice to the importance of Kalastajatorppa. An additional goal is to bring art and science closer together. This will only succeed through the development and diversification of the scientific mode of expression.

If hospitality is your profession, is it then at all possible to fall into the trap of technicization? If the national symbol of the accommodation business becomes part of an international hotel chain, is there then a risk that those lived moments will turn into a serially-produced experience? Here, too, the crucial role is probably the one

played by people: the one who is the customer and the one who serves the customer. Of course, it is true to say that when hospitality is a profession, there are also important economic factors involved. Still, a high level of quality cannot be achieved with money alone or with high-handed dictates. It is also true, though, that people are willing to pay for quality. However, it is not a simple fact that money or cost automatically leads to a spellbinding restaurant or hotel experience. Much more is needed.

There is only one Kalastajatorppa. Which is why there is also a unique Kalastajatorppa spirit. Continuing Tenkku's train of thought, I would argue that life and the art of hospitality are able to meet face-to-face at Kalastajatorppa. For this reason the most important value in the lived culture of customs and usage indeed lies in focussing on the person rather than on a mode of existence shaped by technology. In addition, achieving a high level of quality has required an existential polyphony, which has managed to survive across the decades only because we have fostered the ideal of quality in diversity. Popular culture and high culture, art and science, the domestic and the international, war and peace, past and future: all those dualities of being have found, are finding and will continue to find for themselves a harmonious and hospitable home in Kalastajatorppa.

POSTSCRIPT

In 1957, the famous psychologist and professor C. G. Jung published *Gegenwart und Zukunft* (The Undiscovered Self) dealing with the subject of intellectual culture. The Finnish version, *Nykyhetki ja tulevaisuus*, was published in 1960, translated by Kaj Kauhanen. Jung's book, written during the Cold War, was concerned with humanity and would also aptly describe modern times. I quote from the English translation: "What will the future bring? From time immemorial this question has occupied men's minds, though not always to the same degree. Historically, it is chiefly in times of physical, political, economic, and spiritual distress that men's eyes turn with anxious hope to the future, and when anticipations, utopias, and apocalyptic visions multiply. One thinks, for instance, of the chiliastic expectations of the Augustan age at the beginning of the Christian era, or of the spiritual changes in the West which accompanied the end of the first millennium. Today, as the end of the second millennium draws near, we are again living in an age filled with apocalyptic images of universal destruction. What is the significance of that split, symbolized by the "Iron Curtain," which divides humanity into two halves? What will become of our civilization and of man himself, if the hydrogen bombs begin to go off, or if the spiritual and moral darkness of State absolutism should spread over Europe?" (Jung, [1958]/1960, pp. 5–6.)

In the 1970s, there was talk of the Helsinki spirit. At the time Kalastajatorppa played an important part in efforts to promote the ideals of peace and humanity. The all-important term was détente: reducing international tension. Now, in the 2010s, once again the existential climate has been tightening alarmingly. Would there be any chance, we wonder, of finding the spirit of Finland or Europe? Of course, the most desirable thing would be to discover the spirit of globalness. If, to follow Jung's choice of words, humanity splits into two halves, then the nighttime of humanity will begin, or at least the twilight of humanity. Or should I already use the word 'when' instead of 'if'? Asking this question evokes a bleak view of existence. Can the light of being somehow be rekindled?

Yes, the light of being can be rediscovered and re-ignited to shine brightly. The future does not contain merely apocalyptic prospects. There is also the possibility of dreaming and believing in a happy future. It is to kindle a positive attitude to life that we need magical places like Kalastajatorppa. There, hospitality and the feeling of being looked after with genial warm-heartedness will push aside possible sorrows, somewhere out of reach of the passing moment. The reality of hosting and entertaining could be a key element of an education centred around culture, values and democracy. The culture of accommodation and food would be capable of promoting mutual understanding and the goal of conflict-free coexistence. In this ever more multicultural Finland, Kalastajatorppa would be an excellent implementation of peace education. Then perhaps a suitable motto might be the question: "Could food become the highway to open-minded world citizenship?" Why then couldn't we deck the table of being within the warmth of Kalastajatorppa for a celebratory meal of humanity, an occasion where we could think of all the guests as dignitaries. It would be a Kalastajatorppa celebration of being.

APPENDIX: ACTUAL CLOSING WORDS

I have consciously acted in the spirit of Søren Kierkegaard, and Immanuel Kant. For this reason, the closing words of the closing words have been placed before the actual closing words. Perhaps the process also reveals a hint of the experimental and impish ideal. Here we have indeed travelled a little further along the road than some of the more reputable philosophers: the space reserved for the introduction has been taken by the closing words of the closing words. This supplementary section will then, reversedly, present the actual closing words. A more thorough examination of the topic requires the illustrative and expressive power of two images.



Photograph 2: Time seen from the outside.



Photograph 3: Time seen from the inside.

Again, I need the support of Göran Schildt's discerning vision. Schildt completed his doctoral dissertation on art history in 1947. He had spent the period 1934-1935 studying in Paris at the renowned Sorbonne University. It was also in 1947 that the book *Cézanne*, a more popularized version of his dissertation, was published, with an impressive Finnish translation appearing in 1995, the result of Rauno Ekholm's excellent work. Schildt's deliberations on the dilemma of romanticism – dividing the observation of reality into two modes – are interesting. At the same time, he also looks at the concepts of 'everyday self' and 'ideal self'. Schildt's thoughts are also important in terms of the theme of timelessness: "Its roots lie in an aesthetic attitude towards life. We have grown to admire Great Art and learned to look at nature, society, history, and our neighbours from an artistic viewpoint. What then is more natural than to regard one's own self, one's own existence in the same way? But no one can look at themselves aesthetically, i.e., from the outside, and go unpunished. The inevitable result is that life fragments into two, the aesthetic half, which is absolute and where the ideal self dwells, and the practical half, which is relative and houses the everyday self. The person living in this dichotomy will try either to become like the ideal self or defiantly to dissociate from the everyday self and thus to identify with the ideal self." (Schildt, 1995, p. 25.)

It could perhaps be noted that time and Finnishness also gaze into the looking glass of being. To make a link with food culture, it might be interesting to talk about a time-pan, a chronological casserole. Perhaps it could also work to call it a lidded temporal tureen. An important point here is also the shape, namely its roundness or curvedness. Then the elements of convexity and concavity also combine to form the whole. In other words, the significant point is the direction of the gaze: time seen from the outside or from the inside. The place is also of great significance: Photograph Two shows Vyborg's Round Tower and Photograph Three the Round Room at Kalastajatorppa. In this pair of images, the past and the present meet, as do memory and observation. Probably the dimensions of longing and anticipation are also present.

In Photograph Two, Vyborg's present moment is located in the early autumn of 1941, while Photograph Three's presentness is in the early 1960s. Access to Round Tower time is closed off whereas it is still possible to step into the time of the Round Room. The difference is significant. Round Tower time is included within Round Room time. This is why it is only possible to observe Round Tower time from the outside. Or, adapting it to the idea of a time vessel, Round Tower time can no longer be seen from inside the chronological casserole. Either way, the notion of experimenting with a temporal tureen or time-pan needs to be studied in more detail. The idea of having a lid is a key element. The time of Kalastajatorppa's Round Room is also temporal tureen time. It can be observed both from the outside and from the inside. However, the more significant ingredient is now the dimension of internality.

As the lid of the chronological casserole slides aside, new instants of convexity and concavity are created. And, combined with Round Room time, within the slimmer lid part there can be found moments of expecting, hoping, anticipating, and outlining. They are the time of the future. Then in the actual container section, there are instants of remembering and longing. The Kalastajatorppa gaze gives access to the days of the present as well as to those of the past and future. It's all about the roundness of time divided into two. The situation is the same as when Dr. Schildt describes the ideal self and the everyday self as a partition into two, as dualistic. The lid is like a time vault over being. Into its convexity people's dreams and preliminary plans have been inscribed. Existentially, though, it is narrowly thin because the future is completely open. Plans and drawings may not necessarily be realized in the way they were wanted. Looking ahead to the future, however, is important. In Photograph Two and Round Tower time, the future horizon is missing. It is time whose self and existence are now exhausted and duly chronicled. It no longer has access, neither to the past nor to the future.

The casserole or container section is existentially thick and dense. In it dwell numerous bygones, as well as the memories of private individuals and the shared memories of the whole nation. It's concavity time. There, from, out of a distant past, there blows the wind of time billowing out the spinnaker or balloon sail of the philosophical poem-yacht, and carrying the time-ship – its prow surging through the foaming waves – towards new futures. Perhaps this is also something that should be considered aesthetically, and specifically from an artistic point of view. That's why in its enlightenment the ideal self always chooses Kalastajatorppa's Round Room time. Absoluteness is then not a problem because the person knows he is acting correctly in his capacity as an ideal self. He is sometimes allowed to forget the relativity of his everyday self.

While in this playful mood, why don't we call the sailor aboard the poem-yacht Kalastajatorppari (Fisherman Crofter), for example? When he enters Round Room time, he has the opportunity to be present in Round Tower time as well. In Photograph Three there is a celebration of being. The brutality, ruin and destruction of war, shown in Photograph Two, are present merely as memories. As a guest at the celebration of being, one might even dare to assume the role of the ideal self. As the lid of the chronological casserole once again slides aside, the everyday self also arrives with its divided roundness. Schildt's ideas are only partially correct. The fact is that from time to time it's good to deliberately reject the daily rhythm of the everyday self. The Round Room at Kalastajatorppa is just the place to cross, to transcend the experiential stream of everyday life.

Kalastajatorppari, the Fisherman Crofter, is a Janus-faced experiential subject. Instead of a god, he could be regarded as the essential timedoor or timegate traveller. In the Kalastajatorppa Round Room, he combines the beginning and the end. Vyborg Round Tower time begins with him and ends with him. From him there also begins a fresh future. Thus, from his present moment, the Fisherman Crofter simultaneously looks at both the past and the future. With his dual visage, both of his faces are nevertheless positive: totally devoid of deceit. An aesthetic attitude to life, the Fisherman Crofter as experiential subject, the Round Room at Kalastajatorppa: from these timelessness is born. They create the timeless spirit of Kalastajatorppa. (On being Janus-faced, also see especially Frosterus, 2006.)

Here end my philosophical musings. Any further deliberations are superfluous.

English translation by Glyn Hughes

REFERENCES

- Berner, M. (1986). Saatteeksi. Suomennos L. Ryömä. In P. Saarikoski, *Köyhyyden filosofia* (pp. 5–10). [Accompanying words. Finnish translation: *Philosophy of Poverty*.] Helsinki: Otava.
- docpoint 2017. Helsinki, ikuisesti. [Helsinki, forever]. Writer O. Suuronen. [On-line]. Available at: <https://2016.docpoint.info/tapahtumat/elokuvat/helsinki-ikuisesti/>. (Accessed 31.10.2017).
- elonet (2017). Helsinki, ikuisesti (2008). [Helsinki, forever.] [On-line]. Available at: <https://www.elonet.fi/fi/elokuva/1467456>. (Accessed 31.10.2017).
- Frosterus, S. (2006). *Modernin Janus-kasvot: 1902–1935*. [*Janus faces of the modern: 1902–1935*]. Edited with introductory essay by K. Sarje. Finnish translation R. Ekholm. Helsinki: Taide.
- Haapala, A. (1991). Teko, teos, tulkinta. *Kirjallisuuden tulkinta ja ymmärtäminen. Suomen Estetiikan Seuran vuosikirja 6*. [Act, work, interpretation. *Interpreting and understanding literature. Finnish Aesthetics Society, yearbook 6*. Edited by A. Haapala]. (pp. 81–98). Helsinki: VAPK-kustannus.
- Itkonen, M. (2016a). Elämysvälähdyksiä Wienistä. Filosofin kulttuuriset kaupunkikävelyt. [Experiential glimpses of Vienna. A philosopher's cultural urban walks.] *Warkauden Lehti* 3.8., 8–9.
- Itkonen, M. (2016b). Filosofi filosofin tiellä. Mietteitä Heidelbergin-matkalta. [A philosopher on the philosopher's way. Thoughts on a journey to Heidelberg.] *Warkauden Lehti* 5.6., 16.

- Itkonen, M. (2017). Aikaa ja ihmistä etsimässä. Matkakirje Zürichistä, missä entisyyden lumo on läsnä kaikkialla, ihmiset ovat konstailemattomia ja arjen rytmi mutkatonta. [Looking for time and a person. A travel letter from Zurich where the enchantment of the past is present everywhere, people are straightforward and the daily rhythm uncomplicated.] *Warkauden Lehti* 24.10., 8–9.
- Jung, C. G. (1958). *The Undiscovered Self*. London: Routledge and Kegan Paul.
- Jung, C. G. (1957/1960). *Nykyhetki ja tulevaisuus*. [The Present and the Future]. Finnish translation by K. Kauhanen. Helsinki: Kirjayhtymä.
- Makkonen, A. (1991). *Romaani katsoo peiliin. Mise en abyme -rakenteet ja tekstienvälisyys Marko Tapion Aapo Heiskanen viikatetanssissa*. [The novel looks in the mirror. Mise en abyme structures and intertextuality in Marko Tapio's The Reaping Dance of Aapo Heiskanen. Doctoral dissertation]. Suomalaisen Kirjallisuuden Seuran Toimituksia 546. Helsinki: SKS.
- Rojola, L. (1995). *Varmuuden vuoksi. Modernin representaatio Volter Kilven Saaristosarjassa*. Väitöskirja. [Just to be sure. Representation of the modern in Volter Kilpi's Archipelago series. Doctoral dissertation.] Suomalaisen Kirjallisuuden Seuran Toimituksia 627. Helsinki: SKS.
- Schildt, G. (1976/1977). *Dianan saari*. [Diana's Island. Finnish translation R. Mattila]. Helsinki: Otava.
- Schildt, G. (1947/1995). *Cézanne*. [Cézanne. Finnish translation R. Ekholm. Finnish translation of correspondence R. Salmi and R. Kaipainen] (1984). Helsinki: Otava.
- Tenkku, J. (1945). *Alaston ihminen murrosajan kuvastimessa*. [Naked Man through the Looking Glass of a Time of Flux] Helsinki: WSOY.
- Tiede (2016). Tieteen termipankki. Kirjallisuudentutkimus. Mise en abyme. (On-line) [Scientific term bank. Literary research. Mise en abyme. Available at: http://tieteentermipankki.fi/wiki/Kirjallisuudentutkimus:mise_en_abyme. (Accessed 31.10.2017).

PHOTOGRAPHS

- Photograph 1. *Picture archives of Helsinki City Museum*. Photographer SKY-FOTO Möller, 1964.
- Photograph 2. *Hotel and restaurant museum collections*. Helsinki.
- Photograph 3. *SA picture archives, From the front line to the home front 1939–1945*. Photographer K. Anttila. Available at: <http://sa-kuva.fi/>.

POEM WRITING THROUGH LESSON STUDY TO DEVELOP STUDENTS' VOCABULARY DEMONSTRATION SECONDARY SCHOOL OF KHONKAEN UNIVERSITY (FACULTY OF EDUCATION) THAILAND.

Watcharaporn BUANI
Faculty of Education, Khon Kaen University, Thailand
watcharaporn22550@gmail.com

Nujaree SUKASAME
Faculty of Education, Khon Kaen University, Thailand
nsuk5159@gmail.com

Metta MARWIANG
Faculty of Education, Khon Kaen University, Thailand
metmaw@kku.ac.th

ABSTRACT

Teaching and learning English as a foreign language in Thailand has played in the most important roles for many years. In real teaching English in class mainly focuses on 4 skills of English. Practically, some skills seem to be ignored in class because of limited time allocation of teaching, 50 minutes per period. Such skill, writing skill, is the most important and difficult skill. There is a very important correlation between writing and language development especially for vocabulary development. Writing can be developed through different means; autobiography, story, folk tale, bible, movie and poem. Obviously, poem can create new perspective, open mind and lead to vocabulary developing.

The purpose of this study was to develop students' vocabularies through poem writing by using lesson study of grade 7 students of Demonstration Secondary School of Khon Kaen University (Faculty of Education), the second semester of academic year 2017.

The research instruments applied in this study were eight lesson plans incorporated with lesson study and 2 achievement tests. The expected criterion is 80 per cent of students must pass 80 per cent of the tests. Population of this study are all grade 7 students studying in Demonstration Secondary School of Khon Kaen University (Faculty of Education) in academic year 2017. The perspective sample by using simple random sampling of this study is 35 students in 1/2 class. All research instrument are carefully developed by researcher and experts in order to make them most complete.

This study indicated that the use of poem writing can develop students' vocabulary prominently. Students passed 91.97/88.57 which is higher than the expected criteria at 80/80.

Keywords: Poem / Lesson Study

INTRODUCTION

Language development has become important to the education for all age levels. The lack of vocabularies can influence the student ability in learning English, especially for student in area of EFL. It becomes one of the barriers in language learning process. Therefore, there is needed some teaching methods which can rise the learning ability to understand, learn or remember the words. According to The Basic Education Core Curriculum B.E. 2551 (A.D. 2008) by The Ministry of Education Thailand stated that when the students get through grade 9 graduated, they have to act in compliance with requests, instructions, clarifications and explanations that they have heard or read; accurately read aloud texts, news, advertisements, tales and short verses by observing the principles of reading; specify/write various forms of non-text information related to sentences and texts that they have heard and read; choose and specify the topics, main ideas and supporting details, and express opinions about what they have heard or read from various types of media, as well as provide justifications and examples for illustration and they have to have skilful in the use of foreign languages (with emphasis on listening, speaking, reading and writing) to communicate about themselves, their families, schools, the environment, foods, beverages, free time and recreation, health and welfare, buying and selling, climate, education and occupations, travel for tourism, provision of services, places, language and science and technology with a vocabulary of around 2,100-2,250 words (words of higher abstract quality) As well as Khanittha Rawedth (2000), teaching vocabulary is very necessary in language learning. It is because the vocabulary is the starting point for developing listening, speaking, writing and reading skills. As well as Rungrat Sriprai (1997) that discusses the writing of English vocabulary in developing English reading that if students spell incorrect words and cannot write clearly, Learning English is not successful. In term of teaching, teachers should make learning fun. The researcher has studied a way for students to develop vocabulary by writing short poems for kids which should be new, fun and relax in learning vocabulary, As Holly Chessman (2014: online) said in the article 'How to write a poem with your kids' that it encourages children to access the aesthetics and spirit in the use of vocabulary. In accordance with Horner and Ryf, (2007) said that poetry

can help learners express their feelings and be effective in terms of meaning rather than writing compositions. Although written in short text and less time, it also allows learners to increase their vocabulary knowledge. Corresponding to Untermeyer, (2000), saying that poetry is a writing that can encourage learners to use the language together with the idea of choosing words that students can write using simple language. The instructor must begin by teaching the beginner to learn a simple poem that does not emphasize on rhyme and rhythm. So that students do not feel the difficulty of having to find the rhyming words. From the above statements, the researcher selected 4 types of short poems for kids that are not focused on rhymes and rhythms. They are Bio-poem, Cinquain, Haiku and Diamante. The researcher used all 4 types of poems for kids in the teaching-learning by combining the content of the Lesson Study.

Definition:

Vocabulary refers the words taken from each unit of Aim high students' textbook 1 for grade 7 student by Oxford university press and students' background knowledge.

Poem writing is a way of supporting students to express their feeling and encourage students to search for the words to use in their poems; bio-poem, cinquain, haiku and dimante.

RESEARCH QUESTION

Can poems writing develop Students' vocabulary to meet criteria 80/80?

OBJECTIVE

The purpose of this study was to develop students' vocabularies through poems writing by lesson study of grade 7 students of Demonstration Secondary School of Khon Kaen University (Faculty of Education) with the efficiency of 80/80 criteria.

SCOPE OF STUDY

The researcher determined the scope of research as follows.

1 Population used in research

The population used in this research was 105 grade 7 students of Demonstration Secondary School of Khon Kaen University (Faculty of Education) in the second semester of the academic year 2017.

2 Sample group used in research

The sample group used in this research was 1/2 students of Demonstration Secondary School of Khon Kaen University (Faculty of Education) in the second semester of the academic year 2017, 35 students were acquired by using a simple selection method.

3 Research variables

3.1. **Independent variable** is writing English poem by using lesson study.

3.2. **Dependent variable** is the test scores on the development of English vocabulary of grade 7 students of Demonstration Secondary School of Khon Kaen University (Faculty of Education) were developed according to the criteria of 80 per cent.

THE STUDY

The researcher designed the questionnaire to survey the students' poem writing knowledge, and then created 8 lesson plans that used 4 types of poems for kids: 1. Bio-poem, 2. Cinquain, 3. Haiku, and 4. Diamante. The result of the survey found that the students didn't know all of these poems.

1. Determination of co-researchers

1.1 The researcher planned to work together with the co-researchers, observed and recorded the various things that happened in observing of teaching together in each issue, and recorded the reflection after teaching together. The recorded information was analyzed the data and apply it to use in the teaching process of lesson study.

1.2 Two of the research assistants are the teachers in same department or from other subject groups. The duty of the researcher assistants are:

The 1st research assistant is responsible for recording still images in every step of lesson study such as joining in planning, teaching observation and classroom reflection.

The 2nd research assistant is responsible for recording the video in every step of lesson study such as joining in planning, teaching observation and classroom reflection.

2. Research period

The total duration of research in the second semester is academic year 2017 for 4 months starting from November 2017 to February 2018.

Table 1: The research period

Research period	Month / Year			
	November 2017	December 2017	January-February 2018	March-April 2018
I. Preparation				
1. Planning meetings for lesson study research	✓			
2. Study relevant documents and research	✓			
3. Create research tools	✓			
II. Data collection				
4. Experiment on experimental groups and editing tools	✓	✓	✓	
5. Experiment with sample groups	✓	✓	✓	
III. Data analysis				✓
IV. Writing reports and presentations				✓

3. Research pattern

This research is a qualitative research focusing on analytical description by using protocol analysis in order to study the use of lesson study innovation in communicative approach classroom

4. Research tools

The researcher used the research tools by dividing into 3 categories: tools used for data collection, tools used for data analysis and the process of teaching and learning using lesson study strategy. Details are as follows

4.1 The tools for data collection

4.1.1 Eight lesson plans by using 4 types of poem for kids writing

Lesson plan 1. Content: World famous – Bio-poem - group activity

Lesson plan 2. Content: The great scientist – Bio-poem - individual activity

Lesson plan 3. Content: My town – Cinquain - group activity

Lesson plan 4. Content: On the menu – Cinquain - individual activity

Lesson plan 5. Content: Weather – Haiku - group activity

Lesson plan 6. Content: Nature – Haiku - individual activity

Lesson plan 7. Content: Job and work – Diamante - group activity

Lesson plan 8. Content: Just the job – Diamante - individual activity

4.1.2 Exercises and testing during study

4.1.3 Activity record

Activity record Is a record of lesson studies which the researcher and the research co-researchers plan together on lesson plans, class observation and class reflection. All are the data for data analysis.

4.1.4 An achievement test with 30 items

4.2. Tools for data analysis

4.2.1. Eight lesson plans by using 4 types of poem for kids writing

4.2.2. The written language transcription from the video which is recorded throughout the course of the 3 steps of lesson study called protocol. This method is to study the thinking of researchers who express their thoughts by discussing on 1. creating the lesson plans, 2. class observing and 3. teaching and learning reflection.

4.2.3. The written recorded form of the details from all activities which are the thought of researchers and students, the discussion on creating lesson plans, class observation, the researchers' reflection, worksheets and posttest.

4.3. The process of teaching and learning using lesson study strategy. Lesson study (Inprasitha, 2014) is a classroom based. It is a systematic investigation of classroom pedagogy conducted collectively by group of teacher rather than by individuals, with the aim of improving the quality of teaching and learning. Typically, a lesson study circle will involve small groups of teachers collaboratively planning a research lesson which one teaches while other members of the team observe with a focus on the learning and participation of selected case students. The lesson is then evaluated and revised for further teaching to other groups. Such lessons, subjected to systematic collaborative analysis by participating teacher.

DATA COLLECTION

The data were collected during the second semester of academic year 2017 from student grade 7 in Demonstration school Khon Kaen University. The researcher conducted the study by the following stages;

1. Data collection on the stage of creating lesson plans.

1.1. The researcher and all co-researchers set the date and time to create lesson plans using poems for kids together.

- 1.2. The researcher did the video recorded and took photos of all steps of discussing and creating lesson plans.
- 1.3. The researcher rechecked and corrected the lesson plans.
2. Data collection on the stage of class observation.
 - 2.1. One of the researcher's partner took the photos and recorded of all stage of lesson study.
 - 2.2. The researcher took the photos of the students' output.
 - 2.3. The researcher recorded the details of the observation.
 - 2.4. The researcher and co-researchers studied the details of observing class and rechecked the completed of protocol.
3. Data collection on the stage of reflection
 - 3.1. The researchers and co-researchers reflected the result of using lesson plans.
 - 3.2. One of the co-researcher took photo and recorded the reflection.
 - 3.3. The researcher and co-researchers studied the details of reflection and rechecked the completed of protocol.

DATA ANALYSIS

Qualitative data analysis, the researcher used the information in accordance with the study procedure for the 3 steps of lesson study including; Planning for learning management together, the process of teaching and learning observation together and the process of reflecting together then analyzed in protocol format and the activity logs were used together for clarity and completeness in data analysis.

Calculation of efficiency

Calculating the efficiency of the process (E1) and the efficiency of the results (E2) are calculated as follows

1. Calculating the efficiency of the process (E1)

$$E_1 = \frac{\sum X_1}{N} \times 100$$

E_1 = The efficiency of the process

$\sum X_1$ = The total score from doing exercises or activities during the study of all learners

N = Number of students

A = Full scores of exercises or activities during class

2. Calculating the efficiency of the results (E2)

$$E_2 = \frac{\sum X_2}{N} \times 100$$

E_2 = The efficiency of the results

$\sum X_2$ = The total score from doing posttest of all learners

N = Number of students

B = Full scores of posttest

THE RESULT OF THE STUDY

The students' data on doing exercises or activities and posttest were analyzed to find out E_1 and E_2 as follows:

Table 2 the scores from doing exercises or activities and doing posttest

Students' no.	The scores of doing exercises or activities (lesson plan 1-8)									Posttest
	1	2	3	4	5	6	7	8	Total	
Full scores	10	10	10	10	10	10	15	20	95	30
1	10	10	9	9	10	10	12	17	87	25
2	10	10	10	9	8	8	15	19	89	29
3	10	10	10	10	8	7	12	20	87	29
4	10	10	9	10	5	6	8	16	74	19
5	10	10	10	9	7	6	15	18	85	28
6	10	10	10	10	8	10	15	20	93	29
7	10	8	10	10	8	5	7	9	67	25
8	10	10	10	10	8	10	15	18	91	29
9	10	10	10	10	10	10	15	18	93	27
10	10	10	10	10	10	10	12	20	92	28
11	10	10	10	10	10	10	15	19	94	30
12	10	10	10	9	10	6	8	16	79	22
13	10	10	10	10	10	10	14	19	93	29
14	10	10	10	10	10	6	14	19	89	30
15	10	10	10	10	8	10	8	16	82	20
16	10	10	10	10	10	10	15	20	95	30
17	10	10	10	10	10	10	15	20	95	28
18	10	8	10	10	10	8	15	20	91	29
19	10	10	10	10	8	10	10	17	85	24
20	10	10	10	10	10	10	12	19	91	23
21	10	10	10	10	5	6	10	15	76	18
22	10	10	9	9	10	10	15	20	93	28
23	10	10	10	10	7	10	13	19	89	28
24	10	10	10	9	9	10	15	19	92	26
25	10	8	9	9	8	7	10	19	80	26
26	10	10	10	9	8	10	11	20	88	28
27	10	10	10	10	8	10	12	20	90	23
28	10	10	10	10	10	10	15	20	95	30
29	10	7	10	10	5	8	8	20	78	27
30	10	10	10	10	8	7	13	15	83	26
31	10	8	10	10	7	10	13	18	86	29
32	10	10	10	10	10	9	15	10	84	25
33	10	10	10	10	10	8	13	20	91	28
34	10	10	10	10	10	5	15	20	90	25

Students' no.	The scores of doing exercises or activities (lesson plan 1-8)									Posttest
	1	2	3	4	5	6	7	8	Total	
Full scores	10	10	10	10	10	10	15	20	95	30
35	10	10	10	10	9	8	15	19	91	30
Total	350	339	346	342	302	300	445	634	3058	930
Percentage	100	96.86	98.86	97.71	86.29	85.71	84.76	90.57	91.97	88.57

From table 2, the researcher found that the average score from doing exercises or activities during the study of students who were used poems writing through lesson study to develop English vocabulary was $E1 = 91.97$. and $E2 = 88.57$, which is higher than the specified performance criteria ($E1 / E2 = 80/80$) with percentage efficiency of each lesson plan. The above efficiency performance showed that each lesson passes the first set of performance criteria ($E1 = 80$)

When analyzing the data obtained from the scores of students doing exercises and posttest to find the mean which can be analyzed as follows

Table 3. Comparing the lowest and the highest scores of doing exercises or activities and doing posttest

Exercises/activities	Lowest scores	Highest scores	\bar{X}	S.D.
1	10	10	10.00	.00
2	7	10	9.69	.80
3	9	10	9.89	.32
4	9	10	9.77	.43
5	5	10	8.63	1.55
6	5	10	8.57	1.77
7	7	15	12.71	2.61
8	9	20	18.11	2.64
Total	67	95	87.37	6.61
Posttest	18	30	26.57	3.22

S.D. = Standard deviation of the score

\bar{X} = Mean score

From table 2, the researcher found that the mean score from doing exercises or activities during the study and doing posttest of students who were used poems writing through lesson study to develop English vocabulary was 87.37 and 26.57 and the standard deviation of score was 6.61 and 3.22 which is higher than the specified performance criteria. It showed that the use of poem writing through lesson study to develop students' vocabulary is effective.

To sum up, These two tables of data analysis represents the result of the research's treatment by using poems writing through lesson study to develop English vocabulary with the specified performance criteria 80/80 was successful at 91.97 (E1) and 88.57 (E2).

CONCLUSION

The result revealed that the use of poem writing through lesson study to develop students' vocabulary has improved and it corresponds to the hypothesis set with the average of 80/80 This may be the result of

1. the learning management procedures that the researcher and co-researchers had created a lesson plans that used English short poems as a vocabulary development activity by focusing on students to take action. The vocabularies used were the vocabularies from the text of each unit and vocabularies that students studied further to write poems. The selected poems are easy poems for the children who start English writing which corresponds to Kristina Robertson (online) mentioned in the article about Writing Poetry with English Language Learner that writing poetry is a great exercise for English language learners. It gives them a chance to experiment with language

and vocabulary, and to freely share their ideas without the confinement of perfect grammar or firm structures. In the same article, Kristina Robertson presented many kinds of poetry forms for beginners. The researcher has chosen the poems that can be used and related to the 4 lessons. 1. Bio-poem is used for content about World famous and The great Scientist. 2. Cinquain is used for the content of My town and On the menu. 3. Haiku is used with the content of Weather and Nature 4. Diamante applies to the content of Jobs and work and Just the job.

2. The process of teaching and learning uses the lesson study strategy. Teaching and learning process using the lesson study are 8 steps working in a team (Inprasitha, 2014), they are 1. Set what to teach, 2. conduct lesson plans, 3. lesson plans used and be observed by the researcher team, 4. assess how lessons affect student learning and shared reflection discussions, 5. Use the data collected to improve the lesson and lesson plans, 6. Use the improved lesson plan to teacher other students, 7. evaluate, discuss and reflect the lesson, and 8. The result subjected to systematic collaborative analysis by participating teacher.

The result revealed that arranging learning activities to develop vocabulary by using poems to teach in the Lesson study format, enabling students to have the ability to develop English vocabulary with an average higher than the set criteria 80 / 80. In addition, students also had the opportunity to practice using the vocabulary they have learned and studied additional vocabulary in the form of group activities and solo individual activities. Students enjoyed doing exotic activities and it also encouraged students to study English.

DISCUSSION

From observation in class, the researcher and teams found the same points with leader of English department that there are many problems with students learning ability not only in English subject but all areas. According to the 21st-century students, they have different personalities, goals, and needs, offering a personalized instruction is not just possible but also desirable. Since technology keeps developing, learning a tool once and for all is not an option. The student's behaviors were talkative during the lesson, less concentrate and the weak students are not paying attention on the study because they couldn't understand the vocabulary and detailed. As a result, they had put more attention on talking with their peer. Many studies proved that most Thai students have poor English skills. Liamsakul (1998:2) indicated that Thai students have problem with remembering vocabulary and understanding sentences. However, they also think that English is difficult; as a result their attitude toward English subject was not good, afraid of mistake and not familiar with the words and content. It can predict that the vocabulary learning was taken far-distant to them and they have less previous knowledge. Obviously, it affects to students to not interested in a topic or learning English because they are not familiar and understand the language cultures so they become bored and finally ignore the subject.

The result of all analysis's data represent that the lesson study strategy in teaching and learning is effective and appropriate technique for the target group to develop their ability to learn vocabulary. The data analysis shows that students can reach the determined criteria. The study was succeeded because of many reasons. During the lesson the researcher had put both group and individual activities and four kinds of easy poem writing to help students get better in learning vocabulary repetition. After students understand and remember the strategies they could apply on any assignment and performance task. As a result, the students can apply the vocabularies to write poems if the teacher releases the pattern of poem for them. So the problem is the students cannot remember the name and the pattern of some poems. They remember only Haiku pattern.

SUGGESTION

In the research on using poem writing through lesson study to develop students' vocabulary, there are 2 aspects of the suggestions as follows

1. General suggestion

1.1. In using poem writing through lesson study to develop students' vocabulary, the teacher must be careful in selecting poems to suit the learning content and the age of the students.

1.2. Teachers can choose the type of poem to be applied to the management of learning in other skills as appropriate for the content.

2. The suggestion for the further research

2.1. This research has limitations on teaching time (50 minutes in a period). Making activities organized under limited time causes precipitation Therefore, in the next research should increase the teaching time.

2.2. There should be a comparison of the use of poem to develop vocabulary and groups that use normal learning management.

2.3. It should use other kinds of poems to develop other skills of English and using other strategies like STEM research.

REFERENCE

Holly Chessman. (nd.). **How to write a poem with your kids**, By Holly Chessman. Published April 29, 2014. Accessed on August 1, 2018, from <http://www.mykidsadventures.com/write-a-poem/>

- Horner, C. and Ryf, V. (2007). **Creative Teaching: English in the Early Years and Primary Classroom**. Oxon: Routl I Love Translation. (nd.). **Write a poem**. Accessed on August 12, 2018, from <https://www1.ilovetranslation.com/9WDDIEJUx8X=d/>
- Inprasitha, M (2014) Preparing ground for the introduction of lesson study in Thailand. Lesson Study Challenges in Mathematics education. *Editor by Inprasitha, M, Isoda, M, Wang-Iverson, P & Yeap, B.H. 109-122 Singapore: World Scientific real world situations.*
- Kanittha ravej. (2000). Relationship between knowledge, understanding, grammar and vocabulary with ability in reading English of Mathayom Suksa 3. Students Thesis M.E. Bangkok: Chulalongkorn University.
- Kristina Robertson.(nd.). **Writing Poetry with English Language Learners**. Accessed on Noverber 20, 2017, from <http://www.readingrockets.org/article/writing-poetry-english-language-learners>
- Liamsakul, K. (1998). Investigating How Students Find, Choose and Remember New Vocabulary Items. Master thesis in Applied Linguistics English for Science and Technology, Department of Applied Linguistics, School of Liberal Arts, King Mongkut's Institute of Technology Thonburi.
- Ministry of Education. (2011). Basic Education Curriculum BE 2551. Bangkok: Ministry Education
- Rung Ratanasiprai. (1997). How to teach English in secondary schools. Bangkok: Ramkhamhaeng University Printing Center
- Untermeyer, Louis (2000). **"Doorways to Poetry"**. iUniverse.

SCIENCE TEACHER'S PERCEPTION OF SCIENTIFIC CONCEPT

Nuntawan PHUAPHAN^{1*} Sirinapa KIJKUAKUL² Suriya CHAPOO³

Ed.D. (Science Education), Doctoral Candidate¹

Ph.D. (Science Education), Assistant Professor²

Ph.D. (Science Education), Lecturer³

*Corresponding Author, E-mail: Nuntawan.ph@gmail.com

ABSTRACT

The purpose of this study was to examine science teachers' perceptions of what specific scientific concepts that students found difficulty in learning. There were two sample groups for this study: 7 in-service high school science teachers, who had more than 10 years teaching experience, and 54 pre-service science teachers, who were still training in a teacher college in the lower northern region of Thailand. The primary instrument used for this study was the open-ended form. Data analysis techniques were used to conduct content analysis. This study showed that both the in-service and pre-service science teachers agreed that the most challenging scientific concepts for their students to learn were as follows: 1) The concept of physical motion was the most difficult topic to learn because of too much relative content, too many calculation rules, and the complexity of applying these rules in too many different contexts; 2) Chemical reaction concepts, because the students required great mental effort to understand the complex rules, and an associated high level of difficulty of scientific calculations; 3) Biological concepts including cellular respiration, biomolecules, and genetics, because most of content was intangible and complex. The results were arranged from the most difficult to learn to the least difficult, respectively. In conclusion, it was found that the majority of scientific concepts that students had trouble learning were those requiring the prerequisite mastery of mathematical calculation skills, the application of theoretical knowledge in real-life situations, and the modelling of abstract ideas. Therefore, to enhance students' science learning skills (before they start their actual science lessons), the authors suggested that science teachers must fully review background mathematics knowledge (especially calculations) with students, as well as reinforce the requisite techniques to acquire the rule-based frameworks of individual subjects. The teacher must also provide direct support and guidance to the students in the application of scientific knowledge to diverse situations and contexts. Finally, teachers who used technology, and other learning materials in class, might thereby help students more concretely understand the scientific concepts being presented.

INTRODUCTION

Scientific knowledge refers to facts, concepts, principles, laws, theories, and models acquired in many ways. Understanding science requires that individuals integrate a complex structure of many types of knowledge. These include the ideas of science, relationships between ideas, reasons for these relationships, ways to use these ideas to explain and predict natural phenomena, and ways to apply them to many other aspects of life. Understanding encompasses the ability to use knowledge, and it entails the ability to distinguish between what is and what is not a scientific idea. Developing understanding presupposes that students actively engage with the ideas of science and have many experiences with the natural world (NRC,1996). Scientific concepts represent the body of knowledge that has been built up through scientific research and also refers to academic concepts (Latukefu and Verenikina, 2010). Scientific concepts are acquired consciously according to a certain system of formal instruction. They are generalized systematically and abstracted from concrete experience, therefore they are easily transferable from one context to another (Vygotsky, 1986). The acquisition of scientific concepts help to mediate students' thinking and problem solving and restructure their spontaneous thoughts (Karpov, 2003).

Students' difficulties in understanding scientific concepts have been studied by diverse researchers across the world (Johnstone and Mahmoud, 1980; Finley et al., 1982; Tolman, 1982; Anderson et al., 1990; Seymour and Longdon, 1991; Bahar et al., 1999; Tekkaya et al., 2001; Cimer, 2012). Many concepts or topics in the physical, chemical and biological sciences (such as motion, energy, and genetics) have been perceived as difficult to learn by secondary school students. In Thailand, there have been 20 years of educational reform, although it has not been very successful in science education. For example, on the Ordinary National Educational Test (O-NET), Thai students had an average score of 29 out of 100 points in science subjects, which was the lowest average score in

the last three years (NIETS, 2018). In addition, the Trends in International Mathematics and Science Study (TIMSS) reported that Thai students had lower scores on science subjects, they rank in the lower half, where they 28 out of 39 country. The Government of Thailand is concerned when their educational rankings are low when compared to European countries or when compared to developed countries. (IPST, 2015). Having a poor performance in science education has been a concern among teachers, educators, and researchers in Thailand (Government of Thailand, 2003; Ministry of Education, 2011; Faikhamta and Ladachart, 2016; Faikhamta et al., 2018). They want to know what factors are causing this.

The researcher is a lecturer in the faculty of education at a teacher's college, which is situated in the lower part of Northern Thailand. Based on my work experience in observing the classes of pre-service science teachers, I've found that pre-service science teachers have problems in choosing teaching methods that match the content to be taught. So, I think this may be one of the factors that impede student performance.

Perception is a thought process that affects behaviour and the formation of an individual's attitude. Teacher perceptions had been found to be one of the important variables consistently related to positive teaching behaviour, student learning outcomes, and achievements (Bandura, 1986). Research on the perceptions of teachers suggests that behaviours, such as persistence at a task, risk-taking, and the use of innovations, were related to perceptions. For example, a teacher who has more positive perceptions is more likely to use open-ended inquiry, while a teacher with more negative perceptions is more likely to use teacher-directed strategies, such as lecture or reading from textbooks. Students generally learned more from teachers with more positive perceptions than those students who had learned from ones with more negative perceptions (Cakiroglu et al., 2005).

For the current study, the authors considered both in-service science teachers and pre-service science teachers as key factors in dealing with the situation of science education reform in Thailand. Therefore, the aims of the study were to examine science teachers' perceptions of which scientific concepts did students find difficult to learn and what the teachers thought was the cause of that difficulty.

The research questions investigated in this study were the following:

- 1) What topics in science do teachers think were difficult for Thai students to learn?
- 2) Why do teachers think they have difficulty in these topics?

RESEARCH METHODOLOGY

This is a qualitative case study. The choice of qualitative approach has been influenced by orientation that I needed to immerse myself into the data in the pursuit to understand what participants see as being significant and important.

Participants

The participants were two sample groups of teacher such as 54 pre-service science teachers who had studied in a teacher college, which is situated in the lower part of Northern Thailand, and were Year 3 undergrad students of the 5-year teacher professional training program, for a Bachelor degree of Education in General Science. And 7 in-service secondary school science teachers, who had more than 10 years teaching experience. Table 1 shown demographic information of 7 in-service secondary school science teachers.

Table 1 Demographic Information of the 7 in-service secondary school science teachers

Participant Name*	Gender	Age	Degree	Years of Teaching Experience	School Type	School Size ¹	Average Class Size
Num	female	55	master/ curriculum	26	urban	medium	30
Praw	female	46	master/ science education	19	urban	medium	32
Fern	female	37	bachelor/ science	12	suburban	medium	25
Oum	female	54	master/ science education	25	suburban	medium	27
Mon	male	35	bachelor/ science education	10	suburban	small	20
Tae	male	34	bachelor/ science education	10	suburban	small	15
Pung	female	32	bachelor/ science education	10	suburban	small	20

*pseudonyms

¹Large school size refers to an enrollment of 1,500 or more students; medium to 500 - 1,499 students; and small to fewer than 500 students.

Data collection and data analysis

The questionnaire used in this study involved two main parts. In the first part, The participants were asked to read a list of 30 science topics and then chose 5 topics they thought that were difficult for Thai students to learn. Second, they were asked to write the possible reasons why the Thai students had learning difficulty in these topics. The questionnaire thus included two following two questions.

- 1) Read the list of science topics stated below and chose which five topics that you found the most difficult to learn.
- 2) Please write the possible reasons why you have found these topics difficult to learn and understand?

Table 2 The topics covered in the questionnaire

No.	Science topics
Biological Sciences	
1	Ecological diversity
2	Cellular respiration
3	Energy transfer
4	Biomolecules
5	Population
6	Environment
7	Conservation of natural resources
8	Properties of living things
9	The basic unit of life
10	Conveying the substance into and out of the cell
11	The relationship between the structure and functions of various systems of animals and humans that
12	work together
13	Genetic
14	Biodiversity
	Evolution of life

Physical Sciences	
15	Properties of matter
16	Composition of matter
17	The bond strength between particles
18	Change of state of matter
19	Chemical reaction
20	Motion
21	Energy
22	Chemical reaction
23	Interactions between matter and energy
24	Energy in daily life
25	Nature of the waves
Earth Science & Astronomy	
26	Elements of the process and the evolution of the universe
27	Solar systems
28	Space technology
29	The process of changing within the world and on the surface of the earth
30	The process of changing the air, weather and global climate

Before 54 pre-service science teachers started responding to the questions in the questionnaire, the researcher explained the purpose of the study and told students not to write their names on the questionnaire. Thus, they were assured of strict confidentiality of their responses. Therefore, 54 pre-service science teachers felt free to write what they thought when responding the questions.

As both quantitative and qualitative data were obtained from the questionnaire, data analysis was carried out both qualitatively and quantitatively. The responses to question 1 were analyzed quantitatively to identify descriptive statistics. Descriptive statistics were used to determine the frequencies and rank of scientific topics as perceived by the participants (Table 4). Questions 2 data were analyzed qualitatively through content analysis. All writer responses were coded and formed the categories. Table 3 was designed to show samples of participants' statements, code, category, frequency and percentage that explain the reason why student had difficulties learning science topics.

Table 3 The main reasons for why the participants had difficulties to learn scientific concept (n=61)

Samples of statements	Code	Category	Frequency	Percentage
"...the complexity of applying these rules in too many different contexts..."	#P11	Complex topics	54	88.52
"...do not use in real life..."	#P38			
"... contains complex and overseas words."	#I1			
"...has too much theory..."	#P2	So many concepts	48	78.68
"...too many laws and rules..."	#I7			
"...some topics are too detail..."	#P40			
"...without mathematics background..."	#P25	Lack of prior knowledge	26	42.62
"...lack of chemical background..."	#I3			
"...not interested in teaching..."	P05	Abstract topics	39	63.93
"...Material/ equipment..."	#I2			
"...Teacher's teaching style a boring..."	#I3			

RESULTS AND DISCUSSION

As results, the finding showed that both the in-service and pre-service science teachers agreed that the most challenging scientific concepts for their students to learn (Table 3-4) were as follows

Table 4 Most difficult scientific concepts (n=61)

Rank	Scientific concept	Frequency		Percentage
		pre-service teachers	in-service teachers	
1	Motion	20	3	37.70
2	Chemical reaction	11	2	21.31
3	Cellular respiration	10	1	18.03
4	Genetics	8	1	14.76
5	Biomolecules	5	0	8.20

1) The concept of physical motion was the most difficult topic to learn because of too much related content, too many calculation rules and the complexity of applying these rules in too many different contexts. The participants believed these topics were difficult to learn and understand because they were complex topics (88.52%) and had so many concepts (78.68%). For example, physics was rated as having too many different things to learn, having too much material to learn, and having too much theory. Physics requires a good mathematics background. Ornek et al. (2008) also found that physics had too many laws and rules, such as Newton's laws of motion, the general theory of relativity, the special theory of relativity, etc.

2) Chemical reaction concepts were also difficult, because the students required great mental effort to understand the complex rules and the high level of difficulty with the associated scientific calculations. Almost half of the participants indicated the students lacked prior knowledge (42.62%). It is vital for a teacher to understand what the learners already know and how they came to acquire that knowledge. Sirhan (2007) found that many students come to a class with wrong ideas, confused ideas or even a complete lack of background knowledge. Learning experiences need to be offered to prepare students to grasp new material by clarifying or correcting previously held concepts or by providing fundamental instruction on such concepts. The idea of pre-laboratory and pre-lecture experiences has been explored in depth at the university level and has been shown to be highly effective in increasing meaningful learning. In addition, Tekkaya et al. (2001) found that students need to have mastered concepts like organic and inorganic molecules prior to understanding chemical reactions.

3) Difficult biological concepts include cellular respiration, biomolecules, and genetics because most of the content was intangible and complex. The participants identified various biological events that cannot be seen by the naked eye; these topics were difficult because they were abstract (63.93%). Teachers often talk and describe theoretical or abstracted knowledge and don't provide examples from daily life. Similar findings were also reported by Cimer (2012). In that study, students could not understand why they were learning those topics or concepts in biology as they could not relate those topics to their real lives. Biology includes many abstract concepts and phenomena that require visuals for understanding. Therefore, if teachers use various visual teaching and learning materials and tools (such as figures, models, computer simulations, videos, 3-D materials, and real-life objects) both the teaching and learning of biology can become more effective.

CONCLUSIONS AND IMPLICATIONS

In conclusion, it was found that the majority of scientific concepts that students had trouble in learning were those requiring the prerequisite mastery of mathematical calculation skills, the application of theoretical knowledge in real-life situations and the modelling of abstract ideas. Therefore, to enhance students' science learning skills (before they start their actual science lessons), the researcher suggests that science teachers fully review the background mathematics knowledge (especially calculations) of students as well as reinforce the prerequisite techniques to acquire the rule-based frameworks of individual subjects. The teacher must also provide direct support and guidance to students in the application of scientific knowledge to diverse situations and contexts. Finally, teachers should use technology and other learning materials as part of their science teacher preparation.

In the future, science teacher education programmes in Thailand will involve the components of content knowledge (CK), pedagogical knowledge (PK) and technological knowledge (TK) that is part of the TPACK approach in courses

REFERENCES

- American Association for the Advancement of Science. 1990. *Science for all Americans*. Retrieved. <http://www.project2061.org/publications/sfaa/>
- Anderson CW, Sheldon TH, Dubay J (1990). The effects of instruction on college non-majors' concepts of respiration and photosynthesis. *J. Res. Sci. Teach.*, 27(8): 761 - 776.
- Bahar M, Johnstone AH, Hansell MH (1999). Revisiting learning difficulties in biology. *J. Biol. Educ.*, 33(2): 84-86.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. New Jersey: Prentice-Hall.
- Çimer A (2012). What makes biology learning difficult and effective: Students' views. *J. Educational Research and Reviews.*, 7(3): 61-71.
- Faikhama, C., & Ladachart, L. (2016). Science education in Thailand: Moving through crisis to opportunity. In C. Mei-Hung (Ed.), *Science education research and practice in Asia*. The Netherlands: Springer.
- Faikhama, C., et al. (2018). Science teacher education in Thailand: a challenging journey. *Asia-Pacific Science Education*. 4(3), 1-18.
- Finley F, Steward L, Yaroch L (1982). Teachers' perception of important and difficult science content. *Sci. Educ.*, 66(4): 531-538.
- Government of Thailand. (2003). *Teachers and educational personnel council act B.E.2546 (2003)*. Bangkok: The Government Gazette.
- Institute for the Promotion of Teaching Science and Technology. (2017). *Thai Science Teachers Standards*. Bangkok: The institute of Promotion of Science and Technology Teaching.
- Institute for the Promotion of Teaching Science and Technology. (2015). *TIMSS Thailand*. Retrieved <http://timssthailand.ipst.ac.th/>
- Jale Cakiroglu, Erdinc Cakiroglu, William J. Boone. (2005). Pre-Service Teacher Perceptions Beliefs Regarding Science Teaching: A Comparison of Pre-Service Teachers in Turkey and the USA. *SCIENCE EDUCATOR.*, 14(1): 31-40.
- Johnstone AH, Mahmoud NA (1980). Isolating topics of high perceived difficulty in school biology. *J. Biol. Educ.*, 14(2): 163 - 166.
- Karpov, Y. (2003). Vygotsky's doctrine of scientific concepts: Its role for contemporary education. In A. Kozulin, B. Gindis, V. S. Ageyev & S. M. Miller (Eds.), *Vygotsky's Educational Theory in Cultural Context* (pp. 65-82). Cambridge: Cambridge University Press.
- Knowles, M. (1984). *Andragogy in Action*. San Francisco: Jossey-Bass.
- Ministry of Education. (2011). *Notification of the Ministry of Education: Qualifications framework for higher education in education*. Retrieved http://www.mua.go.th/users/tqf-hed/news/FilesNews/FilesNews6/education5year_m1.pdf.
- National Institute of Educational Testing Service (Public Organization). (2018). *O-NET historical average score*. Retrieved <http://www.niets.or.th/th/>
- National Research Council. 1996. *National Science Education Standards*. Washington, DC: National Academy Press.
- Ornek F, Haugan M. (2008). What makes physics difficult. *International Journal of Environmental and Science Education.*, 18(3): 165-172
- Osborne J, Collins S, (2001). Pupils' views of the role and value of the science curriculum. *Int. J. Sci. Educ.*, 23(5): 441-467.
- Seymour J, Longdon B (1991). Respiration-That's breathing isn't it? *J. Biol. Educ.*, 23(3): 177-184
- Sirhan G. (2007). Learning Difficulties in Chemistry: An Overview. *J. TURKISH SCIENCE EDUCATION.*, 4(2): 2-20.
- Tapilouw1 M, Firman H, Redjeki S, Chandra D. (2017). Science Teacher's Perception about Science Learning Experiences as a Foundation for Teacher Training Program. *AIP Conference Proceedings 1848, 060010 (2017)*; <https://doi.org/10.1063/1.4983978>
- Tekkaya C, Özkan Ö, Sungur S (2001). Biology concepts perceived as difficult by Turkish high school students. Hacettepe Univ. *J. Educ.*, 21: 145-150.
- Tolman RR (1982). Difficulties in genetics problem solving. *Am. Biol. Teach.*, 44: 525-527.
- Vygotsky, L. (1986). *Thought and Language*. Cambridge: The MIT Press.
- Zeidan A (2010). The Relationship between grade 11 Palestinian attitudes toward biology and their perceptions of the biology learning environment. *Int. J. Sci. Maths. Educ.*, 8:783-800.

SPACES IN 21ST CENTURY SCHOOL BUILDINGS EDUCATIONAL EXPECTATIONS – EXEMPLARY IMPLEMENTATIONS

István Dániel SANDA

Ágoston Trefort Centre for Engineering Education, Óbuda University, Hungary
sanda.daniel@tmpk.uni-obuda.hu

ABSTRACT

In Hungary, following the change of regimes (1990), dozens of school buildings were erected which stand their ground even in international comparison. The architectural-technical specifications of the location and design of educational institutions are due on one hand to the spreading of modern educational principles and on the other hand, to the consequences of the legislative harmonization brought about by Hungary's joining the European Union. My paper presents this process. Firstly, I am going to list the educational expectations and student needs stemming from the educational goals of the 21st century school. I will analyse and define the design of the educational environment on the basis of modern theories of space. I interpret expectations as challenges to be answered by architects knowing the expectations of the demands and needs of the future users of the institution: teachers and students.

When designing the exterior and interior of the institution, the latest results and requirements of ergonomics regarding the learning environment must be taken into consideration, along with some basics of psychology and social psychology specifying the expectations for a communal learning environment.

In the spirit of the above, I am going to deal with details of the interior of the ideal learning environment such as the colour of the walls and ceiling, light and lighting or the possibility of darkening the space. Other issues include the design, layout, variability, and potential rearrangeability of furniture and equipment suited to modern educational work and activities. I will also touch upon important details like the amount of space required and the optimal visual field within the classroom.

I am going to link theory and practice by giving examples and showing pictures of existing school buildings which have gained international recognition. One of the conclusions of my paper is that the modernisation, differentiation and changing functions of educational spaces are the consequences of the professionalisation of educational principles and viewpoints. Increasing professionalism and the effectiveness of the educational work go hand in hand to shape educational spaces. Therefore, the implementation of a new spatial structure is always preceded by expectations based on new insights.

At the same time, designing this school environment in a modern, low energy, passive house-like building aiding environment-conscious education is a unique opportunity and challenge for architects and educational experts co-operating with them to shape and improve the environmental and ecological awareness of children and the whole community. Thus, the members of the school and the community can become the centre of action for the future.

INTRODUCTION

“In an atmosphere of empathy, trust, congruence and acceptance,
all personalities are enabled for learning.”
(Carl Rogers)

According to *Winston Churchill*'s well-known claim: “We give shape to our buildings, and they, in turn, shape us.” It is especially true of educational spaces, where communication and interaction play the most important role. Schools should set a textbook example of taking the educational aspects of space creation into consideration; however, we saw the opposite of it in Hungarian schools modelled on Soviet design during the decades of communism. The institutions of all levels of education from primary to tertiary were built with the exclusion of the “third teacher”, the factor of space creation as a constitutional architectural element. The managers of educational policy tied the hands of architects, so to speak, and the building specifications and regulations prescribed by the state only centred upon fire protection, emergency exits and the number of square metres. The needs based on modern educational expectations, which regard the spaces of learning as living space and require transparency and variability, were hardly implemented in the actual school building. (Jeney, 1987.)

It has long been about more than the quality of experience provided by space creation and about the creation of an architectural sense of identity. Optimal educational spaces can become a catalyst for learning and teaching. As a preliminary, let me share a few aspects to take into consideration in the creation of the educational spaces of the future. All users have the right to determine the creation of both external and internal spaces. The use of environment-friendly building materials. Providing natural lighting and easy access. The flexible and multi-functional use of learning spaces without forgoing identity. On the basis of these, we can claim that the creation of spaces of communication constitutes a special area of the building art. (Göhlich, 1994.) (Perlich, 1999.)

In this paper, I focus my attention on schools in which the design of external and internal spaces serves as “textbook examples”.

NEW SCHOOL SPACES IN HUNGARY

In Hungary, following the change of political regimes (1990), dozens of school buildings were erected which stand their ground even in international comparison. The present-day architectural-technical specifications for the location and design of educational institutions are due on one hand to the spreading of modern educational principles including the school building intentions of reform pedagogical trends and on the other hand, to the consequences of the legislative harmonization brought about by Hungary’s joining the European Union.

In the school of the democratic societies of the 21st century, it is a natural principle that the child as learner is in the centre of educational processes and learning takes priority over teaching.

If we aim for a school where all participants feel good, use the achievements of modern technology efficiently and do their work joyfully, then in the creation of the external and internal spaces of the institution, we have to take into consideration the latest results and requirements of ergonomics regarding the learning environment. Moreover, we must consider the basic principles of psychology and social psychology which formulate the expectations regarding the social learning environment. These include, first and foremost, the atmosphere of empathy, trust and congruency as defined by Rogers. (Holik, 2013.)

Nevertheless, due to the often wrongly interpreted use of gamification in the school, it is important to clarify at this point that “feeling good” does not mean that students only have to do nice and easy tasks requiring little effort, as this would create an unrealistic cotton-wool wrapping around them. (Suplicz, 2006.)

Before analysing the aspects one by one, let us first review the psychological comfort of the future school as one of the basic elements of the learning environment.

The school atmosphere

The use of digital equipment and the reshaping of tasks and relationships have given rise to new opportunities on one hand and new difficulties on the other. The school of the 21st century must develop not only technically but also in its humanistic atmosphere and a clear system of requirements. According to Herzberg (quoted by Suplicz, 2006), the causes of a bad work environment are primarily to be found in the human relationships. His statement is also true of the school environment. When interviewing teachers, we found that they identify as the source of their dissatisfaction and difficulties the lack of appreciation and a “human voice”, their conflicts with the authorities operating the school, with their superiors within the staff, with colleagues, students and parents, as well as their overwhelmment. The direct consequence of these is alienation from the world of the school and the joylessness of teaching and learning, respectively. (Tordai – Holik, 2018.)

Mihály Csikszentmihályi considers the key to success and wellbeing to be the joy of learning or working. “Working or studying with joy is more effective and does not seem like effort.” (Csikszentmihályi, 2001. 109.) This, however, does not mean that students only have to do activities that they like. There is also the need for effort and willpower. According to Binswanger, between desire and action, in the case of an appropriate goal, it is often only our will, restricting our current desires, which is able to take us all the way to our desired goal.

The educational environment, the lack of material conditions and of long-term development opportunities are more rarely identified as the reasons for a bad atmosphere. However, the communication style predominant within the staff and the method of solving conflicts serve as a model in the relationship of students and teachers. (Sanda, 2012.) The discoveries of ergonomics regarding the learning environment are closely related to the above psychological aspects.

THE IMPORTANCE OF ERGONOMICS IN LEARNING

According to Murell’s definition, “Ergonomics is the scientific study of the interaction of man and his work environment. However, in this sense, work environment does not only mean the factors of the physical environment surrounding the worker but also the tools and materials used during work as well as the working method, the organisation of the work, whether it is done individually or within a team. All of these are related to man himself: to his abilities, possibilities and limitations.” (Murell, 1965, 9.) Thus, the main aim of ergonomics is to improve efficiency and to satisfy human needs. Its most concise definition is “designing for human use”.

For example, the effective use of digital equipment in the classroom largely depends on the appropriate layout of the given classroom. In the 21st century school, supporting modern teaching methods cannot only consist of providing and using modern ICT devices, but it is also necessary to create a modern educational environment that supports the use of technology. For this, it is needful to design the space appropriately: to furnish the classroom with work stations for students and to provide darkening. There should not be any windows behind the students to prevent flare caused by the glass. (Bauer, 2003.)

Today, it is a more and more accepted view that the application of ergonomics is not only an economic rationale but also an indicator of the quality of life of citizens in a given society. Therefore, in the design of school buildings,

architects and future users alike must strive for the application of the latest and most modern technical and technological solutions. (*Walden – Borrelbach, 2006.*)

EXEMPLARY SCHOOL BUILDINGS IN THE 21ST CENTURY

In the next part of my paper, I am going to present ten primary and secondary educational institutions that I think represent the expectations specified above and prove that Hungarian educational architecture belongs to the European leading edge.



Figure 1: The grammar school of the Piarist Order in Szeged

We can see in the chosen samples that there were several reasons for the school building “fever”. After the change of regimes, churches were either given back their former properties or they started to build new ones: that is how several great buildings came into being, such as the grammar school of the Piarist Order in Szeged (architect: *János Golda*).

New, ethnic minority schools appeared and the role of art schools was also strengthened. Even though my selection is subjective, let us see the schools I have chosen!

RÁKÓCZI FERENC II. GRAMMAR SCHOOL, BUDAPEST 2004, Ferenc Cságoly & Benedek Sólyom (Architect Studio)



Figure 2: Rákóczi Ferenc II. Grammar School, Budapest

The winner of the tender issued by the local government of the 2nd district of Budapest retained the Romantic style street wing and attached the new sections to it. The task was complicated by the heavily rising terrain, due to

which, however, the end result is more varied. From the sports yard, we can access the terrace on the top of the gymnasium via a bridge, while the first floor opens to a garden, suitable for outdoor lessons. The new gymnasium was placed in the back of the building and the old one was converted into an entrance hall. It is attached to the atrium of the assembly hall, which provides an overview of the walkways of the whole building. The street façade was covered with the bricks of a torn-down old wing; its mass shows similarity to the extension implemented in the nearby Medve Street elementary school, which had also been completed by *Ferenc Cságoly* and *Benedek Sólyom* a few years earlier.

ARANY JÁNOS SCHOOL, CSORNA 2004, Zsolt Gunther and Katalin Csillag (3h Architect's Office)



Figure 3: Arany János School, Csorna

In Csorna, two school buildings were erected after the Millennium. The building of the new school for special needs students is modelled on local traditions: the houses of well-to-do farmers built on narrow, drive-through plots. The designers of the building, 3h Architect's Office (responsible designers: *Zsolt Gunther* and *Katalin Csillag*) opted for the economical, traditional building style. Nevertheless, the school completely conforms to present-day specifications. The building is strictly clear and disciplined: the façade is only divided by the pronounced white frames of the windows. The resulting covered and open spaces and the closed inner courtyard perfectly match the school's function. The surfaces and colours of the façade (earth tones, wood panels and raw concrete surfaces) create a harmonious unity. The colours of the interior counterpoint the reserved and disciplined appearance of the building's façade.

BUDAPEST GERMAN SCHOOL 2001, Bánáti Hartvig Achitect's Office - Scheffler Warschauer + Partner



Figure 4: Budapest German School

This building including a primary and a secondary school was erected on a beautifully situated, green plot in the 12th district. Following the design tender issued in 1996, it was designed in international co-operation: Bánáti Hartvig Architect's Office Ltd. worked together with Frankfurt-based Scheffler Warschauer & Partner. Despite its large proportions, the building does not overpower its environment, but rather attempts to make use of its natural conditions by organically fitting into the sloping terrain. Some rooms were lowered into the ground, which makes the mass of the school appear smaller. It is a modern, yet friendly and clear facility, where some of the ground floor classrooms have direct access to the garden. The materials used are natural: the majority of structures are made of wood and ashlar. According to German legislation, 1 % of the building's budget must be spent on the implementation of artwork. This law made it possible to erect a pavilion designed by *Miklós Galambos* in the school garden, supported by four slender pillars and covered with a trapezoidal roof, made of the combination of noble and ordinary materials.

BUDAPEST AUSTRIAN SCHOOL 2001, Georg Driendl



Figure 5: Budapest Austrian School

The “glass box” alluding to abstract art was designed by Viennese architect *Georg Driendl*. The building was placed next to a church school. The new school is distinctly separate from its environment; the transparent, divided glass surfaces recall the art of *Piet Mondrian*. The structures show virtuoso technical solutions: the glass walls of the façade are suspended on an aluminium supporting structure and are divided by suspended walkways of metal structure. The old and the new buildings are connected by the gymnasium, which is used by both schools. The “glass box” also serves as a solar space, saving significant heating costs by the utilisation of solar energy. Both the architectural details and the technical-engineering solutions are of extremely high quality.

CSÍK FERENC PRIMARY AND SECONDARY SCHOOL, BUDAPEST 2002, Architect's Studio



Figure 6: Csík Ferenc Primary and Secondary School, Budapest

The old, eclectic style school building was in need of reconstruction and extension. It was designed by the Architect's Studio Ltd. (responsible architects: *Ferenc Cságoly* and *Benedek Sólyom*). During the reconstruction and extension, it was very important to retain the original character of the school, and care had to be taken to protect the Roman archeological remains in the area. Therefore, the new wing was placed on pillars. Whereas in the old school building, keeping the traditions was the dominant aim, the architecture of the new wing is much more playful. It is due, among other things, to the fenestration arranged differently on each level and to the façade materials of second-hand and exposed concrete. At the joining of old and new wings, the architects designed a smaller, tower-like block, which creates a pleasant emphasis in the street view.

FOREST SCHOOL, VISEGRÁD 1996, László Földes , András Göde and Gábor Turányi



Figure 7: Forest School, Visegrád

The Forest School, completed in 1996, was one of the first buildings in Hungary after the change of regimes to draw international attention. Its architect, *László Földes* had spent three years in Finland prior to this task, from where he was called home by *Gábor Turányi*, who was working on the Hungarian pavilion of the later cancelled Budapest expo. The fruit of their joint labour was the Forest School situated on the bank of the Apátkúti stream in Visegrád. With its natural materials and fine but firm lines, the school fits into the natural environment without having to make any architectural compromises. Erected on a hillside, the building has outdoor access on each floor and its horizontal division resembles *Frank Lloyd Wright's* prairie-style. The colourful patches of the exterior are condensed into a merry picture inside. The building was awarded a Pro Architectura-prize.

HORVÁTH JÓZSEF BASIC ART SCHOOL, SOPRON 2003, Mária Farkas, Ágota Józsa, Dávid Józsa (Domiporta Architect's Studio)



Figure 8: Horváth József Basic Art School, Sopron

The building of the 17th century Jesuit boarding school was probably saved from final destruction by the city's decision to move the music school here. The new wing was erected next to the two existing buildings, on the

longitudinal axis of the plot. The resulting courtyard layout retains the local architectural traditions and provides access from two directions. The unique geometry of the façades is provided by the ashlar and brick surfaces and the alternating wood panels and plastered planes. The old and new wings are connected with graceful bridges. The determining emphasis of the block is provided by the stairwell-tower erected in front of the boarding school which, with its mixed masonry and robust mass, brings the atmosphere of Mediterranean piazzas to the Saint Michael-hill in Sopron.

KODÁLY ZOLTÁN MUSIC PRIMARY SCHOOL, GRAMMAR SCHOOL AND MUSIC SECONDARY SCHOOL, KECSKEMÉT 1997, Pál Boros (Építésműhely)



Figure 9: Kodály Zoltán Music Primary School, Grammar School and Music Secondary School, Kecskemét

The authorities of the city of Kecskemét wished to create the new school on the site of the infantry (later Soviet) barracks built at the end of the 19th century in Neo-Renaissance style, designed by the Pártos-Lechner architect's office. The tender was won by a joint venture (Építészeti Társvállalkozás Bt.), which had been specifically formed for this job from three different architectural limited companies, with *Pál Boros* as the leading architect. The facility was created by converting the previous barracks building and adding a new wing. The latter closed the previously U-shaped plan, thus creating a closed schoolyard. The new façade fits in with the monumental size of the old barracks. The existing building retained its original reserved character and the current colours (grey and white façade and tiled roof) recall the old music school. The colours of the new wing are braver on the exterior and in the interior alike. We can regard it as a symbolic gesture that the entrance of the new facility was placed at the meeting point of the two buildings.

SZEMERE PÁL PRIMARY SCHOOL, PÉCEL 2007, Dezső Ekler



Figure 10: Szemere Pál Primary School, Pécel

The mass of the new school in Pécel was determined by the complicated plot and neighbourhood relations. It does not have a street façade but the yard looks to the Ráday-castle, which is a national monument. What is more, the building had to be connected with the old school consisting of eight classrooms. The Baroque-like division of the mass of the building is adapted to existing features: the precious metal-plated “staff wing”, for example, rhymes with the main bay of the castle opposite, covered with similar material. The middle wing, the centre of the school, houses the assembly hall and the dining area. The long classroom wing, rising above the ground in a bridge-like manner provides a passage between the two parts of the garden as well as a connection to the old building. The colours of the interior of the school were inspired by those of the seven main chakras in the human body and they represent the function of the given internal spaces. The building, erected with scarce resources, earned great appreciation: the Dutch architectural magazine A10, for example, published a three-page article about it.

TOLDY FERENC GRAMMAR SCHOOL, BUDAPEST 2004, László Földes – Tamás Mórocz



Figure 11: Toldy Ferenc Grammar School, Budapest

The original Neo-gothic main building of the Toldy Ferenc Grammar School was completed in 1859, on the basis of *Johann Nepomuk Petschnig*'s design. The new wing of 1350 square metres opening to Donáti Street houses the gymnasium, which had long been missing, some medical rooms, offices and changing rooms. The atrium connecting the two sections is at the same time the grandstand of the gymnasium. The brick surfaces determining both the outdoor and indoor spaces show resemblance to the material use of the main building and the proportion is adapted to the historical environment. Considering the building's function, the façade is reserved and modest, and at the same time carefully measured. The Donáti Street main entrance is decorated with a newly-made copy of the legendary lion door handle of the main building. The extension of the Toldy Grammar school was the first Hungarian building to get on the main page of the global architectural collection page World-Architects.

SUMMARY

Like all progressive and proactive activities, school building also goes beyond itself. In an environment taking into account “the third teacher”, which is the concept of educational spaces, not only education is more effective but its economic effect is also calculable. The BOSTI study (Buffalo Organization for Social and Technological Innovation), conducted with 70 companies in the USA, studied the changes made on the basis of architectural psychology and the optimisation of the work environment. The result: after five years, the performance of employees rose by 17 %. (<https://cutt.ly/pimh31>)

What is true for companies operating in the USA might also be true for the “knowledge-factories” called schools. (Matzing, 2015.) The rise in the motivation and effectiveness of teachers and students of such proportion, the appearance of significantly higher qualified youths on the job market could put the national economy on a new track.

The modernisation, differentiation and changing functions of educational spaces are the consequences of the professionalisation of educational principles and viewpoints. Increasing professionalism and the effectiveness of the educational work go hand in hand to shape educational spaces. Therefore, the implementation of a new spatial structure is always preceded by expectations based on new insights. (Sanda, 2009.)

Classrooms and lecture halls will soon be replaced by learning zones which can be flexibly modified. The infinity of knowledge is ever more often expressed by space creating solutions that enhance intellectual osmosis. At the

same time, designing this school environment in a modern, low energy, passive house-like building aiding environment-conscious education is a unique opportunity and challenge for architects and educational experts co-operating with them to shape and improve the environmental and ecological awareness of children and the whole community. Thus, the members of the school and the community can become the centre of action ensuring the future.

REFERENCES

- Bauer, E. (2003). *Schulbau pädagogisch gesehen*. Villingen: Neckar-Verlag.
- Buffalo Organization for Social and Technological Innovation. <https://cutt.ly/pimh31>
- Csikszentmihályi, M. (2001). *Flow – Az áramlat – A tökéletes élmény pszichológiája*. Budapest: Akadémiai Kiadó.
- Fischer, M. E. (2007). *Raum und Zeit*. Erlangen: Schneider Verlag Hohegehren GmbH.
- Gödde, U. – Schneider, U. – Berka, B. (Eds.) (2001): *Räume gestalten – Räume erleben. Wege zu Kindgerechter Lernumgebung*. Weimar: Thüringer Institut für Lehrerfortbildung, Lehrplanentwicklung und Medien.
- Göhlich, M. (1994). *Die pädagogische Umgebung*. Weinheim/München: Deutscher Studien Verlag.
- Holik, I. (2013): The Role of Comparative Education in Hungary. In: Charl, Wolhuter; Nikolay, Popov; Bruno, Leutwyler; Klara, Skubic Ermenc (szerk.) *Comparative Education at Universities World Wide*. Ljubljana, Szlovénia : Ljubljana University Press, 83-89. , 7 p.
- Tordai, Z. – Holik, I. (2018). Student's Characteristics as a Basis for Competency Development in Engineering Informatics Education. *International Journal of Engineering Pedagogy* 8: 4 pp. 32-42. , 11 p.
- Jelich, F-J. – Kemnitz, H. (Ed.) (2003). *Die pädagogische Gestaltung des Raums. Geschichte und Modernität*. Bad Heilbrunn: Verlag Julius Klinkhardt.
- Jeney, L. (1987). *Educational Buildings in Hungary*. Budapest: Országos Oktatástechnikai Központ.
- Kleberg, J. (1994). In considering quality learning environment. *Bildung und Erziehung* 47. 1. 29-36.
- Klünker, H. (1994). Schulbaudiskussion und Schulbauforschung in Deutschland. *Bildung und Erziehung* 47. 1. 5-18.
- Lehberger, R. (1992). Reformpädagogik und Schulbau. Das Beispiel Hamburg. *Erziehungs- und Bildungsgeschichte*. 1. 33-37.
- Löw, M. – Steets, S. – Stoetzer, S. (2007): *Einführung in die Stadt- und Raumsoziologie*. Ulm: Verlag Barbara Budrich, Opladen & Farmington Hills.
- Matzing, G. (2005). Architektur des Wissens. Das Zusammenspiel von Baukunst und Pädagogik: Was ist Lehre von den Räumen mit den Räumen zum Lehren zu hat? *Süddeutsche Zeitung*. 6. 10.
- Perlick, P. (1999). *Architektur im Dienste der Pädagogik*. A. Henn Verlag Ratingen.
- Pfeffer, M. (1994). Schulgemeindliche Planung eines Grundschulgebäudes. Ein Versuch Demokratischen Schulbaus. *Bildung und Erziehung* 47. 1. 37-56.
- Sanda, I. D. (2009). A pedagógiai terek vizsgálata – Különös tekintettel a XX. századi magyar iskolára. Doktori disszertáció. Kézirat.
- Suplicz, S. (2006). A jövő iskolájának pszichés komfortja. In.: Kárpáti Andrea és mtsai, (Ed.) 2006). *A 21. század iskolája*. 201-212. Budapest: Nemzeti Tankönyvkiadó Zrt.
- Walden, R. – Borrelbach, S. (2006). *Schule der Zukunft. Gestaltungsvorschläge der Architekturpsychologie*. Asanger Verlag. Heidelberg-Kröningen.
- Zur Lippe, R. (1997). *Der Raum*. In: Wulf, Ch. (Ed.) (1997). *Vom Menschen*. Basel: Beltz Verlag.

STRATEGIES USED IN THE INDIVIDUAL APPROACH AT LABOUR OFFICES AS A CHALLENGE FOR THE EDUCATIONAL PROCESS OF SOCIAL WORKERS

Lenka CALETKOVÁ

Faculty of Social Studies, University of Ostrava, Czech Republic

lenka.caletkova@osu.cz

ABSTRACT

This paper is based on partial data collected from research on organizational factors and conditions that prevent or support the application of an individual approach with long-term unemployed clients. The paper aims to analyze and describe what strategies are used by labour office staff when working individually with their long-term unemployed clients. The research led to identification of the factors that influence the choice of individual approach strategies in case of long-term unemployed clients, and which can be divided into five groups. These are organizational factors, inter-organizational cooperation factors, legislative factors, factors on the part of clients, and the expertise and experience of a social worker. The results of the partial research point to the need for further education or training of labour office workers in methods of working with long-term unemployed clients and related issues in order to implement a more effective process of working with the clients.

INTRODUCTION

Labour office workers apply an individual approach in their individual casework with clients. However, it has become evident that an individual approach both in the social work practice and education tends to be viewed intuitively, as tacit knowledge, rather than as an explicitly defined procedure for working with clients. This knowledge is based on routine activities that have been incorporated into their work practices and have become so self-evident that they are no longer perceived by the workers as learned information. Thus, on the one hand, tacit knowledge enables workers to implement appropriate procedures quickly and appropriately without the need for long reflection, but on the other hand, tacit knowledge cannot be reflected, discussed, and passed on to novice workers. Therefore, it is important to focus on strengthening the ability to explain work approaches and practices by social work professionals (Potting et al., 2010). However, in order to achieve an individual approach, this method needs to be better understood, since its use represents the potential to help long-term unemployed clients to find jobs on the labour market.

The problem may be that workers may differ in the concept and the subsequent application of an individual approach. This approach is present as part of activation strategies with an aim to integrate people who are able to work in a paid employment system. These strategies, in addition to the concepts of activation or conception of clients, also differ in understanding and applying an individual approach to clients. Nicaise (1995 in Sirovátka, 2005) sees two groups of approaches to active labour market policy measures. Individualized approaches focus on multiple causes and standardized approaches focus on a simple handicap such as lack of professional skills. Individualized and comprehensive programs apply an individual approach based on identifying the needs of clients, their involvement in activation and mutual communication. Then it is necessary to choose appropriate individual inclusion strategies that match the individual combinations of clients' disadvantages and their needs. Conversely, standardized approaches involve clients as objects of intervention. Clients' active participation in activation is delayed and their responsibility is mainly to accept activation conditions. It is an instrumental individual approach that does not take into account the heterogeneity of clients and their needs. Individualization procedures are used in connection with the assignment and control of fulfillment of activation requirements by clients (Sirovátka, 2005).

However, the individual approach should primarily be based on the clients' wishes and needs. An important feature of social workers is the art of listening and communicating, in order to set clear objectives for cooperation in a joint discussion. However, based on their experience, and often on the basis of their first impression, workers distinguish long-term unemployed clients in different subgroups, and on that basis, they apply individual approach strategies. The personality and life experience of a social worker directly determines the success or failure of mutual cooperation with the client (Schavel, Oláh, 2010). Therefore, the stereotypical dividing of clients into larger groups and the application of a standardized procedure without taking into account clients' individual life situation may be problematic. Workers should be aware that each jobseeker is in a unique social situation and therefore, they should consider the possibility of involving other professionals and working with them to address these situations (Oláh, 2016). Resolving a client's unfavorable life situation can be an important step forward for the client's subsequent participation in the labour market. Clients who do not have stability in their personal lives are hardly able to have a stable work life.

All of the above areas related to working with long-term unemployed clients influence the choice of workers'

strategies and the final form of individual approach. Therefore increasing the competencies of labour office workers in the area of their expertise and in the area of possibilities of the labour market and the importance of cooperation with experts while taking into account client's unique life situation, can contribute to the effective choice of the strategy applied during the individual approach to their clients. Continuous education, as well as inclusion of social work into the labour office workers' practise, can help in solving the life situation of clients on both work and personal levels.

INDIVIDUAL APPROACH AT THE LABOUR OFFICE

Every jobseeker has the right to employment intermediation from labour office workers. Therefore, individual counselling plays an indispensable role here. Labour office workers strive to apply an individual approach to clients within individual counselling. Workers focus on solving the client's life situation. An individual interview allows them to take a personal approach to clients needed to build trust and cooperation between the client and the worker (Freibergová, Vepřková, 2013).

The Labour Office of the Czech Republic is an administrative authority with a national scope and an organisational unit of the state. The Labour Office of the Czech Republic was established on 1st of April, 2011, by Act No. 73/2011 Coll., On the Labour Office of the Czech Republic and amending related acts. The Labour Office of the Czech Republic is managed by the Ministry of Labour and Social Affairs as its superior administrative authority. In 2011, labour offices fundamentally changed their organisational structure. A centralized Labour Office of the Czech Republic has been established, managed by the Director General. Under its heading, there are 14 regional branches with contact offices. In particular, regional offices provide active employment policy tools, contact offices perform tasks in the area of employment and state social support. The Labour Office of the Czech Republic also became the only location to pay out all non-insurance benefits (About the Labour Office of the Czech Republic MoLSA, 2019).

It is clear from the description that the Labour Office of the Czech Republic is a highly structured organization with clearly defined organizational rules. The organizational structure of the Labour Office of the Czech Republic is represented by the General Directorate, Regional Branches and the branch for the City of Prague. The scope of activity of regional branches is identical to the territory of regions according to Constitutional Act No. 347/1997 Coll., On the creation of higher territorial self-governing units, as amended. There are also contact offices that are part of the regional branches. Other conditions of the organizational structure of the Labour Office of the Czech Republic are laid down in the Statute and Organizational Rules issued by the Director General with the prior written consent of the Minister of Labour and Social Affairs (Organizational Structure of the Labour Office of the Czech Republic MoLSA, 2019). The research was focused on the staff of the contact offices, the organizational units of the regional branches, which were created by the reorganization of the original labour offices and their contact offices.

The contact offices perform tasks in the areas of non-insurance social benefits, unemployment benefits, employment intermediation services and registration of job seekers. Employment intermediation service is one of the most important functions of labour offices. Within the framework of employment intermediation, contact offices' staff members seek employment for individual job seekers, search for new workers for employers, and provide job-related information and advice services. In employment intermediation services, special care belongs to job seekers who require it due to their age, health condition, caring for children or for other serious reasons. In particular, it includes persons with disabilities, persons up to 20 years of age, pregnant and breastfeeding women, mothers up to the ninth month after childbirth, persons caring for a child under 15 years of age, persons over 50 years of age, and persons registered in the register of job seekers for more than 5 months, and those in need of special assistance (Vybihal et al. 2017).

The contribution is then focused on clients who are in the register of job seekers for a long time. Long-term unemployed persons are those who have been unsuccessfully seeking employment for more than one year. These persons are registered in the Labour Office of the Czech Republic, which also includes as long-term unemployed those job seekers who were in the register for a total amount of 12 months in the last two years. In the Czech Republic, as at 31st of March 2019, 56,965 long-term unemployed clients were registered at the labour office (Unemployment Statistics, MoLSA, 2019). Šmajsová Buchtová (2002) ranks among the characteristics that condition the employment of people in the labour market their age, gender, education, health status and ethnicity. These characteristics may cause a higher risk of job loss and may even predispose individuals to long-term unemployment or recurrent unemployment. These groups include young people, people with disabilities, women, especially mothers with children, the elderly, people with low education and ethnic minorities.

The heterogeneity of the group consisting of long-term unemployed clients of the labour office is apparent, which

points out the importance of addressing clients' life situations individually. The counselling process at the labour office is then a key tool to help clients find their way into the labour market. The basic approach in working with the client at the labour office is therefore individual counselling and applying an individual approach based on considering all the attributes of the client's life. The individual approach is based on the assumption that each person has a disposition to deal with his/her unfavourable situation. This approach emphasizes that the client determines the best solution to his / her situation. Workers should then take into account all the circumstances of the client's life situation and accept his/her wishes and needs (Hrozenská, Dvořáčková, 2013).

According to the Methodology of Procedures in Public Employment Services (MoLSA, 2015), an individual approach to job seekers should be the basis of any counselling work and thus should not be neglected even in employment intermediation. The individual approach includes an environment enabling privacy, as well as taking into account client's life situation, current needs, health restrictions and the uniqueness of the client's personality. The effectiveness of the counselling process is also supported by building trust needed for active cooperation, recurring appointments with the client and the possibility of scheduling appointments with the client in a manner, so that the workers can focus on their clients' needs. Workers of the labour office thus apply elements of social work in their activities. An important aspect is involving external resources in their work processes, such as social services organizations focusing on working with long-term unemployed clients or cooperating with the municipality. According to Beck (2012), social work is used by workers of the Material Need Department as part of an individual approach to clients. However, the basic principles of social work ethics should also be followed by workers who are not social workers.

RESEARCH METHODOLOGY

This paper is based on partial data collected from research aiming to find out which organizational factors and conditions prevent or support the application of an individual approach with long-term unemployed clients. The paper aims to analyze and describe what strategies are used by labour office staff when working individually with their long-term unemployed clients.

A qualitative strategy was used for the research. The area of interest of this research is to understand how people interpret their experiences, how they construct words, and what importance they attach to their experiences (Merriam, 2009). A qualitative approach has been used for the research as it is a process of exploring phenomena and problems in an authentic environment. It aims to get a comprehensive picture of these phenomena based on deep data. The aim of the researcher is to uncover and represent how people understand, experience and create social reality (Švaříček, Šedová, 2013). Qualitative research is a process of seeking understanding based on different methodological traditions of exploring a particular human or social problem. Attention is focused on a human in his everyday life. Important criterion in choosing a qualitative research strategy is that it brings detailed information about the researched phenomenon that cannot be generalized to the general population (Hendl, 2012), and gathers information about what people say and then uses their words as keys to the subject being studied (Walker, 2013).

The research was carried out at four different contact offices of the Labour Office of the Czech Republic in the South Moravian Region. The research is further specified by focusing on job intermediation workers and continuous education and counselling staff as workers who provide individual counselling services to long-term unemployed clients. For the selection of informants we used a intentional sampling method with the following preset criteria: a) Work position in an employment department b) Geographical nature of the worksite (rural parts of the South Moravian Region) c) Voluntary participation in research. Data were obtained through semi-structured interviews thematically focused on approaches and ideas of workers related to persons suffering from the long-term unemployment, opinions of workers on the implementation of activation policy measures for these clients and work problems as well as ideas for improving work with clients from the workers' perspective. Interviews were conducted with 17 female workers of the labour offices during fall of 2018. The average age of female workers is 43 years and the average length of their work experience is 16 years. The data were subsequently analysed through thematic analysis, based on identification, analysis and reference to topics in collected data. (Braun, Clarke, 2006). The ethical principles of the American Psychological Association (2010) were adhered-to throughout the research.

RESULTS

When analyzing research data, it has been found that organizational factors are not the only factors that affect the application of an individual approach by labour office workers to clients, but it is rather a collection of different factors that can support an individual approach but also prevent it. It turns out that these groups of factors have an influence on the choice of the strategy in applying an individual approach by the labour office worker to clients. An important element here is the dynamics of these factors. These factors are not separate, but they intertwine and

cross each other.

In their testimonies, all workers confirm that the individual approach is part of their work with long-term unemployed clients. The problem, however, is the fact that none of the workers has given their own definition of an individual approach. The answers were always rather general. “I think we have an ideal approach to them. We try to work as much as we can” (R10). It turns out that an individual approach is rather an abstract concept for labour office workers. Workers commonly use the term, but its definition is difficult for them to grasp. The key to this may be the fact that the individual approach is not clearly defined in methodologies or work processes. Workers thus uncritically adopt the definition of an individual approach, which is included in methodologies, albeit vaguely. Thus, in relation to the definitions they adopted, workers do not apply a critical view. The same feature in the workers’ testimonies is a personal contact and an individual interview with the client, in which the client expresses his / her ideas. Based on this, the workers apply individual work procedures that prevail in their professional work. In a deeper analysis of the interviews, two groups formed the concept of an individual approach in terms of its outcome for long-term unemployed clients. The different conception is manifested in relation to the work position of individual workers. Intermediation office workers are rather practical when working with a client and focus on finding a job. This approach can be defined as an “individual effect-oriented approach”. Counselling department workers and counselling specialists for intermediation and further education view the individual work with clients more comprehensively in the sense of implementing processes to solve client's life situation in terms of his participation in the labour market. They consider involving other subjects and stress the importance of gradual steps in the job search process. This method can be referred to as an “individual process-oriented approach”. Different approaches toward the desired outcome of individual work with clients are related to the perceived expectations of clients from the worker’s perspective. “Effect-oriented” workers equally perceive finding a job as the primary expectation of the clients. “Process-oriented” workers do not express the same expectations of the clients in their responses. They refer to a client as a person who should express his/her expectations.

For the purpose of the article, it is possible to generally define an individual approach, from the point of view of both groups of workers, as an individual cooperation with a long-term unemployed client, whose aim is to help him/her to participate in the labour market based on mutual communication and while taking into account problems or obstacles in the client's personal life.

Both groups of workers carry out their profession in the same organizational environment which can be influenced from the outside as well as inside by different factors that may influence the choice of strategies applied in an individual approach to clients. They can be divided into five groups. These are organizational factors, inter-organizational cooperation factors, legislative factors, factors on the part of clients, and the expertise and experience of a social worker. Organizational factors include work environment and organizational rules, management approach, and cooperation with colleagues. The inter-organizational cooperation involves coherence and cooperation between the labour office staff and social services organizations while taking into account the life situation and needs of the clients, and also communication with employers as well as considering their needs. Legislative factors are the legislative anchoring of work procedures. Motivation to obtain a job or to participate in the labour market, active or passive attitude, life situation, can all be considered as factors on the client's side. Work experience, effort to take into account clients' life situations and their motivation can also influence the choice of strategies and tools applied in an individual approach to clients.

Organizational factors

The application of an individual approach to clients is undoubtedly influenced by the type of organization in which the employee operates. As previously stated, labour offices represent bureaucratic, formal organizations with a clear hierarchical organizational structure. Therefore, the management approach and the co-workers represent an important influence on the implementation of individual approach strategies. From the statements of the employees of the labour offices there is excellent cooperation within and between the departments. “... there is no problem to go to any colleague if you need advice” (R15). “The colleagues’ readiness to help is great there” (R6). Workers also perceive cooperation with social workers from Department of Material Need as essential. In particular, they find it beneficial to obtain more information about clients “... It is called enhanced contact, so that we, as employment intermediation specialists, meet with that client together with a material need worker, and consult why the situation occurred, that they need to apply for material need benefits, where the problem really is. So again, it is beneficial for us to learn, for example, about the family situation” (R16). The Head of the counselling department confirms the statements of the workers, who perceive the cooperation among individual workers very positively. The workers also meet during work meetings where they deal with organizational issues as well as work procedures in a joint discussion. She also highlights the aforementioned organization environment with clearly defined rules, which she considers very important in terms of work procedures within the organization and towards clients. “I

like the rules and I tell people how to do it and this is expected from me. We discuss it, we write it down and it goes like that. And it is easier for our clients when we tell them clearly that this is how it needs to be done” (R9). The Head of the Department senses the similar attitude regarding the perception of the rules from her subordinates’ vantage point. “I like the rules and I sense the same from my staff. They want to know from me how we’re going to do it” (R9). The opportunity to hear the opinions of other colleagues and the cooperation between individual departments enables a comprehensive approach to employment intermediation for clients. According to the labour office workers, the complexity of the approach is seen in the tools and projects of the labor office. “... It is focused on why they are in the long-term evidence. They learn to write their CV, so that the project helps them find that job, to think about why they are in such a situation” (R12). “And I think those regional projects are the best way to help a client because there is a truly individual approach...” (R1). The Head of department points out the important fact that the activities of the project are essentially the same as those of the labour office. However, she sees the benefit of being able to pay more attention to individual clients by appointing a certain worker only for that specific activity. “It’s no more than the labour office does, but it’s a project. European funds are being used. And it is also an advantage that one worker is allocated to it, or one has two projects where he is dedicated to it. So, he has the opportunity to devote himself to those people” (R9).

It proves significant that managers should primarily support their subordinates in a joint discussion, enable them to cooperate as a team and provide them with sufficient space for their own decisions. There are rules in the labour office, which, as seen by the workers, make their work more transparent. In order to use the individual approach more effectively, workers consult difficult life situations of their clients with their colleagues and superiors. They combine an individual approach with the need to comprehensively look at the situation of clients and they often see the solution in the possibility of being included in projects that are tailored to long-term unemployed clients and their needs. Workers devote their time to clients individually and provide support services such as babysitting, paying transportation fees and refreshment costs to make it easier for clients to enter the labour market.

Inter-organizational cooperation

The aforementioned complexity of looking at the client’s life situation does not only involve cooperation within labour offices, but also cooperation with workers in social services organizations. Although this cooperation with social services organizations is just in the beginning, its contribution is mainly in sharing information, professional experience and examples of good practice. “It’s getting started, we’re already working with social workers, we’re communicating with each other. They know the information from another side” (R14). A positive outcome is a more comprehensive picture of a particular client. “They go to home visits and see how that person lives, which I don’t know at all. I see him once a week” (R14). An important element of mutual cooperation between social services organizations and the labour office is the implementation of case study seminars and regular staff meetings of mentioned organizations within regional projects. The aim is for the labour office workers to know the activities of the organizations involved, especially because their common goal is to help the client. “They get to know our possibilities and our clients, the problems of our clients, and then they are suggesting their options to help. By getting to know each other, it opened up a lot, and it improved” (R1). Another reason is to bring social work elements into the individual approach in counseling services at the labour office. “During these case study seminars, they told us how to deal with, for example, mentally ill people. How to work with them, how to tell them...” (R2). It is apparent from the previous sentence that this meeting is being conducted with counselling workers. Unfortunately, employment intermediation workers are not in contact with representatives of social services organizations very often. “We won’t come in contact with them” (R6). More frequently they are in contact with employers, for example within the earlier mentioned projects. Employment intermediation workers have the opportunity to visit the employers’ facilities in the given region and get acquainted with their activities. Furthermore, these workers refer to frequent telephone communications with employers. Their cooperation consists mainly in communication with them, in the exchange of contacts or in the implementation of projects.

Inter-organizational cooperation is an important part of the implementation of individual approach strategies with long-term unemployed clients, and in some regions it is a relatively new element. In particular, the counselling department workers come into regular contact with representatives of these organizations to better understand the problems that their clients face. Restriction in application of an individual approach can be seen in the case of employment intermediation workers who do not come into regular personal contact with the workers of these organizations. It is the establishment of personal cooperation with workers from other types of organizations that opens up a new perspective on the client’s situation and new possibilities of solving their life situation, as a first step to enter the labour market. If workers strictly operate according the rules and directives of the labour office, the complexity of individual approach to clients can be limited. Thus, the prevailing contact only with the employers may have an impact on the strategies of an individual approach of workers in terms of their primary focus on the effect, i.e. finding a job. Promoting cooperation and the need for coherence with social work by the management of the labour office may appear to be an important factor in influencing the individual approach to

clients.

Legislative factors

Legislative factors in the context of the application of individual approach strategies mean the legislative anchoring of the working practices of the labor office workers. In their activities, they are governed by Act No. 435/2004 Coll., On Employment, as amended. “Because we are bound by the Employment Act, and it’s all covered there. So then, that’s related to everything” (R3). “We must follow the law, it’s based on the law. From methodologies” (R8). The Head of department confirms the colleagues’ testimonies and specifies the communication between the individual departments of the Labour Office of the Czech Republic. “We all have the same law, the same directives, everything is managed by the headquarters. Now everything is under the General Directorate, then there is a Regional Branch and we are the Contact Office. I deal with the Regional Branch, the Regional Branch deals with the General Directorate...” (R9). Hence, the Directorate General issues directives and decides about the activities that the labour office and its components will perform. The regional offices then methodically manage the contact offices, which also have their own internal guidelines. The employment intermediation and counselling department is not much affected by legislative changes from a managerial perspective. In this connection, she emphasizes the influence of the regional branch and states that the law is an umbrella for the work of the labour office workers and that their first and foremost goal is to help clients. “But at employment intermediation department and especially at counselling department, we are probably very much protected by that regional branch. And I’m here to help those people” (R9).

The strategy of applying an individual approach at the labour offices has its legal limits. Workers follow the laws, methodologies and internal guidelines in their work procedures. They inform their clients about legislative measures and provide advice in this area as well. Labour office worker should be thoroughly familiar with the current legislation and apply an individual approach to their clients within its bounds. However, the choice of their strategy should always be accompanied by some discretion in the best interests of the client.

Client factors

All workers come into contact with different groups of unemployed clients. Furthermore, they all agree that they treat all clients in the same way. “We treat all clients equally” (R7). However, long-term unemployed clients currently account for a large proportion of the total number of labour offices clients and workers come into contact with them daily. The workers then formally differentiate these clients into groups that are identical to risk groups in the labour market, and based on this, jobseekers can be included in different projects. Other criteria for dividing clients into groups are length of evidence, health status and age. However, there is also an informal division of clients based on clients’ attitude to workers and job search. It is a combination of different factors from the clients’ lives, which determine how they present themselves to labour office workers. The main criterion for this division is the level of client’s activity. “Because you see it, those who are motivated and interested in working, they won’t be here long” (R6). Active clients do not stay very long in the labour office registry. Labour office workers often mention the passive approach in connection with long-term unemployed clients. Furthermore, the term passive client is being used in the context that these clients do not want to work and the primary reason for their registration at the labour office is not finding a job. As the main reason they see the financial support, i.e. the payment of health insurance and the collection of social benefits. “First of all, surely because they don’t have to pay health insurance. This is a great motivation... and then it is individual” (R6). The workers point out that in correlation with the length of registration at the labour office, the motivation of the clients to participate in the labour market decreases while the loss of clients’ work habits is increasing. “So, when the person is here, let’s say 5 years, he’ll lose the work habits” (R14). In many cases, workers mention examples of clients’ passive behaviour during self-presentation to the employer. “As soon as he shows up and looks like, if you take me, you’ll need me like lice in a fur coat, so of course they won’t take him” (R3). “Or they start the job and behave in such a way that the employer fires them ...” (R8). All workers have experience with passive clients, but they still do their best to help them in their life situations and take into account the causes of long-term unemployment. However, they all perceive the difficult conditions for applying an individual approach to this group of clients. They find a solution in increased number of appointments with long-term unemployed clients and their inclusion in the labour office programmes. “If the client really starts that course, in the team, they really create some environment there, a class where they mingle (with each other) and this is really helping them mentally” (R1).

Quite often, there is a combination of disadvantages preventing long-term unemployed clients to participate in the labour market. Thus clients’ passivity can also be caused by the long-term frustration arising from unsuccessful efforts to solve these problems. During individual counselling meetings workers can find out about clients’ possibilities, help them to look for part-time jobs or single shift jobs, but unfortunately they often face a lack of these jobs. When working with long-term unemployed clients, they also consider the frequency of appointments. Frequent appointments can be seen as small steps towards activating passive clients. They also see the possibility

of gaining work habits in including these clients in counselling courses or different activities within projects. The poor assessment of the situation and the stereotypical inclusion of the client in a passive group of clients who do not want to work may be problematic. Therefore, it is important to communicate with clients and listen to their needs, and to proceed to sanctions only as an extreme measure.

Factors on the side of labour office workers

Intermediation department workers perceive the priority in finding a job for their clients and putting them back into a work process. This is connected with a more practical view of workers on the life situation of clients. When applying an individual approach, they take into account, in particular, the characteristics of the client that are important for the labour market and his / her possibilities of combining work and personal life, such as travel distance from home, childcare, education, other competencies, etc. They also aim to increase clients' competences and to prevent loss of clients' work habits. As already mentioned, the testimonies of these workers led to their inclusion in the group of effect-oriented workers. In this case, the goal is the employment intermediation, or offering retraining, as the fulfillment of the main purpose of registering at the labour office, and as fulfilling the perceived expectations of clients. "From the beginning we are working with the client according to his needs. During the first appointment when I see that there is a problem with qualification or work experience, and that there is no assumption that he can find a place in a labour market with what he knows, we send him immediately to the counselling department. I think this is an individual approach" (R7). Thus, employment intermediation department workers refer clients to their colleagues, counselling specialists, who provide retraining and other counselling services. Counselling department workers perceive as a priority client's wishes and possibilities and adjust their work procedures accordingly. "So we are first trying out the short counselling where we're trying to figure out if it really makes sense or we have to start somewhere else" (R2). "... that we're not strictly going by offering employment and some sanctioning when they don't fulfill their duties, yeah, that we're trying to empathize with everyone, into his life situation, his attitude, why he acts as he acts and what then is the problem..." (R16). The worker points to another element in the individual approach to clients, which is the personality of the worker and his/her ability to empathize. An equally essential element for the effectiveness of an individual approach is the motivation of clients to be active, whether it is job search or participation in counselling or retraining that is performed by both intermediation workers as well as counselling staff. "To encourage them, that it will benefit them" (R16). "... We try to motivate them" (R15). And last but not least, cooperation between departments and joint discussions play an important role in the individual approach of workers to clients. "It is like when more heads are put together, so more things will be discovered about the person. Because he doesn't always tell the intermediation worker what he tells us. Then we find more barriers to why he can't find a job and then we can try to work on it" (R2).

When applying individual approach strategies, it is important to properly assess client's life situation and his needs. This is affected by the work experience of the labour office workers, their education and having a good understanding of the field. Equally important is the possibility of sharing experiences during joint discussions and cooperation between the labour office departments. Individual approach strategies are selected based on personal contact and conversations with the client. In addition to their wishes, ideas or expectations, the counselling department workers also take into account the clients' possibilities, their health status and the overall family and social context of the client's life. It is important for labour offices to help clients find employment, which means primarily applying an effect-oriented strategy. However, counselling department workers pointed out that a process-oriented approach will help to comprehensively assess the client's life situation. It is apparent from the workers' testimonies that the activation of the client gradually step by step is significant. The common feature of the individual approach of both groups of workers is then the overall motivation of the clients.

IMPLICATIONS FOR PRACTICE AND EDUCATION IN SOCIAL WORK

Labour office staff often faces a number of factors that may shape and influence their choice of help-strategy to this target group. In order to avoid poor practices on the part of staff when assessing clients' life situations, it is important to address the issue of education and theoretical bases of the individual client approach. Glumbíková, Vávrová, Nedělníková (2018) point out that it is necessary for workers to actively reflect their approaches towards the client and, through that, understand their actions, client's behaviour and the actions of other cooperating colleagues. Therefore, the challenges for the education of social workers appear to be the focus on development of actual competencies for reflecting on their own strategies of working with clients with regard to an individual approach. This is important especially in cases where cooperation with other colleagues is necessary to solve a client's situation. Understanding the procedures connected with working with long-term unemployed clients by organizations other than the labour office is also important. These workers operate in a different, more flexible type of organization, and their work procedures can bring a new perspective as well as new solutions for long-term unemployed clients.

With new experiences and sharing good practice comes another challenge. That can be seen in support of workers to challenge existing strategies of individual approach with regard to their functionality in practice. The demands on social work are constantly increasing to prove its usefulness, and experts must explain what they do, why they do it, and how their actions solve the problem. In each profession, it is desirable to have internal debates about what improvements should be made in certain areas. It is very important that the social workers themselves participate in this discussion, contribute their opinions and bring new ways into their work processes and thus improve their professional prestige (Potting et al., 2010). Combining opinions of various experts on the issue of individual approach and on work with long-term unemployed clients may bring new knowledge and thus enrich the theory and practice of social work.

It is important to emphasise the development of critical thinking skills and to encourage future workers to approach the practice holistically as a summary of several factors that influence the individual approach, while trying to understand the role of these factors. Future social workers in their professional training construct their own expectations of the performance of this profession (Gojová, Glumbíková, 2015). In practice, they often face new situations they have not met in their education. In such situations, they will want to continue their education or they will ask their colleagues for advice. However, it is important for future social workers to critically evaluate the new information they receive. According to Petr and Walter (2009 in Potting, 2010), it is important to educate professionals to view their work with a scientific research approach and constantly, critically evaluate their decision-making processes, resulting in transparent and legitimate practice. In the Czech Republic, however, the tradition of critical social work is rather absent, and at present, social workers have no solid ground to build on. Efforts for critical thinking can be found as a part of education at some universities, e.g. the Faculty of Social Studies of the University of Ostrava and there are a few social workers who write and implement critical social work (Janebová et al., 2015).

The results of the partial research point to the need for further education of the labour offices workers in methods of working with long-term unemployed clients and related issues for a more effective process of applying individual approach to clients. Furthermore, the intensity, the increased frequency of individual work with these clients and the enhancement of expertise could bring the solution into practice based on the workers' opinion. Last but not least, the active development of communication skills is important as communication is an integral part of the social worker's profession.

CONCLUSION

Labour office workers come into contact with diverse groups of long-term unemployed clients who, in addition to employment intermediation also expect individual counselling services focused on solving their life situation. Social work at labour offices is more typical than at the Department of Assistance in Material Need, but the results of the research also show that all the departments of the labour office are closely cooperating and the elements of social work are included in the work procedures in all departments. It is the cooperation among workers and the involvement of social service organizations that brings the possibility of a comprehensive view of clients' life situations and new ways of helping. Applying an individual approach to long-term unemployed clients is influenced by a number of factors that need to be understood and taken into account when choosing an individual approach strategy. Encouraging critical thinking in education as well as in social work practice and supporting internal discussion can be a possible way how to transfer these new approaches to cooperation as well as addressing clients' life problems into professional practice.

REFERENCES

- American Psychological Association. (2010). Ethical principles of psychologists and code of conduct. [online] [cit. 2019-06-14]. Available from: <http://www.apa.org/ethics/code/>
- Beck, P. (2012). *Dávky pomoci v hmotné nouzi a dávky pro osoby se zdravotním postižením: k 1. 5.2012: komentář, právní předpisy*. Olomouc: ANAG.
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Freibergová, Z. & Vepřková, R. (2013). *Zpráva o průběhu poradenského procesu na Úřadu práce České republiky*. Praha: Národní vzdělávací fond.
- Glumbíková, K., Vávrová, S., & Nedělníková, D. (2018). Optiky posuzování v agendě sociálně-právní ochrany dětí [Optics of Assessment in the Agenda of Social-legal Protection of Children]. *Sociální práce/Sociální práce*, 18(6), 78-88.
- Gojová, A. & Glumbíková, K. (2015). (Bezmocná) sociální práce jako zdroj zplnomocnění? [(Powerless) Social work as a Source of Empowerment?]. *Sociální práce/Sociální práce*, 15(5), 52-63.
- Hendl, J. (2012). *Kvalitativní výzkum*. Praha: Portál.
- Hrozenková, M. & Dvořáčková, D. (2013). *Sociální péče o seniory*. Praha: Grada.

- Janebová, R., Hudečková, M., Zapadlová, R. & Musilová, J. (2015). Příběhy sociálních pracovníků a pracovníků, kteří nemlčeli – Způsoby řešení dilemat. [Stories of Social Workers Who Did Not Keep Silent – Ways of Dealing with Dilemmas]. *Sociální práce/Sociální práce*, 15(2), 23-37.
- Merriam, Sharan B. (2009). *Qualitative research: a guide to design and implementation*. San Francisco: Jossey-Bass
- Methodology of Procedures in Public Employment Services (MoLSA, 2015). [online] [cit. 2019-06-14]. Available from:
https://www.mpsv.cz/files/clanky/23597/Metodika_postupu_ve_verejnych_sluzbach_zamestnanosti.pdf
- MoLSA (2019). Organizational Structure of the Labour Office of the Czech Republic. [online] [cit. 2019-06-14]. Available from: <https://portal.mpsv.cz/upcr/gr/orgstr>
- MoLSA (2019). Unemployment Statistics. [online] [cit. 2019-06-17]. Available from:
<https://portal.mpsv.cz/sz/stat/nz/qrt>
- MoLSA (2019). About the Labour Office of the Czech Republic. [online] [cit. 2019-06-14]. Available from:
<https://portal.mpsv.cz/upcr/oup>
- Oláh, M. (2016). *Sociálna práca v praxi*. Bratislava: IRIS.
- Potting, M., Sniekers, M., Lamers, C. & Reverda, N. (2010). Legitimizing social work: The practice of reflective professionals. *Journal of Social Intervention: Theory and Practice*, 19(3), 6-20.
- Schavel, M. & Oláh, M. (2010). *Sociálne poradenstvo a komunikácia*. Bratislava: Vysoká škola zdravotníctva a sociálnej práce sv. Alžbety.
- Sirovátka, T. (2005). Individuální přístup a strategie aktivace v politice na trhu práce v České republice. [Individual approach in activation policy in the Czech Republic]. *Sociální práce/Sociální práce*, 5(1), 40-55.
- Šed'ová, K., & Švaříček, R. (2013). Jak psát kvalitativně orientované výzkumné studie. Kvalita v kvalitativním výzkumu. *Pedagogická orientace*, 23(4), 478-510. DOI: <http://dx.doi.org/10.5817/PedOr2013-4-478>
- Šmajsová Buchtová, B. (2002). *Nezaměstnanost: psychologický, ekonomický a sociální problem*. Praha: Grada.
- Vybihal, V. et al. (2017). *Mzdové účetnictví 2017 – praktický průvodce*. Praha: Grada.
- Walker, I. (2013). *Výzkumné metody a statistika*. Praha: Grada.

STUDENTS' PERCEPTION ON MULTIPLE INTELLIGENCE-INSPIRED GENERAL EDUCATION CLASS

KONG Siu Ping

College of International Education, Hong Kong Baptist University
kongspl@hkbu.edu.hk

ABSTRACT

This paper aims to examine students' learning experience in Multiple Intelligence (MI)-inspired general education class. Howard Gardner's MI theory supports the diversity of students' strengths in school and empowers students to learn. It becomes a lens or perspective in the classroom that teachers can use to identify students' intelligence profiles and provide different learning experiences. Intelligence is pluralistic, and any discipline, idea, skill or concept of significance should be taught in multiple ways. Some students learn better through stories and others learn better through artwork, visual images, hands-on activities or group work. Gardner identifies seven entry points for students that reflect multiple teaching strategies: narrational, logical, quantitative, foundational (or existential), aesthetic, experiential and collaborative. The interview data reflecting the students' learning experiences as they relate to pedagogical MI dimensions were examined through students' interactions in practice in addition to the students' written self-reflections on group projects. Furthermore, case study data revealed that the incorporation of MI theory into Integrated Thematic Instruction (ITI) was a pedagogical initiative to support the goals of general education and strengthen learning opportunities for community college students with multiple intelligence.

INTRODUCTION

This qualitative case study investigated the teaching practices in a general education course at a Hong Kong community college. It was intended as a reflection on the instructional design and teaching strategies. The research questions arose from my professional interest in how a general education course should be designed and taught and how students could be helped to achieve learning outcomes. The research was conducted within the context of a Hong Kong community college that witnessed system-wide education reforms in 2012. The single unit of analysis was the students who completed a general education course during the 2013/14 academic year, which comprised the study period. Interviews with open-ended questions were used as the instruments to collect students' voices about their learning experiences in the MI-inspired general education course. Merriam (1988) remarks that the research process begins with at least "an organising image of the phenomenon" to be examined and "theory provides direction for the initial formulation of research questions through to the selection of facts and the interpretation of findings" (p.61). MI theory was adopted as curriculum framework and integrated thematic instruction as teaching approach. Three research questions were posed. First, how does a course instructor design and teach a general education course at a community college in Hong Kong? Second, how do community college students experience learning in such a course? Third, how do community college students evaluate their learning outcomes in such a course? The interview data clearly revealed that the students' learning experiences in an MI-inspired general education course included making connections to lived experience, applying the course content, learning to synthesise information and find relationships, learning to think critically, learning to solve problems and creating knowledge through group projects. Apparently, their learning experiences corresponded to four dimensions of MI theory in instructional design: designing broad-based knowledge and reality-based curriculum, using multimedia sources as teaching materials, developing cognitive skills in students and empowering students to learn. Results of college-wide teaching evaluations indicated that students gave higher ratings to their learning experiences in an MI-inspired general education course.

THE STUDY

Community college students in Hong Kong are mostly academically underprepared and may encounter difficulties in the linguistic and logical-mathematical spheres. According to MI theory, students have diverse intelligences, and once they are given chances to pick up their intelligences through pluralistic teaching and apply them in practical ways, they successfully achieve learning outcomes such as the development of critical-thinking, communication and problem-solving skills. They may even be able to apply the course content they learn to real-life situations and create important knowledge. The educational aims of MI theory are to individualise and pluralise teaching. According to Gardner (2006a), the teacher functions as "a student-curriculum broker who provides different entry points by using various sources of teaching materials" (p.141) due to the diversity of students' intelligences. Gardner (2013) posits that "instead of 'one size fits all', [educators should] learn as much as you can about each

student, and teach each person in ways that they find comfortable and learn effectively” (para. 14). In addition, Gardner believes that educators should pluralise teaching: “Teach important materials in several ways, not just one (e.g., through stories, works of art, diagrams, role play)... Also, by presenting materials in various ways” (para. 14). Gardner (2006a) identifies seven entry points for students that reflect multiple teaching strategies: narrational, logical, quantitative, foundational (or existential), aesthetic, experiential and collaborative. In light of the educational implications of MI theory, a case study of the instructional design and teaching practices in a general education course at a community college was conducted.

“Pacific-rim Asian Societies” a discipline-based course under the Division of Social Sciences introduced students to the various social, economic and cultural facets of Asian societies located in the Asia-Pacific region. Current news and developments in the Asia-Pacific region were explored and analysed to stimulate and consolidate students’ learning. The course had been offered every semester since September 2012 under the administration of the Division of Social Sciences. It was a semester-long discipline-based general education course involving three contact hours per week for thirteen weeks. It was an elective course designed mainly for non-Social Sciences majors with English as the medium of instruction. Each class consisted of no more than 32 students. The students enrolled in the course mostly majored in the film and TV, journalism, Chinese linguistics, hotel and tourism and business fields. Table 1 shows the teaching plan and learning activities corresponding to MI dimensions. As such, both individuation and pluralisation theories comprised the theoretical foundation for teaching practices in the course.

Table 1: General outline of teaching and learning activities in the course corresponding to MI theory

Multiple Intelligence	MI planning questions	Teaching materials (seven entry points)	Learning activities
Linguistic	Use spoken or written words?	Lectures, online news reports, documentaries, academic books and journal articles	Class discussion, debate
Logical-Mathematical	Bring in logic, classifications skills?	Statistical data and survey reports	Group work (in-class survey) and oral presentation
Spatial	Use visual aids, colour, art or metaphor?	Pictures, photos, diagrams and mind maps	Game and worksheets
Musical	Bring in music or a melodic framework?	Theme songs of TV dramas/films and YouTube videos	Worksheet (popular culture)
Bodily-Kinesthetic	Involve the whole body or use hands-on experience?	Awarded short films and songs produced by Hong Kong young people	Role play / drama
Interpersonal	Engage students in peer sharing, cooperative learning	Interviews (e.g. politicians, leaders of NGO, ordinary people, etc.)	Simulation (lobbying), class discussions
Intrapersonal	Evoke personal feelings or memories	TV dramas / films, news articles, social networking platform	Class discussion, worksheets
Naturalist	Incorporate ecological awareness?	On-line news reports and documentaries about Japan’s 311 earthquake in 2011	Quiz, class discussion

In terms of measuring learning outcomes, paper and pencil tests are not recommended by MI theory, as they only assess one’s linguistic and logical-mathematical intelligences. Gardner (2006a) advances the idea of ecological

validity and posits that qualitative assessment in a natural setting can be used to assess students' learning experiences. Based on the concept of ecological validity, new guidelines for group projects in the course was created which the students had more autonomy to design their research in terms of topic and presentation skills. Students had been provided with opportunities to use their intelligences, demonstrate their mastery of knowledge and apply generic skills to real-life situations.

During the 2013/14 academic year, Class A with a total of 32 students was selected as the case of interest to gain in-depth understanding of teaching practices and student learning in an MI-inspired general education course. Throughout the 13-week course, a teacher journal was used to keep the reflections, initial interpretations, confusion and hunches as a participant observer. To construct a knowledge base for the teaching practices and student learning involved in a general education course, information about the students' perceptions of their learning experiences by conducting one-on-one interviews were collected. After the examination results were released in June 2014, twelve students were invited to participate in hour-long one-on-one interviews to be held in July and August. Six students agreed to attend the interviews, which were conducted between July and August 2014 in the student study room at the college.

FINDINGS

Based on the collected interview data, six major themes of learning experiences in general education were identified in relation to four dimensions of MI theory: D1). teaching crucial concepts in the discipline through reality-based curriculum, D2). teaching in a variety of ways using multimedia resources, D3). teaching students cognitive skills that allow them to learn how to learn and D4). providing students with choices that allow them to use their intelligences in practical ways. According to these four dimensions, the interview data were categorised into six themes: T1). making connections to lived experience, T2). applying the course content to real-life situations, T3). learning to synthesise information and find relationships, T4). learning to think critically, T5). learning to solve problems and T6). creating knowledge through group projects. The interview data showed that the students were able to learn three levels of cognitive ability through self-evaluation. The learning outcomes included the abilities to L1). describe current socio-cultural issues in neighbouring countries (memorise information), L2). analyse the structure and roles of the social and cultural institutions in Asian societies (understand relationships) and L3). explain and apply sociological concepts and principles when discussing particular social issues (apply generic skills). The students' qualitative comments on their learning experiences confirmed the pedagogical initiative to incorporate MI theory into integrated thematic instruction that may be well-suited to academically underprepared students. The MI model of learning experience reflected that the six student participants acquired three levels of cognitive ability throughout the course. The interview data reflecting the students' learning experiences as they relate to the pedagogical MI dimensions were examined through teacher's observations of the students' interactions in practice during the class activities and group projects in addition to the students' written self-reflections.

DISCUSSION AND IMPLICATIONS

The most important finding of this case study is its determination of an MI model of learning experience in a general education course. The course created opportunities for students to realise their strengths and practise their intelligences in a variety of ways. The reality-based curriculum, multimedia sources and open learning environment allowed the students to activate their intelligences and use them to think about a topic in many ways. The students may go further to apply their skills to real-life situations and discover more important knowledge. The findings indicate that the group projects were appropriate learning activities that enhanced the students' higher-order thinking, empowered them to learn and gave them the choice to take ownership of their learning experiences.

Perin (2013) reminds that academically underprepared students may experience high levels of anxiety, memories of academic failure and perceptions that instructors have low expectations of community college students: "it is important to understand the emotional experience of academically underprepared students [because] academic motivation is influenced by students' goals ... sense of control ... level of interests ... recognition ... [and] quality of social interaction" (p. 90). Teachers should be independent life-long learners. As Armstrong (2009) notes, MI teachers keep their educational objectives firmly in mind and use different teaching methods that can engage students with diverse interest and intelligence in learning.

There are limitations of the case study. The findings of this study may not represent or replicate the same course taught by other teachers or other general education courses taught in the same community college or other community colleges in Hong Kong. As Yin (2014) stresses, a common concern about case studies is the "apparent

inability to generalise” their findings (p. 20). Yin (2014) accentuates the distinction between “analytic generalisation and statistical generalisation” (p. 40). The latter is not an appropriate choice for evaluating the quality of the research design, as this qualitative case study is not a “sampling unit”. Furthermore, Yin (2014) argues that “case studies, like experiments, are generalisable to theoretical propositions and not to populations or universes” (p. 21). Nevertheless, this case study involved a holistic single-case research design. Students who had completed a general education course grounded in MI theory served as the unit of analysis to represent the critical test of whether MI theory supported teaching in general education.

Although the curricular innovation indicates some positive changes, certain problems and constraints persist. General education courses are designed according to discipline, and each discipline seldom initiates collaboration across departments. Therefore, without the concerted efforts of different departments, it is hard to develop general education curriculum that adopt an interdisciplinary approach and integrate different disciplinary perspectives at both the programme and course levels. In addition, general education sharing and training sessions for teachers are rarely organised at the college. However, general education sharing sessions are held regularly at the university. The different pedagogical goals of general education may threaten the connection between curriculum and learning goals. Students are not given a chance to understand the goals of general education. Because most of them just feel as though they are being forced to take general education courses, it is unsurprising to see large numbers of passive learners in classrooms. For MI theory to be successfully implemented, corresponding changes must be made to the curriculum, pedagogy and assessment methods.

There is no one set of pedagogical guidelines. Teachers’ concepts of curriculum affect the pedagogical approach. Yeung et al. (2012) state that “[t]o develop the cognitive process of students, a teacher must infuse cognitive models in the curriculum design and in the classroom setting. The teacher should also be creative, reflective, critical, and analytical. He or she should be able to cultivate a learning climax or a thinking classroom to facilitate creative thinking in the students” (p. 42). Teachers can find it challenging to strive to innovative teaching in a structured curriculum. Yeung et al. (2012) mentions that many governments and educational administrators have found outcome-based curriculum useful for management because they involve a “scientific procedure of effective instructional planning, including setting up objectives, selecting and organising teaching content and learning experiences, and planning for tests and assessments” (p. 34). As such, teachers should be exposed to different teaching approaches and define their own pedagogical goals in connection with the general education learning outcomes of the institution or discipline. This involvement can be mutually beneficial for both faculties and students. As Perin (2013) emphasises, getting to know what the students need can help a teacher design a well-suited educational instruction method. Hunter and Michaelsen (2012) advise teachers to “not be afraid to create your own goals to fit the outcome you want to see from your students” (p. 84).

To reach more students with diverse strengths and interests, teaching and learning activities corresponding to each intelligence that seem most appropriate for communicating course content must be identified in future course development. Teachers are encouraged to file their accumulating MI teaching experience in teacher journal including the use of multimedia resources and learning activities corresponding to eight multiple intelligences. An MI instructional menu could be developed to expand pedagogical repertoires and infuse variety into lessons engaging the eight MI according to teachers’ own teaching context and learning goals. The preceding interview data, my observational notes taken during class activities and the students’ written self-reflections on group projects revealed that using MI theory as a framework for the instructional design of the course empowered the students to take ownership of their learning experiences. The results of this case study can offer faculties and administrators practical advice on general education curriculum development, teachers’ professional training and prospects of future course development.

REFERENCES

- Armstrong, T. (1999). *7 kinds of smart: Identifying and developing your multiple intelligences*. New York: PLUME.
- Armstrong, T. (2009). *Multiple intelligences in the classroom* (3rd ed.). Alexandria, Va.: Association for Supervision and Curriculum Development.
- Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences*. New York: Basic books.
- Gardner, H. (2000). *The disciplined mind*. New York: Penguin books.
- Gardner, H. (2002). *Howard Gardner in Hong Kong. School education reform series, No.5*. Hong Kong: The Chinese University of Hong Kong.
- Gardner, H. (2003). Higher education for the era of globalization. *The Psychologist*, 16(10), 520-522. Retrieved

from

<http://search.proquest.com.easyaccess1.lib.cuhk.edu.hk/docview/211863635/fulltextPDF/FEE390B875574688PQ/11?accountid=10371>

- Gardner, H. (2004). Preface. In Viens, J. & Kallenbach, S., *Multiple intelligences and adult literacy: A sourcebook for practitioners* (p. viii). New York: Teachers College Press.
- Gardner, H. (2006a). *Multiple intelligences: New horizons*. New York: Basic books.
- Gardner, H. (2006b). *Five minds for the future*. Boston, Massachusetts: Harvard Business School Press.
- Gardner, H. (2009a). Reflections on my works and those of my commentators. In Shearer, B. (Ed.), *MI at 25* (pp. 96-112). New York: Teachers College Press.
- Gardner, H. (2009b). Birth and the spreading of a “Meme”. In Chen, J.Q., Moran, S. & Gardner, H. (Eds.), *Multiple intelligences around the world* (pp. 3-16). San Francisco, CA: Jossey-Bass.
- Gardner, H. (2011). Introduction. *Multiple intelligences: The first thirty years*. Retrieved from http://howardgardner01.files.wordpress.com/2012/06/intro-frames-of-mind_30-years.pdf
- Gardner, H. (2013, October 16). ‘Multiple intelligences’ are not ‘learning styles’. *The Washington Post*. Retrieved from http://www.washingtonpost.com/blogs/answer-sheet/wp/2013/10/16/howard-gardner-multiple-intelligences-are-not-learning-styles/?tid=auto_complete
- Gardner, H. (2014, September). Tom Hoerr interviews Howard Gardner about MI. Retrieved from <http://multipleintelligencesoasis.org/tom-hoerr-interviews-howard-gardner-about-mi/>
- Hanstedt, P. R. (2012). *General education essentials: A guide for college faculty*. Hoboken, NJ, USA: Jossey-Bass.
- Merriam, S.B. (1988). *Case study research in education: A qualitative approach*. San Francisco and London: Jossey-Bass Publishers.
- Hunter, E. & Robinson, B.K. (2012). Connecting students to the social world: Using team-based learning in the sociology classroom. In Sweet, M. & Michaelsen, L.K. (Eds.), *Team-based learning in the social sciences and humanities: Group work that works to generate critical thinking and engagement* (pp. 81-97). Sterling, Virginia: Stylus.
- Perin, D. (2013). Teaching academically underprepared students in community colleges. In Levin, J.S. & Kater, S.T. (Eds.), *Understanding Community College* (pp. 87-103). New York and London: Routledge.
- Yeung, S.S.Y., Lam, J.T.S., Leung, A.W.L. & Lo, Y.C. (2012). *Curriculum change and innovation*. Hong Kong: Hong Kong University Press.
- Yin, R.K. (2014). *Case study research: design and methods* (5th ed.). LA, London, New Delhi, Singapore and Washington, DC: Sage Publications Ltd.

STUDENTS' VIEWS ON USING OF THE INSTRUCTIONAL MATERIALS AND MATH LABORATORY BY TEACHER

Sinan AYDIN

Accounting and Task Department, Kocaeli Vocational School, Kocaeli University
sinanaydin1704@yahoo.com

ABSTRACT

Today, technology has a powerful effect in every point of education. It provides some meaningful advantages instructors and students. Specially in mathematics lectures, this basic tool has many using platform with its special functions that students apply and study in his/her special work. By the help of this device, understanding of mathematical concepts, developing abilities and skills and problem-solving capacity could be more efficient than the traditional way of education. So, it has a big effect to improving of instruction and learning supplements. Many researches showed that using of technological ways as software and internet sources engages learners, gives them 3-dimentional views of the concept and motivates them to spend much time for mathematical activities.

In this study, it was presented technological sources for education and the school performance of vocational school students from different department such as business, accounting-task and marketing in Turkey in basic mathematics lecture of their curricula. For the analyses of the study, the quantitative research method is applied, and data were obtained with the measurements that socio-demographic ways of the students, academic performance level of the participants and students' perceiving for their teachers using to mathematics laboratory. According to the result of this study trainers don't fully use libraries and the mathematics laboratory of the school for their lectures.

Key words: lecture material, academic achievement, teacher performance.

INTRODUCTIN

Technology is one of the main important tools for education. It is the main helper equipment of students and teachers for learning and teaching (Drijvers, 2015; King, 2000; Lian and Ma, 2010, Neo, 2007). Not only in education life but also it has critical important in other parts of life such as economy, sport and marketing. Some technological devices have many using format in the mathematics laboratory (Meyer and Feinberg, 1992; Etcuban at al., 2019; Yesseldyke at al., 2003; Zumwalt 2001). According to many researchers, computer makes mathematical exercises' solution and geometrical presentation more practical and faster than hand on computation. By manipulating and transforming of technology with meaningful and effective strategies of mathematics teacher, learning of student and teaching of teacher could be more interesting and more modern. Teachers had been more time to spend on definitions, theorems and proofs by using computer to present exercises.

Many researches stress the effect of technology and network on teaching and learning (Liao, 1999; Ouyang, 1993; Oshinaike and Adekunmisi, 2012; Wodarz, 1994; Van Dursen and Worthen, 1995; SETDA, 2010). By using of technological materials in mathematics lectures as computer, mathematical information transforms correctly, painlessly and rapidly to students (Lee, 1990). So, these innovative alternatives present a learning environment that is self-controlled, student operated individualized usage.

For teaching and learning mathematics, computer and some other technological material are vital and indispensable. Besides the abstract concepts, mathematics has many concrete concepts that have directly relation with daily life subjects. Presentation of these concrete concepts by technological materials and learning these concepts by help of computers give big advantages to teachers and students. Adaptation of using technological material with non-technological material in teaching and learning mathematics, it gives students some practical habits as multiple way analyzing of the mathematics problems and experimentation of mathematics problems with different perspective.

METHOD

In this study by using descriptive statistical method for gathering the data, it was assessed the using of the business, accounting-task and marketing in Turkey. As an instructional media it was used math laboratory in which internet was available and educational tools for math lectures. The effect of instructional media and tool to the academic achievement of the students was searched. 62 students were selected from marketing, business and accounting – task departments as randomly. The research scale was applied to the students. The questionnaire developed by Capuno at al. (2019) was translated for the Turkish students when the researcher was applying to them if it was necessary to translate. The materials used in this study were instructional tools for math lectures and math

laboratory with internet network. The scale had tree level as always utilized (3 point), sometime utilized (2 point) and never utilized (1 point). The data was analyzed statistically with frequency, mean, pearson and percentage.

FINDINGS

Table 1. Gender of the students.

<i>Department</i>	<i>Male (n = 24)</i>		<i>Female (n = 38)</i>		<i>Total (n = 62)</i>	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Marketing	7	29.2	13	34.2	20	32.2
Accounting and Task	9	37.5	12	31.6	21	33.9
Business	8	33.3	13	34.2	21	33.9

According to table 1, the number of the students coming from different departments was the same. Also, a large portion of the students was female. Usually, the number of female students is much more than the number of male students at the social program of the vocational schools in Turkey.

Table 2. Academic Performance of the Students.

<i>Performance level</i>	<i>Point</i>	<i>Frequency</i>	<i>Percentage</i>
Perfect	90 - 100	5	8.0
Very Good	85 - 89	6	9.7
Good	80 - 84	8	13.0
Successful	75 - 79	11	17.7
Sufficient	65 - 74	17	27.4
Failure	Below 65	15	24.2

According to the analyzing of Table 2, it was clear that the academic performance points of the students were centered at the intervals “Successful” (75 -79) & 11 students, “Sufficient” (65 -74) & 17 students and “Failure” (Below 65) & 15 students. The meaning of this data is that the academic performance of these students is very low, and need be promoted. Especially, high level points of students were very low that “Perfect” (90-100) & 5 students, “Very Good” students (85-89) &6 students and “Good” level (80-84) & 8 students. So, we can say that the academic performance of the students’ needs to be enhanced to reach more better level at least good level. For this reason, some educational activities are needed to develop students’ academic achievement in mathematics lectures.

Table 3. Students’ perceiving of teachers’ using to Math Laboratory.

<i>Indicators</i>	<i>Mean</i>	<i>StDev</i>	<i>Description</i>
1. The teacher use textbooks downloaded from internet in the mathematics laboratory.	1.25	0.428	Not Satisfactory
2. The teacher use some different material from his/her textbook	1.72	0.691	Satisfactory
3. The teacher organize the classroom as a controllable way.	1.83	0.722	Satisfactory
4. The teacher sometimes makes different presentation using the material in math lab.	1.00	0.324	Not Satisfactory
5. The teacher sometime stresses the necessity of the mat laboratory.	1.97	0.853	Satisfactory

6. The teacher uses internet network to show mathematical text or math videos.	1.39	0.452	Not Satisfactory
7. The teacher tell the students to spend time in the math laboratory when they have time.	1.65	0.671	Satisfactory
8. The teacher benefits from all kind of materials which were in the math laboratory.	1.71	0.765	Satisfactory
9. The teacher helps students when they need help in the math laboratory.	1.75	0.598	Satisfactory
10. The teacher spends time when he or she has time out of the lectures.	1.41	0.396	Not Utilized

According to Table 3, we shortly say that the teacher using mathematics laboratory is not satisfactory by view of the students. Especially, teachers' using different resource for the lecture, a rich presentation to the students, video presentation or web presentation and efficiently using to mathematics laboratory is not satisfactory by mean of the students. But the teacher was sometimes changing their textbook as that they were using the lecture notes and a textbook. How every they stressed on the important of math laboratory for mathematics lectures to their students. All kinds of mathematics materials in the math laboratory were used by the teachers. And finally, students expressed that the communication between the teachers and them was sufficiently level.

Table 4. Students' perceiving of teachers' using to Mathematical Materials

<i>Indicators</i>	<i>Mean</i>	<i>StDev</i>	<i>Description</i>
1. Teacher uses many kinds of educational tools as integer models, maps for functions and tools for analytic geometry	1.48	0.394	Not Satisfactory
2. Teacher uses some geometric tools to facilitate the understanding of the geometric figures.	1.39	0.325	Not Satisfactory
3. Teacher sometimes presents some famous historical mathematician characters	1.93	0.710	Satisfactory
4. The materials that teacher uses in the mathematics lecture are compatible with the math subjects.	2.47	1.105	Satisfactory
5. Teacher uses mathematical software, internet sources and tools that are available for every student.	2.56	1.208	Much Satisfactory
6. Teacher always gives information about the instructional materials that he/she uses in mathematics lectures.	2.41	0.989	Satisfactory
7. Students are sometimes used instructional materials in the mathematics lectures to develop their hands-on abilities.	1.43	0.502	Not Satisfactory
8. The using adaptation of teacher between mathematics subject and instructional tool is good	1.56	0.726	Satisfactory
9. Teacher uses instructional material in mathematics lecture carefully and professionally.	1.62	0.812	Satisfactory
10. Teacher wants from students using instructional material at their special studies.	1.94	0.963	Satisfactory

Table 4 gives us a multifaceted situation about the students' ideas on the teacher using of instructional material in mathematics lectures. So, it is not possible to say a certain result on this subject from this table. At the items of the table that teacher's using many kinds of educational tools, his/her using geometric tools to facilitate the

understanding of the concepts and his/her giving chance to the students to use instructional materials in the mathematics lectures to develop their hands-on abilities are not satisfactory according to the students. At the items of the table that teacher's presenting some famous historical mathematician characters, his/her compatible using of mathematics materials with the math subjects, his/her giving information about the instructional materials, his/her using adaptation between mathematics subject and instructional tool, his/her using instructional material in mathematics lecture carefully and professionally and finally, his/her getting students to use instructional material at their special studies are satisfactory by the views of the students. At the item of the table that his/her using of mathematical software, internet sources and tools is much satisfactory according to the students.

RESULT

In this study, it was focused on the student's views, who are from the departments that marketing, business and accounting – task at a vocational school in Turkey, for their mathematics' teacher using of mathematics laboratory and instructional materials in math lectures with their academic performance. First, our students' mathematics academic performance levels were gathered round the points that "successful", "sufficient" and "failure". We think that the main reason of this situation is our data coming from the social programs of a vocational school and mathematics lecture is not an important subject on their working carrier. And, they are only focusing mathematics lecture to take passing grade or to graduate. Students' view on their teacher's using mathematics laboratory was not satisfactory. In this subject, the findings say that mathematics laboratory is not an absolute object for social programs of vocational schools. And finally, teacher's using educational materials was not also expected level. According the data analyze, the mean reason of this situation is mathematical subjects of the social program's curricula don't require using of instructional materials. Searching of the relation between academic performance and students' views on these subjects could give extra information about the reasons.

REFERENCES

- Capuno, R., Reyalde, H., Etcuban, J. O., Aventuna, M., Meido, G. and Demeterio, R. A. (2019). Facilitating Learning Mathematics Through the Use of Instructional Media. *International Electronic Journal of Mathematics Education*, 14(3), 677-688.
- Drijvers, Paul. (2015). Digital Technology in Mathematics Education: Why It Works (Or Doesn't). 10.1007/978-3-319-17187-6_8.
- Etcuban, J. O., Campanilla, B. S., & Horteza, A. D. (2019). The use of Mathcad in the achievement of education students in teaching College Algebra in a university. *International Electronic Journal of Mathematics Education*, 14(2), 341-351. <https://doi.org/10.29333/iejme/5718>.
- King, K. P. (2000). *Educational technology that transforms: Educators' transformational learning experiences in professional development*. Retrieved from <http://bit.ly/2Ymeehm>
- Lee, W. C. (1990). The effectiveness of computer assisted instruction and computer programming in elementary and secondary mathematics: A meta-analysis. University of Massachusetts-Amherst, Amherst.
- Liao, Y. K. (1999). Effects of hypermedia on students' achievement: A meta-analysis. *Journal of Educational Multimedia and Hypermedia*, 8(3), 255-277.
- Li, Q., & Ma, X. (2010). A meta-analysis of the effects of computer technology on school students' mathematics learning. *Educational Psychology Review*, 22(3), 215-243. <https://doi.org/10.1007/s10648-010-9125-8>.
- Neo, M. (2007). Learning with multimedia: Engaging students in constructivist learning. *International Journal of Instructional Media*, 34(2), 149-159. Retrieved from <http://bit.ly/2HfEeoU>.
- Oshinaike, A. B., & Adekunmisi, S. R. (2012). Use of multimedia for teaching in Nigerian university system: A case study of University of Ibadan. *Library Philosophy and Practice (e-journal)*, 682. Retrieved from <http://bit.ly/2E5gIcd>
- Ouyang, R. (1993). A meta-analysis: Effectiveness of computer-assisted instruction at the level of elementary education. Unpublished Dissertation, Indiana University of Pennsylvania, Indiana.
- SETDA. (2010). National educational technology trends: 2010. Retrieved August 1, 2010: www.setda.org
- Ysseldyke, J., Spicuzza, R., Kosciolk, S., Teelucksingh, E., Boys, C., & Lemkuil, A. (2003). Using a curriculum-based instructional management system to enhance math achievement in urban schools. *Journal of Education for Students Placed at Risk*, 8(2), 247-265.
- Van Dusen, L. M., & Worthen, B. R. (1995). Can intergrated instructional technology transform the classroom? *Educational Leadership*, 53(2), 28-33.
- Wodarz, N. (1994). The effects of computer usage on elementary students' attitudes, motivation and achievement in mathematics. Unpublished doctoral dissertation, Northern Arizona University.

Zumwalt, D. (2001). The effectiveness of computer aided instruction in eighth grade pre-algebra classrooms in Idaho. Unpublished doctoral dissertation, Idaho State University.

SUPPORTING HEART HEALTH

Emília MIKLOVIČOVÁ

Jarmila KRISTOVÁ

Faculty of Nursing and Professional Health Studies at the Slovak Medical University in Bratislava

Slovak Republic

emilia.miklovicova@szu.sk

jarmila.kristova@szu.sk

ABSTRACT

In 2007, the World Health Organization (WHO) adopted an Action Plan for the years 2008-2013, which confirmed that elimination of risk factors can prevent up to 80% of premature cardiovascular diseases. These are among the most common causes of death, as well as hospitalization, disability and increasing health care costs. They can also be considered as diseases in which the state of health is conditioned by the level of knowledge of the population. Nursing plays an indispensable role in promoting heart health, which in primary (general) prevention can, through education, improve awareness, change attitudes, thinking and actions, and lead the adult population to take responsibility for their health. The aim of this thesis was to determine the prevalence of selected risk factors in relation to selected demographic indicators. The respondent sample consisted of an adult population in Slovakia. A questionnaire of own design was used to determine the data. The results indicate a statistically more frequent occurrence of obesity in women, in respondents without a life partner and in respondents in their fifties and older. More frequent occurrence of smoking as a risk factor was recorded in secondary school-educated respondents, in respondents aged 31-40 and in respondents living in rural areas. The physical activity deficit was influenced by the age, education and social status of research participants. Considering these results, I propose to strengthen the nurse's educational role.

Keywords: Risk factor. Cardiovascular diseases. Nursing. Prevention.

INTRODUCTION

Cardiovascular diseases (CVDs) belong to the world's most urgent health problems. CVDs account for 53% of the total mortality in Slovakia and they are the main cause of shortening the average life expectancy of the population. According to the Report on the Health of the Population of the Slovak Republic (2015), 15.8% of people who died from CVDs were younger than 65 years. In statistical data comparing V4 countries, Slovakia shows the lowest fall in mortality rate from CVDs (26% decrease in men and 31% in women in Slovakia versus 48% in both genders in the Czech Republic, 37% in men and 42% in women in Hungary, and 41% in men and 44% in women in Poland). In the Slovak Republic, the standardized mortality rate from CVDs is 3.6 times higher than in France, 2 times higher than in Austria and 1/5 higher than in the Czech Republic (NPPZ – the National Health Promotion Program Update, 2014). According to the OECD Report – Health at a Glance from 2013, Slovakia has a shorter life expectancy at birth than most of the OECD countries. But what's much worse, the number of years we live in health after reaching 65 is the least from all EU countries. WHO data are also alarming – it is estimated that 17.9 million people died from CVDs in 2016, which represents 31% of all deaths worldwide. 85% of these deaths were caused by the heart attack or stroke.

Already in 2004, the WHO Member States approved the Global Strategy on Diet, Physical Activity and Health, committing themselves to take action at a national level to reverse the unfavourable trend of developing CVDs (www.who.int). WHO also estimates that of 1.13 billion people, only less than 1 in 5 has it under control. Unhealthy diet, physical inactivity, stress, alcohol and tobacco consumption are among the main contributors to increasing hypertension. In order to achieve the global goal of reducing hypertension by 25% by 2025, WHO and Centers for Disease Control and Prevention in the US launched the Global Hearts Initiative in 2016 to promote heart health worldwide. One of the 5 “packages” is called HEARTS and it provides a manual for identifying CVD risk factors in the primary health care. These risk factors represent a probability measure of developing CVDs and they are collectively referred to as the risk profile of the individual. Schusterová et al. (2012, p. 59), Jurkovičová (2005), Najafi Ghezeli et al. (2014), Zhu et al. (2012) claim that risk factors mutually potentiate each other. They can be categorized as non-controllable and controllable. The group of non-controllable factors includes those representing a dominant risk of developing cardiovascular diseases: genetic predisposition, age, gender and race. Controllable risk factors are characterized as determinants that may be affected by certain measures. They are also called the lifestyle factors. The group of controllable CVD risk factors includes: dyslipoproteinaemia, arterial hypertension, smoking, obesity, diabetes, insufficient physical activity and psychosocial factors. According to WHO (www.who.int), the risk of premature heart attacks can be reduced by 80% through these controllable risk factors. A healthy diet, regular physical activity, non-use of tobacco products and avoiding stress are crucial for the preventive population care.

Nursing in Heart Health Promotion

According to the results of long-term prospective and intervention studies in many countries (e.g. Framingham Heart Study, Study of Seven Countries, Lipid Search Clinics Follow-Up Study, Interheart Study and others), early identification of major risk factors and reducing their prevalence in the population lead to a significant decrease in CVD mortality. Early identification of risks and subsequent good management of the heart care are necessary for people with the risk profile (Balady et al. 2011). CVD risk reduction management includes also preventive strategies such as coordinated efforts of several sectors at a national level: health professionals, teachers, politicians, family members, food producers and retailers, advertising agencies, mass media, as well as the general public. Nursing represents a significant element of the health community. Five million nurses working in the European region play an important role in promoting the health of individuals, families and communities. They comprise the largest single group of health professionals and often provide the first contact with the health and social system (Farkašová et al. 2009). Already in 2000 at the WHO conference “Nurses and Midwives: a Force for Health” in Munich, it was stated that nurses are one of the key sources in the strategy based on principles of the primary prevention and promotion of the public health. A nurse should be prepared to support the heart health on three levels: individual, family and community. This task of nursing can be achieved through education. Nowadays, the education in nursing is conceived as a controlled and documented nurse activity. The elementary goal of nurses’ educational intention is for people to understand and acquire new information, skills, develop the right values and attitudes towards their own health and strive to achieve changes in established stereotypes through their own activities. In order to accomplish these educational goals aimed at promoting heart health, it is necessary to prepare an educational plan consisting of:

a) conditions for the implementation of education:

- environment – institutionalized (outpatient health care, family and community environment),
- duration and number of education units according to the needs of the individual, family and community,
- selection of appropriate methods – monologic, dialogic, printed word,
- form – individual and group (family, community),
- principles of education – purposefulness, progression, individual approach, activity, combination of theory with practice,
- phases of education – motivational, cognitive, performance, revision,
- communication adaptation in relation to the intellect of educated individual/people.

b) nursing diagnoses (NDx) (Nanda 2018 – 2020) (Table 1); a nurse uses a problem-focused diagnosis, risk diagnosis and health promotion diagnosis. According to Slezáková (2014), the nursing diagnosis for health promotion means that a nurse seeks for ways to improve the patient’s health or strengthens it.

Table 1: Nursing diagnoses in relation to risk factor

Nursing diagnosis	Risk factor
Ineffective health management 00078	overweight and obesity, physical inactivity, smoking, stress
Readiness for enhanced health management 00162	overweight and obesity, physical inactivity, smoking, stress
Overweight 00233	overweight and obesity
Risk for overweight 00234	overweight and obesity
Obesity 00232	overweight and obesity
Deficient knowledge 00126	overweight and obesity, physical inactivity, smoking, stress
Readiness for enhanced knowledge 00161	overweight and obesity, physical inactivity, smoking, stress
Ineffective health maintenance 00099	overweight and obesity, physical inactivity, smoking, stress
Risk-prone health behaviour 00188	overweight and obesity, physical inactivity, smoking, stress
Deficient diversional activity 00097	overweight and obesity, physical inactivity, smoking, stress
Readiness for enhanced power 00187	physical inactivity
Stress overload 00177	stress
Ineffective coping 00069	stress
Readiness for enhanced coping 00158	stress

c) education units (EU) for nursing diagnoses:

- EU1 – heart health, CVD risk factors
- EU2 – healthy diet
- EU3 – physical activity
- EU4 – elimination of smoking
- EU5 – handling stressful situations

General interventions of nurse towards education units:

- monitors heart health of the individual, family and community,
- identifies individuals with the risk profile,
- motivates to get regular preventive medical examinations,
- persuades to be responsible for one's own health,
- cooperates with a team of cardiac health professionals,
- initiates and participates in the cardiac health research.

Specific interventions/recommendations of nurse towards education units:

EDUCATE/INCREASE THE LEVEL OF KNOWLEDGE OF THE INDIVIDUAL, FAMILY AND COMMUNITY on:

- heart health and CVD risk factors,
- balanced nutrition which is crucial for a healthy heart and circulatory system (plenty of fruit and vegetable, wholemeal products, lean meat, fish and pulses, nuts, unsweetened drinks, reduced intake of salt, artificial sugars and alcohol) (WHO, 2015), split the all-day food intake into 5-6 portions: breakfast (20%), mid-morning snack (15%), lunch (25-35%), afternoon snack (10%), dinner (20%) and possibly also second dinner (0-10%) (Kamenský, Pella, 2010),
- regular physical activity (at least 30 minutes of regular physical activity per day help to maintain the cardiovascular condition; at least 60 minutes during most days of the week help to maintain healthy weight) (WHO, 2015),
- elimination of tobaccoism (the risk of heart attack and stroke starts to decline immediately after a person stops using tobacco products, and may fall by a half after one year) (WHO, 2015),
- Health Advice Line and Heart Health Promotion and Protection Helpline,
- regular and correct monitoring of blood pressure (Kamenský, Pella, 2010),
- simple techniques for coping with the stressful situations (Linden, 2005),
- meaning of the healthy life codes (0-3-5-140-5-3-0) 0: zero cigarettes per day, 3: walking 3 km per day or performing 30 minutes of the aerobic physical activity, 5: portions of fruit and vegetable per day, 140: blood pressure < 140/90 mmHg, 5: upper limit of total cholesterol in mmol/l, 3: upper limit of LDL cholesterol in blood in mmol/l, 0: absence of obesity (80 cm/94 cm and less – ideal waist size for women/men) and diabetes (European Heart Health Charter, 2007).

THE STUDY

The aim of this empirical research was to:

- map the occurrence of selected CVD risk factors – overweight and obesity, smoking, lack of physical activity and excessive stress,
- compare the incidence of selected CVD risk factors by gender, education, residence and marital status.

Sample and methods

The sample consisted of 594 respondents. To be included in the sample, they must have been at least 18 years old and willing to respond independently. 370 (62.33%) women and 224 (37.67%) men participated in the survey. The average age of the respondents was 37 years, with a range of 18-87 years. A detailed demographic structure of the sample is presented in Table 2.

We used a questionnaire as the research tool to process the defined problem. Questions were focused on obtaining the identification and anthropometric data (weight and height) about respondents, as well as the smoking status, physical activity and stress.

The overweight and obesity of the survey participants were evaluated according to the BMI, the respondent was categorized as overweight when the BMI was 25-29.9 kg/m² and obese when the BMI was 30.0 kg/m² and more. The physical activity in relation to the cardiovascular diseases was considered as effective when it reached moderate or severe intensity and was repeated 3-5 times per week, i.e. the respondent gets out of breath, his/her pulse quickens, has trouble with fluent speaking or gets sweaty.

The stress was assessed as excessive if respondents reported at least a moderate intensity of stressful situations experienced several times per week.

Table 2: Socio-demographic characteristics of respondent group

		Number	%
Summary		594	100
Gender	Women	370	62.33
	Men	224	37.67
Education	Basic	102	17.17
	Secondary	342	57.58
	University	150	25.25
Residence	City	472	79.46
	Village	122	20.54
Marital status	Single	284	48.15
	Married	204	34.34
	Without a partner	104	17.51

The survey was carried out in 2018-2019, the questionnaire return rate was 85.5%. Descriptive statistics were used to interpret the results, and the statistical significance of differences between categories was measured by the χ^2 test. We presented mainly distinct results such as differences at the level $p < 0.05$. SPSS Statistics programme was used for the statistical evaluation.

FINDINGS

We inquired about the height and weight of respondents to assess their nutrition status. The results of anthropometric data analysis and subsequent BMI calculation showed an unfavourable situation in the occurrence of overweight and obesity in the selected group of survey participants. The average BMI for men was 24.07 kg/m^2 , with a range of variation $17.35\text{-}43.21 \text{ kg/m}^2$. The average BMI for women was 23.7 kg/m^2 , with a range of variation $16.56\text{-}38.05 \text{ kg/m}^2$.

Based on these BMI values, we found out that the sample consisted of 50 respondents (8.42%) with underweight, 320 (53.87%) had a normal weight, 164 (27.61%) were overweight and 60 (10.10%) suffered from obesity.

The incidence of overweight and obesity in men and women was not the same ($p = 0.001$). While in the men's group 35.71% suffered from overweight and 6.25% from obesity, there were 22.70% overweight and 12.63% obese respondents in the women's group. We also found out that the occurrence of risk factors was increasing in proportion to the age ($p < 0.00001$). In the highest age group (more than 50 years old), there were up to 49.18% overweight and 26.23% obese people. The lowest incidence of overweight and obesity was found in the lowest age group (18-30 years old): 13.01% cases of overweight and 1.63% cases of obesity. The prevalence of overweight and obesity was seen more often in respondents who lost their life partner (divorced, widowed) than in single or married research participants (overweight 42.31%, obesity 21.15%). The occurrence of this risk factor in our sample was also influenced by the education of respondents ($p = 0.00019$), the most people with overweight were from the university-educated group (33.33%) and the highest number of obese people had a secondary education (12.86%). In case of the residence, we didn't find any statistically significant differences in the incidence of overweight and obesity ($p = 0.56$). The prevalence of overweight and obesity according to the selected demographic indicators can be seen in Figure 1.

Figure 1: Prevalence of overweight and obesity by selected demographic indicators

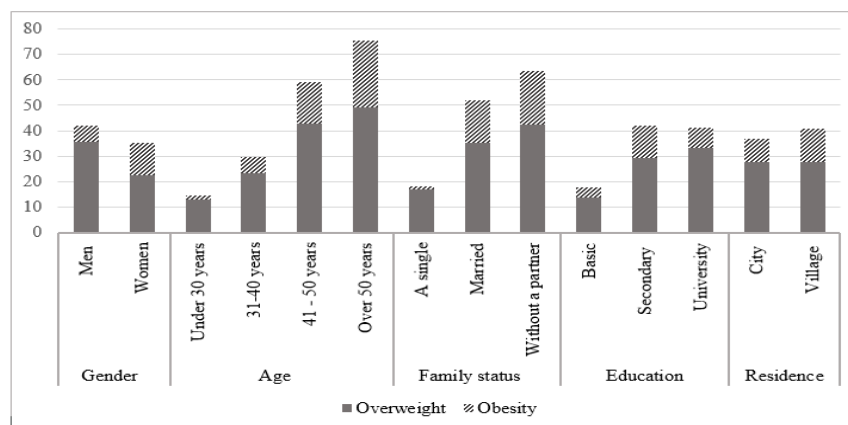


Figure 1: Prevalence of overweight and obesity by selected demographic indicators

Another controllable risk factor of the lifestyle that we focused on is the physical inactivity, i.e. insufficient physical activity. The analysis of data showed the lack of sufficient physical activity in 218 (36.69%) survey participants and the effective physical activity was proclaimed by 376 (63.31%) respondents. The insufficient physical activity was observed more often in respondents with a completed secondary education than in people with primary and university education ($p < 0.00001$). In the group of respondents with marital status “married”, there were significantly fewer people who performed the effective physical activity ($p = 0.0014$). Analyses also showed that the realization of effective physical activity decreases with the age of respondents, from 72.36% in the age of 18-30 to 47.54% in the age of 50 and more ($p = 0.000067$). In case of the gender and residence, we didn't find any statistically significant differences in performing effective physical activity (Figure 2).

Figure 2: Physical activity by selected demographic indicators

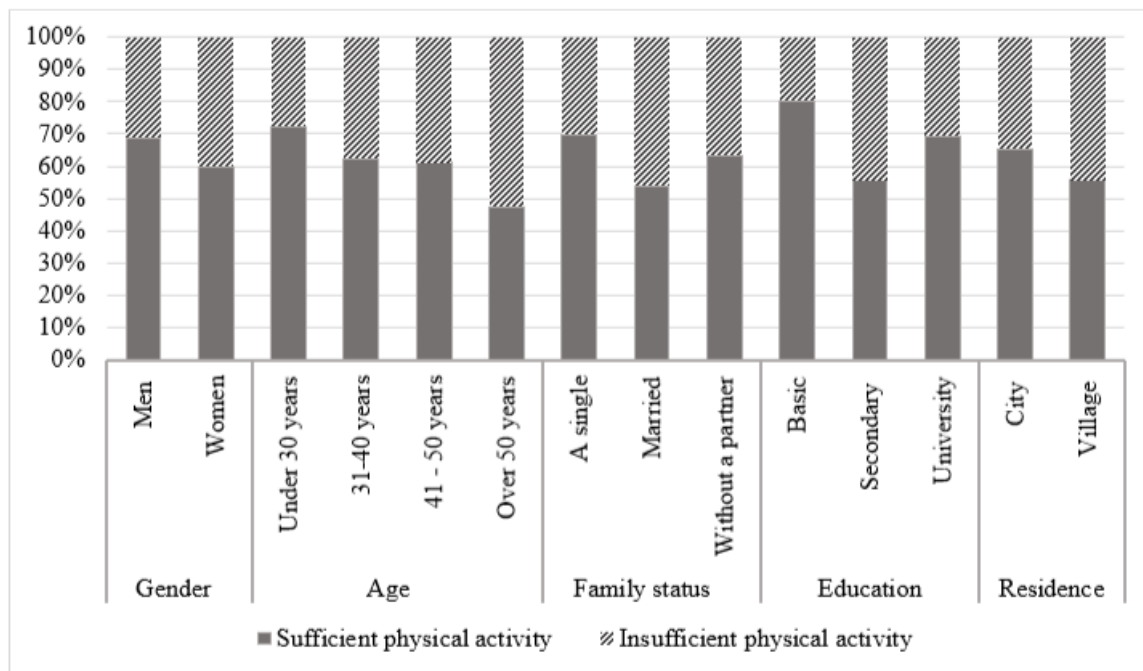


Figure 2: Physical activity by selected demographic indicators

Smoking is considered a serious society-wide problem with health, economic and social consequences. It is one of the most important preventable CVD risk factors. According to the results of our research, 33% of respondents smoke daily. The difference in smoking prevalence in men and women did not reach the statistical significance. Respondents living in rural areas smoke more (54.1%) than those living in a city (27.54%) ($p < 0.00001$). The lowest occurrence of smoking was observed among respondents with the university education ($p = 0.0014$). The incidence of smoking is increasing to the age of 40 (34.15% in the age group up to 30 years; 42.19% in the age group 31-40 years), then it decreases to 16.33% in the age group 41-50 years and in the age group 51 years and more, it raises again to 34.43% ($p = 0.00056$). Up to 25.51% of respondents have been smoking for more than 15 years. The average cigarette consumption has stabilized at 10 cigarettes per day. The prevalence of smoking based on the selected demographic indicators is shown in Figure 3.

Figure 3: Smoking by selected demographic indicators

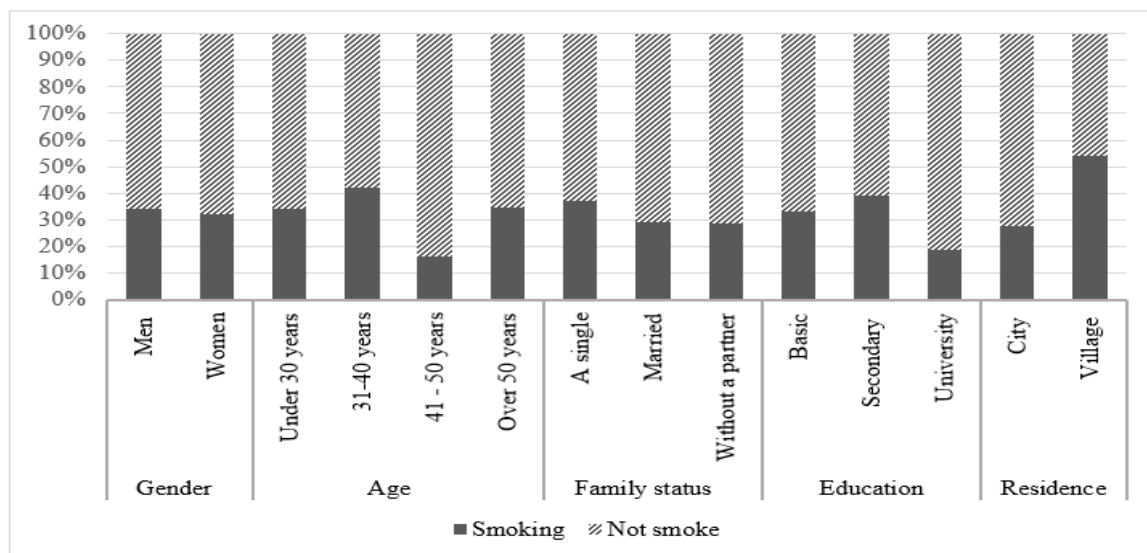


Figure 3: Smoking by selected demographic indicators

The last preventable risk factor we examined was stress. Analyses indicates that up to 65.32% of research participants feel like they're struggling with an excessive stress. Men experience stressful situations more intensively than women ($p = 0.01$). In relation to the age, the most respondents were experiencing excessive stress in the age group 31-40 years (78.13%) and the lowest occurrence was observed in the age group 51 years and more (44.26%) ($p < 0.00001$). Respondents with the primary education experienced stressful situations more often (80.39%) than people with the secondary (60.82%) and university education (65.33%) ($p = 0.0013$). Considerably more people struggling with excessive stress were in the group of respondents with the marital status "single" ($p = 0.0154$). In case of the residence, we didn't find any statistically significant differences in the impact of stressful situations (Figure 4).

Figure 4: Stress by selected demographic indicators

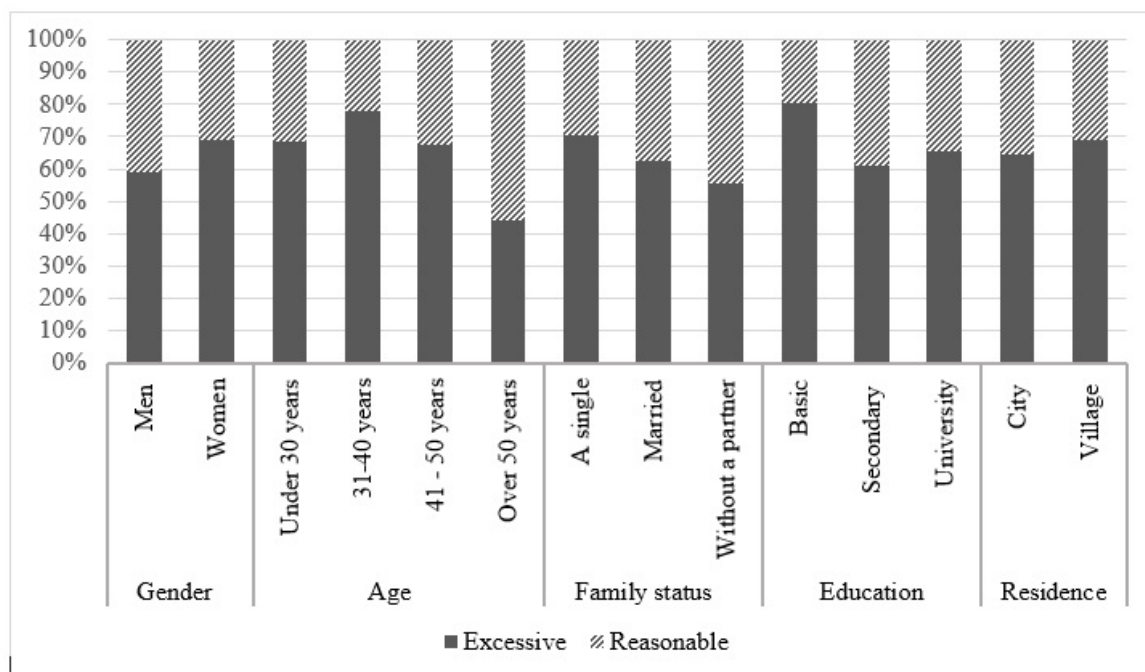


Figure 4: Stress by selected demographic indicators

DISCUSSION

For the purpose of processing the discussion, we used databases such as PubMed, ScienceDirect, Scopus, SpringerLink, Web of Science, ProQuest Central, Medvik and Slovak Medical Library when searching for sources (complete relevant articles related to this specific issue).

Among the determining requirements were: English, German, Slovak, Czech and Polish language, complete texts of articles and the time range 2000-2019. It can be concluded that several authors dealing with the same topic have come to results similar to those in our study.

In relation to the CVD risk factors overweight and obesity, we would like to mention some important global and European statistics. WHO warns about the alarming increase of overweight and obesity incidence in the world. Since 1975, the occurrence of these undesirable phenomena has almost tripled. In 2016, more than 1.9 billion of adults were overweight and 650 million of them suffered from obesity. Overall, it means there were 39% of adults with overweight and 13% with obesity (WHO, 2018). Eurostat published the incidence of overweight and obesity in the EU countries already in 2014 (last modified on 21.03.2019). The most obese population is in Malta (25.2%), Latvia (20.8%), Hungary (20.6%), Turkey and the United Kingdom (19.9% and 19.8%). The lowest incidence of overweight and obesity was observed in Romania (9.1%) and Italy (10.5%). WHO and other studies confirm a higher occurrence of obesity in women than in men. National studies of experts also point to the prevalence of obesity in population. In the research carried out by Novýsedláková and Šeliga (2017, p. 991), the body mass index higher than 29 (overweight) was found in 41.4% of the total amount of 70 respondents. They also reported a higher occurrence of obesity in women than in men (64.6% of women and 54.9% of men). Similar results were published by Adhikari (2018) in India. His analysis of data shows that 194 respondents out of 1 080 patients were overweight and also diagnosed with one of the CVDs. Results of the Carrington and Stewart study (2015, p. 355) conducted in Australia confirmed the occurrence of overweight and obesity in 370 (74%) respondents out of the total amount of 530 survey participants. Dorner (2016, p. 70) reports the prevalence of obesity in adult population in Austria between 8.3 and 19.9% in men and between 9.0 and 19.8% in women. Results of our study likewise showed that from the total amount of 594 respondents, 164 were overweight (27.61%) and 60 (10.10%) suffered from obesity. Higher incidence of obesity in women was also confirmed by our findings (women = 12.63% and men = 6.25%). The current situation needs to be solved by prompt and effective preventive interventions focused on reducing weight. Several countries are taking steps towards a national strategy to reduce the incidence of overweight and obesity. For example, Ireland has launched the obesity policy and action plan „A Healthy Weight for Ireland 2016-2025“ which includes the preparation of calorie labeling legislation and publication of the voluntary code of practice on food advertising. Since 2013, Turkey has been launching campaigns to promote health such as „Move for Health“, „Reduction Portions Size“ and „Promoting Physical Activity“ with 275 000 bicycles distributed to schools, universities, towns and non-governmental organizations (WHO, 2016).

Physical inactivity belongs to controllable CVD risk factors. In 2014, Eurostat divided the physical activity for European citizens into four categories: walking, cycling, aerobics and muscle building. Most adult Europeans unequivocally prefer walking. Although, it should be mentioned that the statistics do not indicate the type and frequency of walking. Therefore, if the walking did not last ≥ 30 minutes per day or ≥ 150 minutes per week and if it wasn't equivalent to fast walking or aerobics (www.who.int), it cannot be considered a physical activity. In Europe, most cyclists are Germans (47.1%) and Hungarians (40.4%), but only minimum can be found in Cyprus (2.2%), Malta (3.9%) and Turkey (5.3%). Aerobics is preferred (over 70%) by citizens of Austria, Germany, Luxembourg, Finland, Sweden, Norway and Iceland, while in Romania (4.9%), Turkey (7.5%) and Bulgaria (10.8%) it is the least popular among adults. The physical activity at gyms is performed the most by citizens of Island (57.3%), Finland, Sweden (52.8%, 51.6%) and Germany (48.3%). Although, this activity is unpopular with Romanian (1.9%), Turkish (3.3%) and Polish (7.7%) people. It should be noted that this kind of physical activity is effective when performed at least 2 and more days per week (WHO, 2018). If we'd generalize results by Eurostat, it can be said that Germany, Slovenia, Finland and Sweden are countries with the most intense physical activity. Citizens of Turkey, Romania and Greece are at the other end of the scale. In our study, we detected insufficient physical activity in 218 (36.39%) survey participants and effective physical activity was proclaimed by 376 (63.31%) respondents. Our findings are slightly more optimistic than results of the physical activity of Slovaks published by Eurostat in 2014, and SACHO study (2015) carried out at a national level in 2 000 respondents, which showed the effective physical activity in 25.4% of women and 37.1% of men after data analyses.

Another serious public health problem with health, economic and social consequences is smoking. The organization Our World in Data (2016) compared its incidence in the female and male population between years 2000-2016. The development map shows that approx. 30% of the female population in France, Czech Republic, Bosnia and Herzegovina, Bulgaria and Greece is smoking. The lowest smoking rate in women (about 2%) is in the North African countries, China, India, Saudi Arabia and Iran. The highest smoking incidence in men is observed in Russia (58.3%), approx. 50% in Ukraine, China, Mongolia and Morocco. The least one is in Ethiopia and Ghana. A positive indicator of these statistics is the fact that smoking had been on a downward trend in both genders from

2000 to 2016. According to results of our research, 33% of adult respondents smoke daily. Differences in the prevalence of smoking in men and women in Slovakia didn't reach the statistical significance.

The last investigated CVD risk factor was stress. Based on the results of the American Psychological Association, the Global Organization for Stress reported a high level of stress among the US citizens – 75%, and more than a half of them said it has an upward tendency. The American Institute of Stress points out that 80% of employees feel stressed out and nearly half of them needs help to cope with it. According to Regus, China has the highest increase in the workplace stress rate (86%). The report by Lifeline Australia is also alarming – 91% of Australian adults experience stress in at least one important part of their lives. Similarly, results of the Mental Health Foundation study (2018) (the UK) confirmed the occurrence of stress in 74% out of 4 619 respondents. Results of our analysis confirm these above-mentioned statistical indicators. 65.32% of the total amount of 594 survey participants evaluated their stress level as excessive. Men experience stressful situations much more intensively than women ($p = 0.01$). Coping strategies help to minimize the negative effects of stress on the body. According to Solgajová et al. (2017), supporting adaptive forms of stress management is necessary to achieve positive results in the process of promoting health, prevention and treatment of CVDs.

Based on the statistical indicators presented at a transnational and national level, also with regard to objectives of our research study, we can conclude that the controllable CVD risk factors are present in the population worldwide. Unsatisfactory results lead to a global appeal to eliminate or minimize the impact of risk factors. Smoking cessation, maintaining a healthy weight and regular aerobic physical activity belong to lifestyle areas where consultancy and support can be provided. Results of several studies confirm that nurse-led programmes tend to improve patients' lifestyle in relation to the CVD risk factors.

The study on preventive cardiologic programmes conducted in six European countries showed that more high-risk patients achieved the lifestyle goals in the nurse-coordinated group than in the control group (Wood et al., 2008). In 2009, the randomized study on cardiovascular risk management and preventive care carried out in the Netherlands showed that nurses achieved the same results as general practitioners after one year of follow-up (Voogdt-Pruis et al., 2010). A clinical trial in the US also came to results that preventive interventions of nurses working in the community can accomplish a significant control of risk factors (Allen et al., 2011). Interesting results were also brought by Cicolini et al. (2014). During the 6-month nurse's programme, the physical activity of 98 respondents increased from 5.8% to 16.6%.

In addition to improving the lifestyle and reducing the levels of risk factors, it is important that people of all ages are encouraged to recognize and adopt a healthy lifestyle. As Dimunová (2018) states, the health literacy leading to higher interest of people in their own health is one of the concepts of health promotion the nursing participates in.

CONCLUSIONS

The state of health of the population is a result of the complex combination of genetic predisposition, economic and psychosocial situation, nutrition and lifestyle, but also quality of health services, living and working environment. There is a mutual bond among these forms. It is important to mention that the existence and function of health trade unions and their implementers, including nursing, is irreplaceable at all stages of the health care.

REFERENCES

- Adhikari N.Ch.D. (2018). Prevention of heart problem using artificial intelligence. *International Journal of Artificial Intelligence and Applications (IJAIA)*, 9(2), 25-26.
- Allen J.K. et al. (2011). Community Outreach and Cardiovascular Health (COACH) Trial: a randomized, controlled trial of nurse practitioner/community health worker cardiovascular disease risk reduction in urban community health centers. *Contemporary Clinical Trials*, 32(3), 403-411.
- Balady G.J. et. al. (2011). Referral, enrollment, and delivery of cardiac rehabilitation/secondary prevention programs at clinical centers and beyond: a presidential advisory from the American Heart Association. *Circulation*, 124(25), 2951-2960.
- Carrington, M.J. & Stewart, S. (2015). Cardiovascular disease prevention via a nurse-facilitated intervention clinic in a regional setting: The Protecting Healthy Hearts Program. *European Journal of Cardiovascular Nursing*, 14(4), 352-361.
- Cicolini, G. et al. (2014). Efficacy of a nurse-led email reminder program for cardiovascular prevention risk reduction in hypertensive patients: A randomized controlled. *International Journal of Nursing Studies*, 51(6), 833-843.
- Dimunová, L. (2018). Zdravotná gramotnosť ako kľúčový determinant zdravia. *Zdravie – hybná sila ošetrovateľstva bez hraníc: zborník vedeckých prác*. Piešťany: VŠZaSP (pp.46-54).
- Dorner, T.E. (2016). Adipositas epidemiologie in Österreich. In *Wiener Medizinische Wochenschrift* (pp. 79-87). European Heart Health Charter. (2007). Recommendations for CVD prevention. [On-line]. Available: <http://www.heartcharter.org/about-charter/why.aspx>.
- Eurostat: [On-line]. Available: <https://ec.europa.eu/eurostat/data/database>.

- Farkašová, D. et al. (2009). Ošetrovateľstvo – teória. Martin: Osveta.
- Global Organization for Stress. Stress related facts and statistics. [On-line]. Available: <http://www.gostress.com/stress-facts/>
- Herdman, T.H. & Kamitsuru, S. (2017). Nursing Diagnoses : NANDA International: Definitions & Classification, 2018-2020.: 11th Edition. Thieme Medical Publishers Inc.
- Jurkovičová, J. (2005). Vieme zdravé žiť? Zdravotný stav slovenskej populácie 1999 – 2004 a prevencia kardiovaskulárnych a civilizačných ochorení. Bratislava: Univerzita Komenského.
- Kamenský, G. & Pella, D. (2010). Zdravý životný štýl. Cesta k prevencii ochorení srdca a ciev. Bratislava: AEPress.
- Linden, W. (2004). Stress management. USA: University of British Columbia.
- Mental Health Foundation. (2018). Results of the Mental Health Foundation's 2018 study. [On-line]. Available: <https://www.mentalhealth.org.uk/statistics/mental-health-statistics-stress>.
- Najafi Ghezeli, T. et al. (2014). Coronary heart disease patients transitioning to a normal life: perspectives and stages identified through a grounded theory approach. J. Clin. Nurs. 23(3-4), 571–585.
- Novýsedláková M. & Šeliga, R. (2017). Prevention of risk factors of cardiovascular Disease in nursing. CBU International Conference Proceedings 2017. 5, 988-993.
- OECD. (2013). Health at a Glance 2013: OECD Indicators, OECD Publishing. [On-line]. Available: http://dx.doi.org/10.1787/health_glance-2013-en.
- Our World in Data. (2016). Smoking around the world. [On-line]. Available: <https://ourworldindata.org/smoking>
- SACHO. (2015). Analýza trendov chronických ochorení a monitorovanie zdravotných indikátorov v kontexte 9 cieľov globálneho monitorovacieho rámca do roku 2025. WHO Prevencia a kontrola chronických neprenosných ochorení v SR: národný seminár. [On-line]. Available: http://www.hpi.sk/cdata/Documents/Analýza_trendov_CHO_a_monitorovanie_RF.pdf
- Schusterová, I. et al. (2012). Kardiológia pre pediatriu. Bratislava : Univerzita Komenského.
- Slezáková, Z. (2014). Ošetrovateľství v neurologii. Praha: Grada.
- Solajová, A. et al. (2017). Coping in patients with ischemic heart disease. Ošetrovateľstvo a pôrodná asistencia. Supplement - Scientific Reviews Section, 16(6), 45-49.
- Úrad verejného zdravotníctva SR. (2015). Správa o zdravotnom stave obyvateľstva SR za roky 2012–2014. [On-line]. Available: http://www.uvzsr.sk/docs/info/podpora/Sprava_o_zdravotnom_stave_obyvateľstva_SR_za_roky_2012_2014.pdf.
- Úrad verejného zdravotníctva SR. (2015). Aktualizácia Národného programu podpory zdravia v Slovenskej republike. [On-line]. Available: http://www.uvzsr.sk/docs/info/podpora/Aktualizacia_Narodneho_programu_podpory_zdravia_2014.pdf.
- Wood, D.A. et al. (2008). Nurse-coordinated multidisciplinary, family-based cardiovascular disease prevention programme (EUROACTION) for patients with coronary heart disease and asymptomatic individuals at high risk of cardiovascular disease: a paired, cluster-randomised controlled trial. The Lancet, 371(9629), 1999-2012.
- Voogdt-Pruis, H.R. et al. (2010). Effectiveness of nurse-delivered cardiovascular risk management in primary care: a randomised trial. Br J Gen 60(570), 40-46.
- World Health Organization. (2004). Global Strategy on Diet, Physical Activity and Health. [On-line]. Available: https://www.who.int/dietphysicalactivity/strategy/eb11344/strategy_english_web.pdf.
- Zhu, L. et al. (2012). The experiences of Chinese patients with coronary heart disease. J. Clin. Nurs. 21(3-4), 476 - 484.
- World Health Organization. (2015). What can I do to avoid a heart attack or a stroke? [On-line]. Available: <https://www.who.int/features/qa/27/en/>.
- World Health Organization. (2018). Obesity and overweight. [On-line]. Available: <https://www.who.int/en/news-room/fact-sheets/detail/obesity-and-overweight>.
- World Health Organization. (2016). Turkish Healthy Nutrition and Active Life Programme 2010–2014 and related initiatives. [On-line]. Available: <http://www.euro.who.int/en/countries/turkey/publications/turkish-healthy-nutrition-and-active-life-programme-20102014-and-related-initiatives-2016>.
- World Health Organization. (2018). Physical activity. [On-line]. Available: <https://www.who.int/news-room/fact-sheets/detail/physical-activity>.

SYNERGISTIC LEADERSHIP OF ADMINISTRATORS AFFECTING PROFESSIONAL TEACHERS UNDER THE OFFICE OF SURIN PRIMARY EDUCATIONAL SERVICE AREA 3

Sudaporn KAEWDEE
Faculty of Education, Khon Kaen University, Thailand
Sudaporn.unet@gmail.com

Arkon UNGPUANG*
Faculty of Education, Khon Kaen University, Thailand
akoeng@kku.ac.th

Wallapha AREERUT
Faculty of Education, Khon Kaen University, Thailand
wallapha@kku.ac.th

Dawruwan THAWINKARN*
Faculty of Education, Khon Kaen University, Thailand
dawtha@kku.ac.th

*Corresponding Author

ABSTRACT

The purpose of this research were to study the influence of Synergistic leadership of school administrators who influenced professional teachers under the office of SURIN Primary Educational Service Area 3. is a descriptive research. Sample group is School administrators and teachers under the office of SURIN Primary Educational Service Area 3, academic year 2018, number 345 persons. Data were collected using a 5-level estimation scale questionnaire with a reliability of 0.972. Data were analyzed by Pearson's product moment correlation coefficient. And structural equation modeling (SEM) by considering the consistency of the structural model developed with empirical data.

The results of the research found: Synergistic leadership in 4 areas:

Goals and Objectives, Work Empowerment, Job Autonomy, And Organizational Commitment. With the observed variables, being a professional teacher in 7 areas. Every pair is related in a positive direction. With statistical significance at the level of .01. The correlation coefficient is between 0.072 and 0.626. And the study of the influence of Synergistic leadership of school administrators on professional teachers With a positive influence size of 0.771, can explain 59.50 percent of professional variance

Keywords : Synergistic Leadership, Professional Teachers, Primary School

INTRODUCTION

Change is a constant in the educational administration; therefore being a school director and leading the school is difficult and consequently, most professional end up taking direction from others (Dawruwan Thawinkarn, 2018). Synergistic leadership is essential in the development of quality education to be effective and lead to work achievements and effective organization administration. There are various concepts in terms of organizational development and improvement such as the synergistic organizational development, which is the improvement of working system as well as the power reinforcement of employees within the organization (Baxter & Lisburn, 1994). The development of a school to be successful in every aspect is a challenging role of a leader. The application of synergistic administration concept to develop and improve staffs' focus on the cooperation and providing opportunities for them to work together and be part of the goal determination and plan development of the school, especially for teachers as they are directly involved in teaching and reinforcing students. Reinforcement is a process that increases capacity and effectiveness of an organization and also develops and increases the products and achievements resulting in quality development and modification of organizational cultures as well (Laschinger, Finegan & Shamane, 2001). Synergistic leadership will help increase employees' potential and confidence in success in order to achieve the goals, be responsible, determined and dedicated to their roles, build a sense of belonging to the organization including benefits from the organization's services (Hersey, Blanchard & Johnson, 2001; Ronald, 2000).

Klakovich (1996) proposed a concept about work reinforcement as a corresponding process between leader's and followers' roles, which will help achieve both individuals' and the organization's goals resulting in individuals' potential, who have been reinforced both by themselves or others. As a result, the staffs develop and improve continuously – develop a sense of stability, self-confidence, self-esteem, ability to make decisions and work to successfully achieve both of their own and the organization's goals.

It can be seen that effective synergistic leadership is essential to the school's administration because the Office of the National Education Commission (2002) has emphasized the importance of education administration to be successful. Therefore, the school's administrators should have visions, knowledge, potential, and leadership skills for success and progress of the school, which are some of the responsibilities of administrators who possess leadership to lead, facilitate, coordinate with the staffs for effective work, utilize the existing resources to their most usefulness, and to be able to lead colleagues to work together.

From the importance and literature review discussed previously, the researcher would like to study synergistic leadership of the administrators affecting professional teachers under the Office of Surin Primary Educational Service Area 3 as a guideline for schools' administrators to synergistically work to develop the organization by reinforcing teachers' and staffs' work within the organization – promote and increase work potential of the teachers and educational staffs by providing opportunities for the teachers and staffs to be part of work planning and educational management. This will also help build a sense of self-value, good relationship and cooperation within the workplace for the success of both staffs and the organization. Synergistic leadership of schools' administrators is the key to the educational quality and efficiency development in schools – to achieve goals and lead to efficient and effective organizational administration. Synergistic organizational development is an improvement of the working system according to educational reform. Also, it is a reinforcement for employees in the organization to cooperate, strengthen the organization itself and help the country resulting in successful and efficient school administration in all aspects. Moreover, it supports the teachers under the Office of Surin Primary Educational Service Area 3 to be professional, possess good and desiring qualifications for effective and successful work and make progress in their teaching career.

RESEARCH OBJECTIVE

To study the effects of synergistic leadership of the administrators affecting professional teachers under the Office of Surin Primary Educational Service Area 3.

RESEARCH METHODOLOGY

Population and Sample group: Population of the research subjects are 3,610 schools' administrators and teachers under the Office of Surin Primary Educational Service Area 3 from 233 schools. The size of the sample group is determined by using Hair et al. (2006)'s proportion criterion between the sample group and parameters 15:1, and the set deviation range is 0.01. Simple sampling is applied to select the subjects for the sample group from 23 educational management networks to represent the population. 345 subjects were selected by drawing lots according to the proportion of the administrators and teachers.

Research Tools: To collect data needed, the researcher used questionnaire asking about synergistic leadership of the administrators and professional teachers under the Office of Surin Primary Educational Service Area 3, which has been divided into three parts:

Part 1 is about the status of the sample group in a form of checking list including questions about sex, education, position, and work experiences.

Part 2 is about synergistic leadership of the schools' administrators. There are 31 questions with 5 rating scales.

Part 3 is about professional teachers. There are 47 questions with 5 rating scale.

Data Analysis

The data analysis at the level of synergistic leadership of the administrators and professional teachers is statistically calculated using average, standard deviation and linear structural equation modeling.

RESULTS

The results of the study about synergistic leadership of administrators are in four aspects: 1) setting goal and objective, 2) work empowerment, 3) independence of work responsibilities, and 4) organization commitment. The average of the overall is at a high level, and the aspect with the highest score is organization commitment followed by the independence of work responsibilities. In terms of professional teachers under the Office of Surin Primary

Educational Service Area 3, the average of the overall is at a high level in all aspects, and the aspect with the highest average value is organizational cooperation followed by the learners' potential development.

The linear structural equation modeling of the synergistic leadership of schools' administrators affecting professional teachers corresponds empirically by considering that chi-square value (χ^2) equals 51.316, the degree of freedom (df) equals 42, chi-square per degree of freedom (χ^2/df) equals 1.221, which are statistically significant to 0.153; root mean square error of approximation (RMSEA) equals 0.025; the standardized root mean square residual (SRMR) equals 0.029; the comparative fit index (CFI) equals 0.992; Tucker-Lewis index (TLI) equals 0.990. The results of the test are as presented in Table 1, 2 and 3:

Table 1 Results of the analysis of the relationship between synergistic leadership of the administrators affecting professional teachers under the Office of Surin Primary Educational Service Area 3

	X1	X2	X3	X4	Y1	Y2	Y3	Y4	Y5	Y6	Y7
X1	1										
X2	.626**	1									
X3	.573**	.535**	1								
X4	.567**	.615**	.520**	1							
Y1	.432**	.567**	.427**	.442**	1						
Y2	.332**	.490**	.340**	.413**	.536**	1					
Y3	.386**	.510**	.381**	.434**	.484**	.581**	1				
Y4	.392**	.519**	.309**	.426**	.527**	.489**	.567**	1			
Y5	.073	.123*	.072	.104	.080	.087	.173*	.122*	1		
Y6	.160**	.151**	.138*	.155**	.182**	.124*	.165**	.178**	.126*	1	
Y7	.140**	.178**	.126*	.179**	.185**	.173**	.283**	.214**	.160**	.142**	1

From table 1, when considering Pearson's product moment correlation coefficient in the overall image of observed variables in four aspects of synergistic leadership and in seven aspects of professional teachers, the correlation does not occur in every pair and had positive correlation statistically significant at 0.01 levels. The correlation coefficient ranges between 0.072 to 0.626, and the pair with the most correlation coefficient is synergistic leadership of the schools' administrators in terms of synergistic leadership in working and professional teachers in terms of synergistic goal and objective determination and work empowerment ($r = 0.626$). The pair with the lowest correlation coefficient is synergistic leadership of the schools' administrators in terms of work reinforcement and professional teachers in terms of cooperation within the organization ($r = 0.072$). There is also a relationship in a positive direction, demonstrate that the correlation variables of simple observation, all are related.

Table 2 the structural equation modeling of the synergistic leadership of administrators affecting professional teachers

Element model measurement	Element weight Matric			
	β	SE	t	R ²
Synergistic Leadership (SL)				
1. Goal and Objective Determination (X1)	0.741	0.030	25.083	0.549
2. Work Empowerment (X2)	0.844	0.023	37.150	0.713
3. Job Autonomy (X3)	0.667	0.035	19.185	0.445
4. Organizational Commitment (X4)	0.745	0.029	25.464	0.555
Professional Teachers (PT)				
1. Pedagogical Content Knowledge: PCK (Y1)	0.773	0.031	24.689	0.597
2. Instructional Design (Y2)	0.705	0.031	22.411	0.497
3. ICT (Y3)	0.797	0.030	26.829	0.635
4. Professional Development (Y4)	0.703	0.032	21.834	0.494
5. Cooperation within the Organization (Y5)	0.036	0.057	0.636	0.001
6. Develop Learners (Y6)	0.209	0.055	3.820	0.044
7. Develop a Learning and Environment (Y7)	0.252	0.054	4.686	0.064

From table 2, the structural equation modeling of the synergistic leadership of the schools' administrators affecting professional teachers correlates empirically when considering that Chi-square value (χ^2) equals 51.316; the degree of freedom value (df) equals 42; Chi-square per degree of freedom (χ^2/df) equals 1.221; the statistical significance (P) equals 0.153; the deviation value of root mean square error of approximation (RMSEA) equals 0.025; the standardized root mean square residual (SRMR) equals 0.029; the comparative fit index (CFI) equals 0.992; Tucker-Lewis index (TLI) equals 0.990.

Table 3 Size effects of synergistic leadership of administrators affecting professional teachers under the Office of Surin Primary Educational Service Area 3

Variable	Influence on the Professional Teacher (PT)		
	Size Effects	SE	t
Synergistic Leadership (SL)	0.771	0.033	23.593
R² of Professional Teacher = 0.595			
$\chi^2 = 51.316$, Df= 42, $\chi^2 / Df = 1.2218$, P-Value = 0.1535, RMSEA = 0.025, SRMR= 0.029, CFI = 0.992, TLI = 0.990			
** p < 0.01			

From table 3, the result of the analysis of the direct effect's size of the synergistic leadership of administrators affecting professional teachers under the Office of Surin Primary Educational Service Area 3 is positive, which equals 0.771 and is statistically significant at 0.01 level. It means the higher the synergistic leadership of the schools' administrators, the higher the professionalism of the teachers. The variable of the synergistic leadership of the schools' administrators explains the variation of the professional teachers at the average of 59.50%. Moreover, the modeling also correlates with the empirical data as shown in Figure 1:

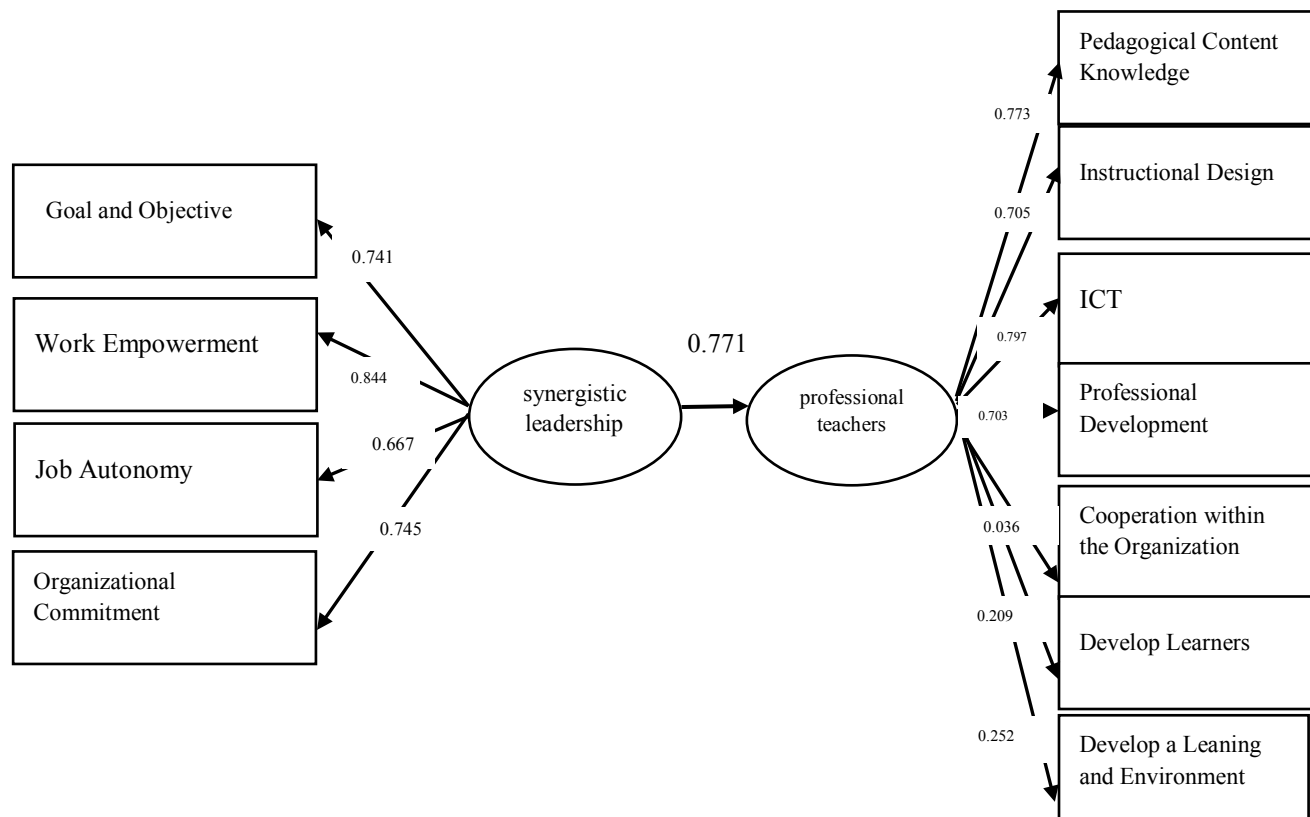


Figure 1. The structural equation model of the synergistic leadership of administrators affecting professional teachers under the Office of Surin Primary Educational Service Area 3

The results of the study about the effect of the synergistic leadership of the schools' administrators on professional teachers found that the size of the positive effect equals 0.771, which is quite statistically significantly high at 0.01 level. This shows that the higher the synergistic leadership of the schools' administrators, the higher the professionalism of the teachers. The variable of the synergistic leadership of the schools' administrators explains the variation of the professional teachers at the average of 59.50% because of the effect on professional teachers. The synergistic leadership of the schools' administrators in different aspects especially the organizational bond – the administrators have faith and will to work and also believe in their colleagues and their own potential will result in effective administration. Furthermore, the administrators will be able to build unity within the organization then later lead to a positive relationship and the effectiveness of the organization. These qualities will then bring enthusiasm, dedication, bond, and attention, which is more stable than satisfaction. Therefore, the organizational bond is the indicator of the organization's effectiveness, which corresponds to Bundhit Limpanachaipornkuk's study (2016) about compositions and indicators of the synergistic administration of basic education board. The result found that the compositions and indicators of the synergistic administration of the basic education board consist of 8 items: 1) objective determination, 2) synergistic decision making, 3) cooperation, 4) responsibility independence, 5) trust, 6) bond, 7) organizational atmosphere, and 8) synergistic evaluation and benefits. Every indicator is possibly practical from a high to the highest levels – more than 80%, suitable and corresponding to theoretical data.

SUGGESTION

Suggestions for applications

- 1) The Office of Surin Primary Educational Service Area 3 is able to apply the compositions of the professional teachers from this study as information for the development of professional teachers either in every composition or from the most important one first.
- 2) Schools can establish goals in order to achieve effective work which will be more challenging and will also affect teachers and educational staffs within the organization to realize the importance and involvement in the development to synergistically achieve those goals.

Suggestions for further study

- 1) There should be a study on the need to develop quality culture in accordance to the compositions from this study to acquire information for the practical development of professional teachers under the Office of Surin Primary Educational Service Area 3.
- 2) There should be a study and development of teachers' professions by considering specific indicators to the context and conditions in the Office of Surin Primary Educational Service Area 3 more.

REFERENCES

- Ati porn Thonglo.(2013).**Added the power of working teachers ,nurses,institutional affiliation**,Chakri,thesis.Science Ph.d.higher education branch, Chulalongkorn University.
- Baxter, S. and Lisburn, D. (1994). **Reengineering information technology success through empowerment**. USA: Prentice Hall International.
- Bazzano, D. (2011). **Teaching Skills: What 21st Century Educator Need to Learn to Survive**. Retrieved November 29,2018,from <http://www.masternewmedia.org>.
- Bryman,A. (1986). **Leadership and Organization**. London routledge and kegan paul.
- David, F. R. (1997). **Strategic Management**. New Jersey : Peason Prentice – Hall.
- Dawruwan Thawinkarn. (2018). Relationship between perceived directors' leadership and classroom quality of primary school in Thailand. **Kasetsart Journal of Social Sciences**, 39(2018) : 230-235.
- Dubrin, A.J. (1998) **Leadership** : Research Finding Practice and Skill.Boston: Houghton Minffin.
- Kemtong Sirisang. (2013). **The development of quality education**.Academic professional experiences;skills development,processing,set RTO.For the leader in education,education,discipline,8 units.Nontaburi :Sukhothai thammathirat Open University.
- Hersey,P.,Blanchard,K.H. &Johnson,D.E. (2001). **Management of organization behavior:Leading human resources**. 8th ed. Englewood Cliffs, New Jersey: Prentice-Hall.
- Joseph, E., & Winston, B. (2005). **A correlation of servant leadership, leader trust, and organizational trust**. **Leadership & Organization Development Journal**, 26(1).
- Junsukhon, K. (2011). **Relationship between Interpersonal Relationship, Being a Member of Informal Groups and Work Efficiency of Employees, Industrial and Organizational Psychology**. Bangkok: King Mongkut's University of Technology North Bangkok. (in Thai)

- Klakovich, M.D. (1996, May). **“Registered nurse empowerment : Model testing and Implication for nurse administrators,”** Journal of Nursing Administration.
- Laschinger, H. K., Finegan, J. and Shamine, J. (2001). **The impact of workplace empowerment,organizational trust on staff nurses’ work satisfaction and organizational commitment.** Journal of Health Care Management Review.
- Lashley, C. (1997). **Empowering Service Excellence : Beyond the Quick Fix.** London : Cassell.
- Nittaya Chantapassa.(2012). **Technical development with empowerment of teachers working in schools affiliated with the Office of basic education.** Master of education thesis doctoral program of graduate education, Khon Kaen University.
- Poramtee Vimonsiri. (2016). **20 National Strategies Year of the future country,** Thailand to stable, sustainable wealth. Retrieved January 20 2019, from any [http:// Pundit. Lim Chai Pornkul.](http://Pundit.LimChaiPornkul.com)(2016). Elements and Indicators of participation management of the basic education . Saint John s University Thai Journal Citation Index Centre. Retrieved February 12 from https://www.kmutt.ac.th/jif/public_html/article_detail.php?ArticleID=170862 plan.vru.ac.th/ wp-content/uploads/2016/11/ https://www.kmutt.ac.th/jif/public_html/article_detail.php?ArticleID=170862 plan.vru.ac.th/ wp-content/uploads/2016/11/ 20 –year - plan-1.pdf..
- Suwimol Wongwanid. (2005). **Research practice in classroom.** Bangkok: Chulalongkorn University print Bureau.
- Swansburg, R. M. (1996). **Management and leadership for nurse managers.** Boston: Jones and Bartlett.
- The Board of higher education. (2016). **productions to develop local teachers (2016-2029).**
- The Office National Economic and Social Development,(2016).**Conclusion.National Economic and Social Development plan No 12 (AD 2017 – 2021)**
- The Secretary of the Council for education .(2016). **Education for future reform the country stable, sustainable wealth,Thailand.Education policy.**
- The Secretary of the Council for education. (2016). **The National Education Plan Framework (2017 – 2022).**Bangkok : Secretary General of the Council of education.

THE EXAMINATION OF EXPERIENCED CHEMISTRY TEACHERS' SCIENCE PROCESS SKILLS' DEVELOPMENT THROUGH PROFESSIONAL DEVELOPMENT

Sevgi AYDIN-GÜNBATAR

Department of Mathematics and Science Education, Van Yüzüncü Yıl University, Turkey
sevgi.aydin45@hotmail.com

Elif Selcan ÖZTAY

Department of Mathematics and Science Education, Van Yüzüncü Yıl University, Turkey
selcan.kutucu@gmail.com

Ayşegül TARKIN-ÇELİKKIRAN

Department of Mathematics and Science Education, Van Yüzüncü Yıl University, Turkey
aytarkin@gmail.com

Betül EKİZ-KIRAN

Department of Mathematics and Science Education, Van Yüzüncü Yıl University, Turkey
betulekiz@gmail.com

ABSTRACT

The purpose of this study is to examine the development of 24 experienced in-service teachers' science process skills (SPSs) through a week-long professional development (PD) supported by the Scientific and Technological Research Council of Turkey (#117B302). SPSs are important part of scientists' work, scientific literacy, science education, and problem solving. In the related literature, SPS are categorized in different ways. However, we adopted the categorization that examines SPS under two main categories, namely, basic SPS and integrated SPSs. Basic SPSs are prerequisite for development of integrated ones that have also two sub-categories, namely, verification type and authentic experiment design. Through the one-week PD, participants received a training with theory and application of inquiry strategy from expert teacher educators. The participants had a chance to apply the all inquiry-based activities in a chemistry laboratory, write hypothesis, design experiments, control variables, collect data and analyze the data, and present it to other groups. To addresses the research question set, we collected data by the use of a test including 36 multiple choice items. The test was administered as pre- and post-test. The statistical analysis of the data was performed with SPSS.23 package program. We run paired sample t-test. Results revealed that there is a statistically significant change in participants' SPSs ($t=2.508$, $p < .05$). In the light of the results, we recommend that longitudinal PDs should be organized more frequently. Moreover, active participation of in-service teachers should be ensured.

Key words: In-service teacher education, science process skills, professional development.

INTRODUCTION

There is a growing need for people to learn how to reach and interpret scientific knowledge with changing and developing scientific and technological developments. Parallel with changing conditions in the world, both learning and teaching environments should be changed and modified in terms of 21st century learner skills such as science process skill, critical thinking, life skills etc. Within the scope of 21st century skill, in order to gain learners these skills, teachers should utilize instructional strategies including making brainstorming, solving a real life problem, identifying dependent/ independent variables and designing an experiment (Köseoğlu & Bayır, 2012, Finlayson, McLoughlin, Coyle, McCabe, Lovatt, & van Kampen, 2015). The main aim is enriching learners with critical thinking and inquiry skills through their education. At this point, science process skills (SPSs) have crucial role by giving a chance to students for producing scientific knowledge and utilizing nature of science by experiencing scientific knowledge.

SPSs generally refer abilities that every individual can use in all stages of daily life in order to become a scientifically literate person, to understand and use scientific knowledge and to improve the quality and adaptation of social life (Bozkurt & Olgun, 2005; Işık & Nakiboğlu, 2011; Karapınar, 2016). In order to train learners who, have those skills and knowledge, inquiry-based approaches in which learners are active participants of knowledge acquisition and solve problems faced with everyday life are necessary (Finlayson et al. 2015; Köseoğlu & Bayır, 2012). In order for teachers to implement effective science instruction including inquiry based approaches, they should improve both their knowledge and experience in terms of teaching and learning science via professional development programs (Cotabish, Dailey, Hughes, & Robinson, 2011). The main purpose of this study is to investigate the development of experienced chemistry teachers' SPSs through professional development.

This study aimed to address following research question:

- Is there any effect of professional development program on experienced teachers' science process skills?

LITERATURE REVIEW

Science Process Skills (SPS) and Categorization of SPSs

Although SPS is simply defined as skills that scientists use in their scientific studies, they are utilized by everyone in order to be scientifically literate people (Harlen, 1999). There are many definitions of SPS in the science education literature. Çepni, Ayas, Johnson and Turgut (1997) defined SPS as special skills that simplify learning science, activate students, develop students' sense of responsibility in their own learning, increase the permanency of learning, as well as teach them the research methods. In another study, Gultepe (2016) described SPS as "the tools that students use to investigate the world around them and to construct science concepts" (p.780). SPS are also considered as the thinking skills that we use to process information, to think about solving problems, and formulate conclusions (Karamustafoğlu, 2011; Tan & Temiz, 2003). Although researchers have defined SPS more or less similar in a similar way, they categorized SPS in different ways. While some researchers categorized the SPS in two groups as basic and integrated SPS (Lancour 2005, cited: Kanlı & Yağbasan, 2008), some of them grouped them under three levels, namely, basic processes, causal processes and experimental processes (Çepni et al., 1997). In this study, we adopted the first categorization that examines SPS under two main categories, namely, basic SPS and integrated SPS.

Basic SPS includes observation, classification, recording data, measurement and using numbers, time and spatial relationship, and communication skills. These skills can be used in both scientific studies and daily life. On the other hand, integrated SPS are more complex skills than basic ones and includes use of two or more basic skills together. Integrated SPS has been examined under two sub-categories, namely, verification type and authentic experiment design SPS. Verification type includes skills used in the process of performing an experiment to confirm a truth. Verification SPS are prediction, identifying variables, operational identification, and interpreting data. Authentic experiment design SPS refers the skills are the ones that are used to design an experiment and to perform the designed experiment. Authentic experiment design SPS are hypothesizing, designing experiments, changing and controlling variables, processing data and creating model, and decision making (Aslan, Ertaş-Kılıç, & Kılıç, 2016; Şen & Nakiboğlu, 2012).

Scientific Literacy, Inquiry, & SPS Development

Scientific literacy, is one of the most important outcome of science education all around the world (National Research Council, [NRC], 1996, Organisation for Economic Cooperation and Development [OECD], 2015). Scientific literacy is "knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity" (NRC, 1996, p.22). In addition to science content knowledge about concepts and principles, scientific literacy has other facets that are nature of science (NOS) understanding, how science and its products affect the society and individuals (OECD, 2007). In order to train learners who have those skills and knowledge, inquiry-based approaches in which learners are active participants of knowledge acquisition and solve problems faced with everyday life are necessary (Finlayson, McLoughlin, Coyle, McCabe, Lovatt, & van Kampen, 2015).

SPS Development

Teachers play a crucial role in learners' SPS development. A teacher who is not properly equipped with these skills would experience some difficulties to support learners' SPS development (Feyzioğlu, 2009). Therefore, science teachers are expected to be equipped with those skills and help learners develop SPS (Kruea-In et al., 2014; Özer & Özkan, 2012). Numerous studies have been conducted to examine teachers' views about learners' SPS level, and teachers' SPS sufficiency in the related literature. Many research studies have revealed that science teachers and preservice teachers' SPSs were insufficient (Aydoğdu, 2006; Emereole, 2009; Feyzioğlu, 2009; Karlı et al., 2009; Mbewe et al., 2010; Yıldırım, Atilla, Özmen, & Sözbilir, 2013).

Researchers have focused on how to develop SPS in addition to determining teachers' and learners' SPS level. However, these studies have mostly been conducted with students and pre-service teachers. Studies have revealed that especially research-based activities and laboratory works include interventions such as project-based (Abdulhanung, Supasorn & Samphao, 2011; Hernawati, Amin, Irawati, Indriwati, & Aziz, 2018; Özer & Özkan, 2012), problem-based (Saputro, Irwanto, Atun & Wilujeng, 2019), and inquiry-based trainings (e.g., Budak-Bayır,

2008; Irwanto, Saputro, Rohaeti & Prodjosantoso, 2019; Köksal & Berberoğlu, 2014; Kruea-In & Buaraphan, 2014; Nworgu & Otum, 2013; Şen & Sezen-Vekli, 2016) enhance SPS development of participants.

THE STUDY

Type of the study

In the current study mixed method design was used (Creswell & Plano Clark, 2011). Both quantitative and qualitative data were collected throughout teachers' professional development to provide validated results.

Participants

Participants of the study were 24 (12 females and 12 males) in-service chemistry teachers. They have chemistry teaching experience of at least 10 years. They were teaching chemistry subject at high schools in different cities of Turkey.

Professional Development (PD) and its Details

Although different definition of PD has been existed in the literature, PD can be defined as "an activity in which the individual and the group interact to develop better models for practice which preserve the best of professional autonomy while promoting the sort of reflective culture that encourages constructive, cooperative change" (Paechter, 1996, p.354). PDs are vital components of educational system due to changes occurred in curriculum, society, and technology (Borko, 2004).

In the PD reported in this study, a training that took 5 days were provided to 24 in-service chemistry teachers. During the 5-day PD, participant in-service teachers involved in 13 different sessions led by chemistry educators. Sessions lasted 2 to 4 hours. While some of the sessions provided theoretical knowledge about inquiry-based teaching, some of them led participants practice laboratory activities based on inquiry approach. For instance, in 'Generating Electricity from Chemical Energy' session, teachers were supposed to design a voltaic cell that produces the cheapest and highest voltage by using different variables (e.g., concentration of electrolytes, the type of the electrodes, temperature, the ratio of the concentration of electrolytes in anode and cathode cells. In this way, participants will be able to work in groups, form a hypothesis by using their pre-knowledge of the problem, design their own hypothesis by using the tools and equipment available, and predict the results of the observations.

Data source

Science process skills test developed by Burns, Okey and Wise (1985) and translated into Turkish by Geban, Askar, and Özkan, (1992) was used as data source. The SPS test includes 36 multiple-choice items. The test includes 5 sub-dimensions that are identifying variables, operationally defining, stating hypothesis, interpreting data, and designing investigations. The test has 12 items for identifying variables, 6 items for defining operationally, 9 items for stating hypothesis, 6 items for graph and interpreting data, and 3 items for designing investigations. The reliability of the Turkish version of the test was $\alpha = 0.82$.

Data Analysis

First, pre-test and post-test data were coded as true (1) or false (0), and then, the data were entered to SPSS.23 program. The participants' scores were analyzed through t-test analysis. Specifically, paired sample t-test was run. Later, the scores were examined for each SPS sub-categories.

FINDINGS

Results obtained from paired sample t-test analysis of teachers' total score from pre and post-tests are shown in Table 1.

Table 1: Results of paired sample t-test analysis of the total scores obtained from pre and post science process skills test

Measurement		X	N	S	SD	t	p
Science Process Skills Test	Pre-test	26.13	24	3.675			
	Post-test	28.00	24	4.243	23	-2.508	.020

*p<0.05

Results revealed that inquiry-based teaching activities provided through 5-day PD resulted in a significant increase in experienced chemistry teachers' SPS development ($t = 2.508$, $p < .05$) (Table 1).

Science process skills test includes 5 sub-dimensions (i.e., identifying variables, operationally defining, stating hypothesis, interpreting data, and designing investigations). Table 2 shows the participants' mean scores of pre-and post-tests for each sub-dimension.

Table 2: Pre- and post-test results of teachers for the sub-dimensions of science process skills test

The sub-dimensions	Test	X	N	S
Identifying variables	Pre-test	6.3750	24	1.95187
	Post-test	7.6667	24	2.53097
Operationally defining	Pre-test	4.6250	24	.96965
	Post-test	5.0833	24	1.05981
Stating hypothesis	Pre-test	7.0417	24	1.36666
	Post-test	7.4167	24	1.50121
Interpreting data	Pre-test	5.3333	24	.76139
	Post-test	5.2500	24	.79400
Designing investigations	Pre-test	2.7083	24	.55003
	Post-test	2.5833	24	.65386

The scores obtained from pre- and post-tests for each sub-dimension were analyzed by paired sample t-test. It was revealed that there was a significant difference between the scores. Although we received a statistically significant difference, still the mean scores were low. For the other sub-dimensions, such as the mean was 6.4 for the pre-test and 7.7 for the post-test for identifying variables. However, the means were good for designing investigations (i.e., over 3.0).

Table 3: Results of paired sample t-test analysis of teachers' pre- and post-test scores of the sub-dimensions of science process skills test

	X	S	t	p
Identifying variables	-1.29167	3.02855	-2.089	.048*
Operationally defining	-.45833	1.21509	-1.848	.078
Formulating hypothesis	-.37500	1.17260	-1.567	.131
Interpreting data	.08333	.82970	.492	.627
Designing investigations	.12500	.61237	1.000	.328

*p<0.05

When Table 3 was examined, it can be seen that there is a meaningful significant difference between teacher scores for the first sub-dimension, identifying variables, in favor of post-test ($t = -2.089$, $p < .05$).

CONCLUSIONS

First, this study is a small part of a large project that includes 5-day PD offered to 24 in-service chemistry teachers. In the light of the literature that has report the significant contribution of inquiry—based, project- and problem-based training on SPS development, the researchers designed a PD with activities based on those strategies. Desimone (2009) has stated that one of the most important features of PD is active participation of teachers. In our PD context, we paid specific attention to active participation. Through the PD participant teachers had a chance to actively participate in chemistry activities. To be clear, to support the teachers' SPS development, the teachers educators let them hypothesize, control variables, collect data, analyze data, and interpret them. As a result of the study, it can be concluded that the chemistry teachers have acquired and improved the science process skills through professional development program to some extent. Similar to previous studies (Ergul, Şimşekli, Çalış, Özdilek, Göçmençelebi, & Şanlı, 2011; Irwanto, et al., 2019; Köksal & Berberoğlu, 2014; Şen & Sezen-Vekli, 2016) the findings of this study have shown that hands-on activities incorporating inquiry based teaching to chemistry instruction improve science process skills. It is recommended that in order for the teachers to acquire SPSs, they should be directly participated in the inquiry process. However, as stated earlier, we observed low mean scores for some sub-dimensions of the test (e.g., identifying variables, stating hypothesis), which shows that in the future studies, teacher educators should pay specific attention to those sub-dimensions and provide more opportunities for teachers to identify variables and write hypothesis during PD.

Second, studies on SPS development in the related literature have been focused on pre-service teachers' (Irwanto et al., 2019; Saputro et al., 2019; Şen & Sezen-Vekli, 2016) or K-12 learners SPS development (Ergül, Şimşekli, Çalış, Özdilek, Göçmençelebi, & Şanlı, 2011; Kanlı & Yağbasan, 2008). Hence, more studies should be focused

on in-service and experienced teachers' SPS development and how they incorporate SPS into their laboratory work.

REFERENCES

- Abdulhanung, D., Supasorn, S., & Samphao, A. (2011). Promoting Students' Scientific Methods and Comprehension of Acid-Base Using Cooperative Learning Accompanied with Science Projects. *Journal of Srinakharinwirot University (Sci. & Tech.)*, 3(1), 54-62.
- Aslan, S., Ertaş-Kılıç, H., & Kılıç, D. (2016). *Bilimsel Süreç Becerileri*. Ankara: Pegem Akademi.
- Aydoğdu, B. (2006). *İlköğretim fen ve teknoloji dersinde bilimsel süreç becerilerini etkileyen değişkenlerin belirlenmesi*. Yayınlanmamış yüksek lisans tezi. İzmir: Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitüsü.
- Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher*, 33(8), 3-15.
- Budak-Bayır, E. (2008). *Fen Müfredatlarındaki Yeni Yönelimler Işığında Öğretmen Eğitimi: Sorgulayıcı-Araştırma Odaklı Kimya Öğretimi*. Yayınlanmamış doktora tezi. Ankara: Gazi Üniversitesi Eğitim Bilimleri Enstitüsü.
- Burns, J. C., Okey, J. R. & Wise, K. C. (1985). Development of an integrated process skill test: TIPS II. *Journal of Research in Science Teaching*, 22(2), 169-177.
- Creswell J. W. & Plano Clark V. L., (2011). *Designing and conducting mixed methods research*, 2nd ed. Thousand Oaks, CA: Sage.
- Çepni, S., Ayas, A., Johnson, D., Turgut, F. (1997). *Fizik öğretimi*. Ankara: YÖK/Dünya Bankası Milli Eğitimi Geliştirme Projesi Hizmet Öncesi Öğretmen Eğitimi.
- Desimone, L. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181-199. Doi.10.3102/0013189X08331140
- Emereole, H. U. (2009). Learners' and teachers' conceptual understanding of science processes: The case of Botswana. *International Journal of Science and Mathematics Education*, 7, 1033-1056.
- Ergül, R., Şimşekli, Y., Çalış, S., Özdelek, Z., Göçmençelebi, Ş., & Şanlı, M. (2011). The effects of inquiry-based science teaching on elementary school students' science process skills and science attitudes. *Bulgarian Journal of Science & Education Policy*, 5(1), 48-68.
- Feyzioğlu, B. (2009). An investigation of the relationship between science process skills with efficient laboratory use and science achievement in chemistry education. *Journal of Turkish Science Education*, 6(3), 114-132.
- Finlayson, O., McLoughlin, E., Coyle, E., McCabe, D., Lovatt, J., & van Kampen, P. (2015). *SAILS inquiry and assessment units*. Eğiten Kitap Yayıncılık: Ankara.
- Geban, Ö., Aşkar, P. & Özkan, D. (1992). Effects of computer simulations and problem-solving approaches on high school students. *Journal of Educational Research*, 86(1), 5-10.
- Gultepe, N. (2016). High School Science Teachers' Views on Science Process Skills. *International Journal of Environmental and Science Education*, 11(5), 779-800.
- Harlen, W. (1999). Purposes and procedures for assessing science process skills. *Assessment in Education: Principles, Policy & Practice*, 6(1), 129-144.
- Hernawati, D., Amin, M., Irawati, M., Indriwati, S., & Aziz, M. (2018). Integration of Project Activity to Enhance the Scientific Process Skill and Self-Efficacy in Zoology of Vertebrate Teaching and Learning. *EURASIA Journal of Mathematics, Science and Technology Education*, 14(6), 2475-2485.
- Irwanto, Saputro, A. D., Rohaeti, E., Prodjosantoso, A. K. (2019). Using Inquiry-Based Laboratory Instruction to Improve Critical Thinking and Scientific Process Skills among Preservice Elementary Teachers. *Eurasian Journal of Educational Research*, 19(80), 151-170.
- Kanlı, U., & Yağbasan, R. (2008). 7E modeli merkezli laboratuvar yaklaşımının öğrencilerin bilimsel süreç becerilerini geliştirmedeki yeterliliği. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi*, 28(1), 91-125.
- Karamustafaoğlu, S. (2011). Improving the science process skills ability of science teachers using I diagrams, *Eurasian Journal of Physics and Chemistry Education*, 3(1), 26-38.
- Karlı, F., Şahin, Ç., Ayas, A., (2009). Determining science teachers' ideas about the science process skills: A case study. *Procedia Social and Behavioral Sciences*, 1, 890-895
- Koksal, E. A., & Berberoglu, G. (2014). The Effect of Guided-Inquiry Instruction on 6th Grade Turkish Students' Achievement, Science Process Skills, and Attitudes toward Science. *International Journal of Science Education*, 36, 66-78.
- Kruea-In, N., & Buaraphan, K. (2014). Enhancing lower secondary school science teachers' science process skills and laboratory lesson preparation through a social constructivist-based professional development workshop. *The International Journal of Science, Mathematics, and Technology Learning*, 20(2), 43-56.

- Mbewe, S., Chabalengula, V. M., & Mumba, F. (2010). Preservice teachers' familiarity, interest and conceptual understanding of science process skills. *Problems of Education in the 21st Century*, 22(22), 76-86.
- National Research Council (1996). *National Science Education Standards*. Washington, DC: National Academy Press.
- Nworgu, L. N., & Otum, V. V. (2013). Effect of guided inquiry with analogy instructional strategy on students acquisition of science process skills. *Journal Education and Practice* 4(27), 35- 40.
- Organisation for Economic Cooperation and Development. (2007). Assessing scientific, reading and mathematical literacy: A framework for PISA 2006. Retrieved November 2008 from <http://www.oecd.org/dataoecd/63/35/37464175.pdf>
- Özer, D. Z., & Özkan, M. (2012). Proje tabanlı öğretimin fen bilgisi öğretmen adaylarının bilimsel süreç becerileri üzerine etkisi. *Türk Fen Eğitimi Dergisi*, 9(3), 119-130.
- Paechter, C. (1996). What do we mean by professional development? *Research in Post -Compulsory Education*, 1(3), 345-355. DOI: 10.1080/1359674960010305
- PISA, O. D. (2015). Science framework. 2015-3-14]. <http://www.oecd.org/pisa/pisaproducts/Draft%20PISA%202015%20Science%20Framework%20.Pdf>
- Saputro, A. D., Irwanto, I., Atun, S., & Wilujeng, I. (2019). The Impact of Problem Solving Instruction on Academic Achievement and Science Process Skills among Prospective Elementary Teachers. *Elementary Education Online*, 18(2), 496-507.
- Sen, C., & Sezen-Vekli, G. (2016). The Impact of Inquiry Based Instruction on Science Process Skills and Self-Efficacy Perceptions of Pre-Service Science Teachers at a University Level Biology Laboratory. *Universal Journal of Educational Research*, 4(3), 603-612.
- Şen, A. Z. & Nakiboğlu, C. (2012). Ortaöğretim kimya ders kitaplarının bilimsel süreç becerileri açısından incelenmesi. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 13(3), 47-65.
- Tan, M. & Temiz, B., K. (2003). Fen öğretiminde bilimsel süreç becerilerinin yeri ve önemi (Place and importance of science process skills in science teaching). *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 1(13), 89-101.
- Yıldırım, M., Atilla, M. E., Özmen, H., & Sözbilir, M. (2013). Fen bilimleri öğretmen adaylarının bilimsel süreç becerilerinin geliştirilmesi hakkındaki görüşleri [The preservice science teachers' views about the developing science process skills]. *Mersin University Journal of the Faculty of Education*, 9(3), 27-40.

THE FAIRY TALE AS A MEANS TO REINFORCE LEARNING IN MATHEMATICS: A DIDACTIC EXPERIMENT AT ITALIAN PRIMARY SCHOOL LEVEL

Claudia Caprin

Department of Psychology, University of Milano-Bicocca, Milan, Italy,

Daniela Leder

Primary School “G. Foschiatti”, “Istituto Comprensivo Valmaura”, Trieste, Italy

Marina Rocco

“Nucleo di Ricerca Didattica”, Department of Mathematics and Earth Science, University of Trieste, Trieste, Italy

Verena Zudini

“Nucleo di Ricerca Didattica”, Department of Mathematics and Earth Science, University of Trieste, Trieste, Italy
vzudini@units.it

ABSTRACT

Situations for informal learning have a recognized role in the psychology of development and education as well as in general and disciplinary didactics - in this case mathematics education. Our contribution, supported by results from informal learning in laboratory experiences carried out in the project “La matematica dei ragazzi”, shows the efficacy of narrative elements for reinforcing learning in mathematics at primary school level.

INTRODUCTION

THE ROLE OF NARRATIVE ELEMENTS IN HUMANS

The realm of narration is characterized by imagination yet humans spend an extraordinary amount of their life in this “virtual” kingdom telling and/or listening to stories, reading them, watching films and playing with video games (Carroll, 2018; Gottschall, 2014).

In recent decades, increasing numbers of scholars from diverse fields, such as psychology, sociology, biology and - principally - pedagogy, have studied that special and mysterious human characteristic which is now commonly called “story-telling” (Bruner, 1992; Gottschall, 2014).

The tendency to create imaginary scenarios through narrating stories is, indeed, ingrained in every culture and human society, distinguishing itself as universal and innate. It is still subject for debate as to what function it has in the survival of our species and in what way it is therefore adaptive (Gottschall, 2014; Carroll, 2018). Surely, as extensively argued in Bruner (1992), it is just this expression of narrative thought by *Homo sapiens sapiens* that is able to elaborate concepts, thoughts and memories differently from paradigmatic logical-abstract thought which is used in practical and scientific reasoning. According to Bruner (1992), narrative thought, through the creation of collective myths, allows for not just a cultural transmission of values, knowledge and personal experiences (see Valsiner, 2017), but also - and above all - the structuring of our personal identity, an understanding of the world of interpersonal relationships and of social mores, including the meaning of our existence (see also Breen et al., 2017).

THE ROLE OF NARRATIVE ELEMENTS IN THE CHILD

The child’s mind is, by its very nature, attracted by the imaginary world and is predisposed to creating alternative realities: as strikingly stated by Gottschall, “children are creatures who are closely bound to stories... their life is immersed in ‘let’s pretend that...’” (2014, p. 24). Indeed, the ability to create games of make-believe with adults, but above all with their peers, emerges at around two years old (Piaget & Inhelder, 1970; Harris, 2008) and characterises all the years of childhood.

The fairy tale is a literary genre specifically conceived for children. Through fairy tales, children are taught about the main difficulties in life, especially those linked to internal processes of psychological maturing, which, through identification with the main characters, are somehow elaborated in an indirect way (Bettelheim, 1977).

The fairy tale, communicating through metaphor, has a high value and therapeutic impact with regard to the chance to interpret and thus understand one’s own emotional state and the difficulties to be faced (De Stasio, 2004; Mills & Crowley, 1988).

In recent years, narration has been increasingly used for teaching purposes not just to promote learning a language (lexis, grammar), as has traditionally been the case, but also to introduce basic scientific notions (Arya & Maul, 2012).

In particular, there are interesting results from experiments using fairy tales to facilitate the acquisition of mathematical concepts both at pre-school level and in the first years of school (see, for example, Andersone, 2009; Razzini, 2016). Analyzing four well-known fairy tales, Andersone (2009), in particular, identifies the explication of various mathematical concepts and concludes that fairy tales are an ideal means by which to facilitate the acquisition of basic notions of arithmetic, algebra, geometry, number theory and probability.

Our experimentation, which will be illustrated later in this contribution, deals instead with the use of the fairy tale as a means to go over and to reinforce mathematical notions. A pathway through geometry will be given as a specific example, where narration is used as an instrument of consolidation at the end of an activity, and not, as usually happens, at its beginning, to introduce a subject or to act as a setting.

THE DIDACTIC EXPERIENCES

THE RESEARCH GROUP

The experiences illustrated here arose in the context of our research group (“Nucleo di Ricerca in Didattica della matematica”, Department of Mathematics and Earth Science, University of Trieste), made up of a diverse group of teachers from nursery school, primary school, middle school and high school (teaching children and teenagers ranging from 3 to 19 years old) and led by university lecturers involved in multiple activities aimed at promoting and improving the teaching of mathematics at varying school levels.

In the periodic group meetings, difficulties, gaps and misconceptions are highlighted and we endeavour to find together “prevention” and “solution” strategies to them. Our activity is also “open to others” with the organization of events to promote mathematics among children and teenagers, and to offer initial or in-service training for teachers; among these, should be remembered, in particular, the “La matematica dei ragazzi” event, which has been held every two years since 1996 and in 2018 reached its 12th edition (see Leder, Scheriani & Zuccheri, 2002; Zuccheri & Zudini, 2014).

THE “LA MATEMATICA DEI RAGAZZI” EVENT

The event is held over two days, where a dozen classes, from nursery school up to high school, receive visiting classes (not necessarily of the same age) to whom they present a laboratory based on what they have studied throughout the year. There is no common theme to the laboratories, rather the teachers of each of the host classes are free to choose, whether by reworking familiar subjects or favouring an unusual and less traditional approach.

This has a great impact on the participating students, and, through the use of engaging and less well-known aspects of the subject (no longer only of the “world” of school), contributes to altering positively and enlarging the idea that many of them previously had of mathematics. The strength of this experimentation is that the learners choose how to handle the subject, rendering it accessible to the younger visitors yet attractive to the older ones.

FAIRY TALES AND STORIES AS LEARNING SUPPORT

Both in the preparatory stage and during the “La matematica dei ragazzi” event, stories have been used as a learning support and consolidation tool at Italian primary school level (5 years: from first to fifth year, with children aged 6-11 years).

The role of narration is fundamental particularly with younger children. The Italian primary school classes considered here (Primary School “G. Foschiatti” of Trieste) decided to greet the visitors with an introductory story: this story was conceived as a setting and memory support with regard to the specific elements to be dealt with in the laboratory. Thus, for the visitors, this was the point of departure, while for the class holding the laboratory it acted as a summary of the same laboratory. Our experience shows that such a procedure seems no longer to be felt when the pupils reach the fifth class. Each story was written directly by the children of a specific class: what is important is the role the story fulfils, not its plot.

A PATHWAY IN MATHEMATICS AMONG FAIRY TALES AND STORIES

Below we include a table of fairy tales proposed in the “La matematica dei ragazzi” event (from 2010 to 2018), ordered according to the age of the pupils and indicating the laboratory presented and the mathematical elements involved.

School level	Year	Title of the laboratory	Contents of the laboratory	Title of the fairy tale
First class	2016	“Alla ricerca del quadratino... nel quaderno!”	Point, lines Even, odd	“Il pupazzo di neve e il bruco”
Second class	2012	“Geo-gio 2: La fiaba di Rombomante. La geometria di un’avventura fantastica”	Polygons and non-polygons	“La fiaba di Rombomante”
Third class	2018	“Qual è la festa?”	Classifications	“La fiaba delle ‘Feste’”
Fourth class	2014	“Aritmetica e orologi”	Modular arithmetic	“La scuola Formulis de la Gioia”

Figure 1. Experiences presented at the “La matematica dei ragazzi” event

2.5 AN EXAMPLE: “LA FIABA DI ROMBOMANTE”



Figure 2. “La fiaba di Rombomante” (Figure and photo by D. Leder)

The fairy tale, created in 2012 by second-class pupils, was as follows:

Once upon a time, a long time ago, in a far-off wood, lived a wizard called “Rombomante” (Rhombusond). His father “Rombo” (Rhombus) and his mother “Diamante” (Diamond) had called him by this name because he looked like both of them.

He was good even if he was talkative and grumbled about everything. He also had some amazing powers: he could fly, rotate very fast on himself like a top and become invisible, he never made mistakes with magic potions and was very strong. He loved playing with kites: on windy days, he went out on the big lawn in front of his house and had great fun. For this reason, he always kept a kite stored behind the garden wall.

His house had a peculiar roof built in such a way that three of its sides were equal; the windows, which had the shape of many quadrilaterals, were magic: they let in the light, but they didn’t let you see inside. In order to have light in the evening, Rhombusond didn’t use ordinary lamps, but lamps which floated in the air and followed him like little dogs.

One day, as he was walking in the triangle wood, Rhombusond met a Rectangle accompanied by his servant, an old, lame Triangle. Rhombusond grumbled: “Now I’m going to have to listen to him! And I wanted to go and have a rest!”.

The Rectangle really wanted to talk: he was desperate, once he was “Prince Askewangle” from the Kingdom of Clepsydra. He had been transformed by the Witch of Shapes because he wanted to win the hand of Princess No Name. He wanted to give her a special skirt, made of material from the first rays of the sun interwoven with the sunset’s rays, encrusted with dewdrops. Alas, only the Witch had such a skirt! Askewangle had tried to ask her politely, but he had been turned into a rectangle.

If he didn’t return to how he’d been before, Princess No Name would be without a bridegroom!

Just at that moment, the Witch appeared and, without more ado, said: “Salacazum, one, one, one, parababum, turn into a quadratum!” and changed him into a square.

Rhombusond couldn’t move fast any more, let alone fly. He couldn’t even talk.

The Witch went away. Rhombusond tried to get up, but tripped over the roots of a tree, then, with the help of the lame Triangle, he made it, little by little, back to his garden at home. Once there, he got his kite and, by the power of thought, turned it into an arrow and flung it in the direction of the Witch.

The arrow flew faster than the wind for kilometres and kilometres, above the woods, the sea, the cities, until it arrived at the Witch’s retreat and struck her. From that moment, all the spells that the Witch had cast disappeared: even Rhombusond and Askewangle went back to how they had been before. Rhombusond went at last to have a rest,

Askewangle married Princess No Name and the servant returned to his home where he could hug his equal-legged children, Isosceles.

And the Witch? A few days later, Rhomusond reached her at her retreat and made her explain why she was so bad; the Witch told him that from when she was little she had always been teased because she was different: she had neither vertices nor sides, but only curved lines... so she had thought that nobody would ever be able to love her.

Rhomusond, as talkative as ever, told her that he too, when he was little, had had problems: he had a good four equal sides! They used to tease him, calling him “four sides”. Then, as he grew up, he understood that it was not he who should feel strange, but the others who were wrong: we are all different and we all have our own characteristics.

In the end, Rhomusond invited the Witch to a party along with all the inhabitants of the Kingdom of Clepsydra. From that time on, Rhomusond and the Witch have become inseparable and, just imagine... their children are beautiful non-polygons who are a bit like daddy and a bit like mummy!

SOME REMARKS

This is about a story that grew out of a class project on geometry, using straws to construct polygons. The children began working with the straws and then, when the teacher saw that they had could handle wire, straws and scissors, they had fun giving a name to the forms that they had constructed; thus, the characters and/or the objects were created and then the question arose as to what was “special” about them - what their characteristics were - in such a way as to construct them correctly but also to give them a consistent role in the story.

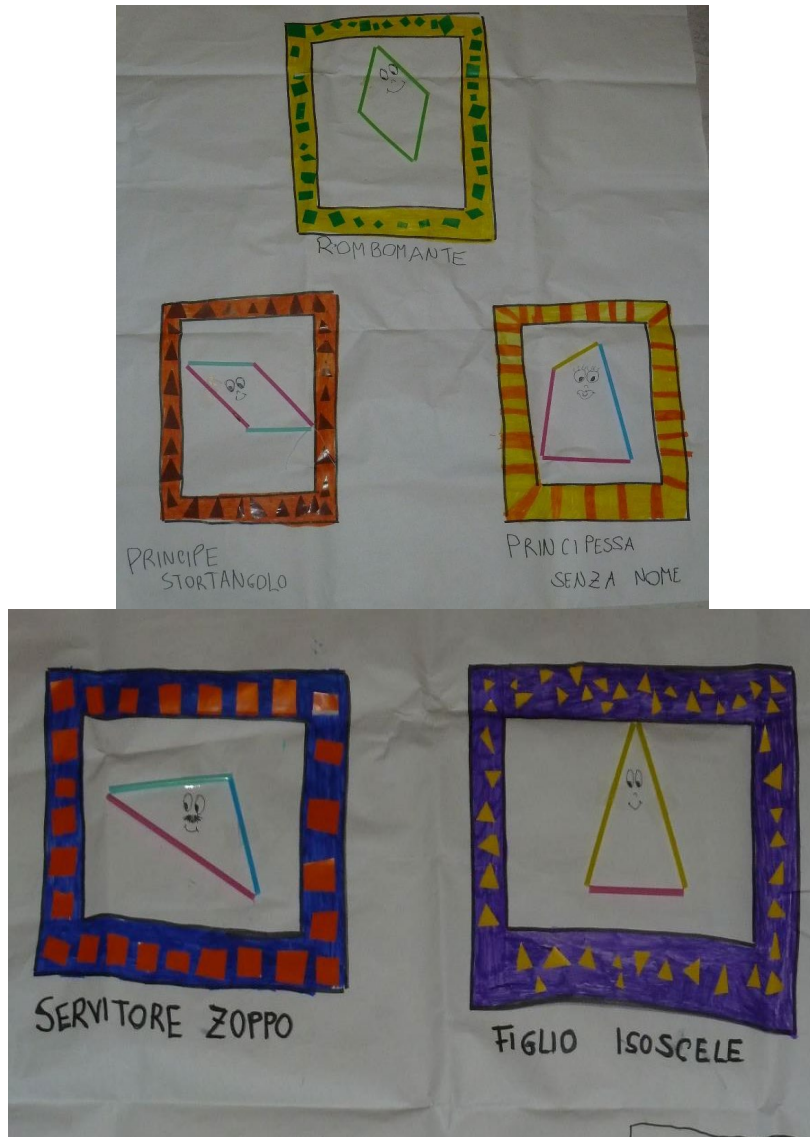


Figure 3. Characters of the fairy tale (Figures and photos by D. Leder)

A few names of the characters or the objects in the story were suggested (for example, the lame servant), others were thought up by the children. The names given do not correspond to the “names” of the polygons in geometry: the aim, indeed, was recognition of the characteristics, while the acquisition of the name comes later. When constructing the text, the significance of the name was also kept in mind (for example, rhombus which means top: see lines in the story).

When re-presenting the story, since some children already knew the names of the geometrical shapes and identified them correctly (for example, the trapezium, which in the earlier school cycle had not been named), it was easy to share them with the others, so they were introduced “early”.

The logic followed is that: first it is important to identify (the name identifies bringing with itself all the characteristics), then to communicate.

The correspondence between characters and shapes are as follows:

- Roof: isosceles trapezium with the shorter base equal to the sides
- Skirt: isosceles trapezium with the longer base equal to the sides
- Lamp: isosceles trapezium
- Quadriver: quadrilateral with all sides different
- Rhombusond: rhombus (which can turn into square)
- Princess: quadrilateral with two consecutive equal sides
- Kite: deltoid (it turns into clepsydra and into arrow if it is a concave polygon)
- Askewangle: parallelogram (which becomes rectangle)
- Lame Triangle: scalene triangle
- Equal-legged Triangle: isosceles triangle

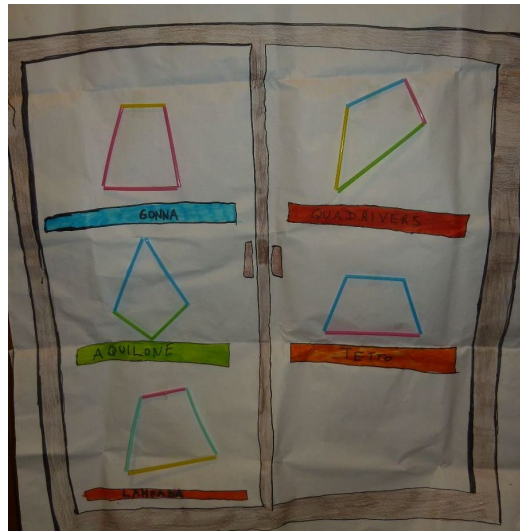


Figure 4. Objects of the fairy tale (Figures and photos by D. Leder)

The pupils of the class were also part of a research project (Matofi Azad, 2014), which aimed to illustrate the effects of the laboratory education on learning in the field of geometry, with particular reference to the relationship between the study of geometry and the students' skills. There were both experimental classes (including the class which had created Rhombusond) and control classes involved in the research.

The conclusions corroborated other studies which assert the greater efficacy of a teaching approach based on the active participation of the pupils in the process of building knowledge (see Boaler, 2002). Also, the pupils of the traditional classes learnt to name the geometric shapes, but the teaching style adopted in the experimental model was more

efficient in that the geometric concepts in the minds of the pupils were (well-)formed and able to be potentially exploited in various situations, thus developing further their skills.

Keeping these positive results in mind, we continued working with this method dealing both with topics other than geometry (see Figure 1) and also reproducing a part of the pathway. For example, in the school year 2018/2019, working as always with the straws and naming the shapes, the pupils of another second class (Primary School “G. Foschiatti” of Trieste) decided that “Dive”, “Stra” and “Ugu” were the names of the triangles, respectively the scalene triangle (“Dive” = different sides), the isosceles triangle (“Stra” because it was strange, and the children did not know exactly what name to give it) and the equilateral triangle. The quadrilaterals, instead, became:

- Lamp: isosceles trapezium with the shorter base equal to the sides
- Skirt: isosceles trapezium with the longer base equal to the sides
- Bell: isosceles trapezium
- Stone: quadrilateral with all sides different
- Rhombus: rhombus (which can turn into square)
- Diamond: deltoid (it turns into clepsydra and into arrow if it is a concave polygon)
- Rocket: quadrilateral with two consecutive equal sides
- Screen: parallelogram (which becomes rectangle)

A few analogies are to be noted (Skirt, Lamp) with respect to the previous didactic situation (of 2012), despite the storyline, naturally, being different.

REFERENCES

- Andersone, R. (2009). Through fairy-tales to math in the lessons. *Acta Didactica Napocensia*, 2(2), 111-118.
- Arya, D., & Maul, A. (2012). The role of the scientific discovery narrative in middle school science education: An experimental study. *Journal of educational psychology*, 104(4), 1022-1032.
- Bettelheim, B. (1977). *Il mondo incantato*. Milano: Feltrinelli.
- Boaler, J. (2002). The development of disciplinary relationships: Knowledge, practice and identity in mathematics classrooms. *For the learning of mathematics*, 22(1), 42-47.
- Breen, A., McLean, K., Cairney, K., & Mc Adams, D. (2017). Movies, Books, and Identity: Exploring the Narrative Ecology of the Self. *Qualitative psychology*, 4(3), 243-259.
- Bruner, J. (1992). *La ricerca del significato. Per una psicologia culturale*. Torino: Boringhieri.
- Carroll, J. (2018). Minds and Meaning in Fictional Narratives: An evolutionary perspective. *Review of general psychology*, 22(2) 135-146.
- De Stasio, S. (2004). *Come in una favola*. Milano: Mondadori.
- Gottschall, J. (2014). *L'istinto di narrare*. Torino: Boringhieri.
- Harris, P. (2008). *L'immaginazione nel bambino*. Milano: Cortina.
- Leder, D., Scheriani, C., & Zuccheri, L. (2002). “La matematica dei ragazzi: scambi di esperienze tra coetanei”. Una valutazione del lavoro svolto. In L. Zuccheri, D. Leder, & C. Scheriani (Eds.), *La matematica dei ragazzi: scambi di esperienze tra coetanei. Antologia delle edizioni 1996-1998* (pp. 167-179). Trieste: EUT.
- Matofi Azad, M. (2014). *Effetti della didattica laboratoriale sugli apprendimenti in campo geometrico*. Dissertation. Master Degree in “Scienze della formazione primaria”. Supervisor: P. Sorzio; Co-supervisor: M. Rocco. Academic year 2012/2013. Trieste: Università degli Studi di Trieste.
- Mills, J., & Crowley, R. (1988). *Metafore terapeutiche per bambini*. Roma: Astrolabio.
- Piaget, J., & Inhelder, B. (1970). *La psicologia del bambino*. Torino: Einaudi.
- Razzini, V. (2016). *Una matematica da favola. Percorsi narrativi per superare le difficoltà nell'apprendimento dei concetti matematici. Livello 2 scuola primaria*. Trento: Erickson.
- Rocco, M., & Leder, D. (2014). Sono solo immagini dell'arte?. In L. Zuccheri, M. Stoppa, & V. Zudini (Eds.), *La matematica dei ragazzi: scambi di esperienze tra coetanei. Edizione 2010* (pp. 37-48). Trieste: EUT.
- Schaffer, H. R. (1984). *Il bambino e i suoi partner: interazione e socialità*. Milano: Angeli.
- Valsiner, J. (2017). *Mente e cultura. La psicologia come scienza dell'uomo*. Roma: Carocci.
- Zuccheri, L., & Zudini, V. (2014). Io e la matematica. Un'indagine sul rapporto dei ragazzi con la matematica. In L. Zuccheri, M. Stoppa, & V. Zudini (Eds.), *La matematica dei ragazzi: scambi di esperienze tra coetanei. Edizione 2010* (pp. 155-184). Trieste: EUT.

THE RELATIONSHIP BETWEEN MANAGEMENT FACTORS IN HIGHER EDUCATION INSTITUTE AND EMPLOYABILITY OF KHON KAEN UNIVERSITY GRADUATED

Waraporn Phiewphanngam, Kanokorn Somprach and Dawruwan Thawinkarn

Khon Kaen University, Thailand

warapornp@kku.ac.th, kanoklin@kku.ac.th and dawtha@kku.ac.th

ABSTRACT

These research objectives were 1) to study the current conditions of employability of graduates of Khon Kaen University and 2) to study the relationship of factors related to employability of graduates of Khon Kaen University. The research sample were 336 persons in Graduates of Khon Kaen University at the undergraduate level Science and Technology Group, who graduated in the academic year 2018. Five-rating scale questionnaire was use as instrument. Data was analyze using ready-to-use computer program to search for frequency, percentage, means, standard deviation, and Pearson correlation product moment coefficient. Result of level employability of Khon Kaen university graduated was seen through the overview at high level ($\bar{x} = 4.03$). Management factors in higher education institute consisted of 5 main elements were 1) employers' involvement in course design 2) using technology to enhance employability 3) preparing graduates to apply theory in practice 4) educational challenges to the global manufacturing industry, and 5) life skill and career skill. The relationship between the 5 relevant factors and employability of Khon Kaen university graduated have a positive relationship with statistical significant at 0.1 level. Correlations between 0.605-0.342 there were life skill and career skill ($r = 0.605$), educational challenges to the global manufacturing industry ($r = 0.563$), using technology to enhance employability ($r = 0.549$), preparing graduates to apply theory in practice ($r = 0.496$), and employer's involvement in course design ($r = 0.342$).

INTRODUCTION

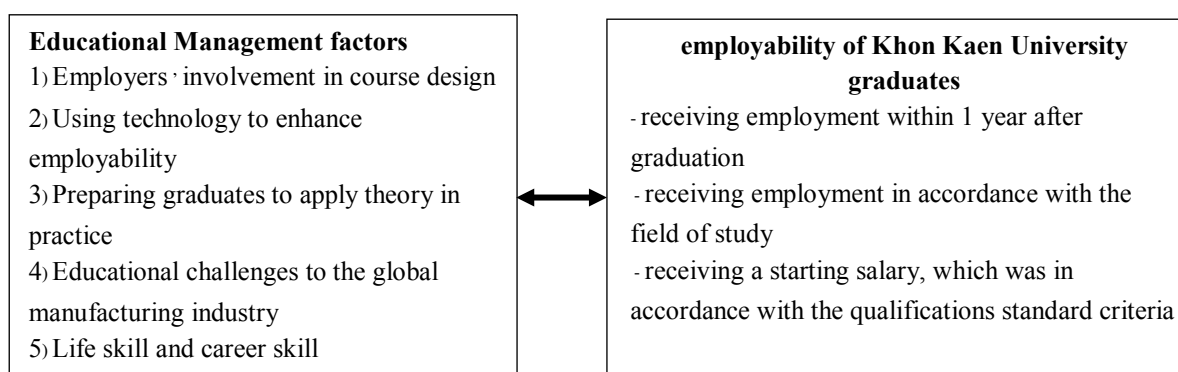
Currently, for institutions of higher education, developing their graduates' potential for employability has become a major problem. Employability means that the graduates adequately possess the required abilities, morals, and related professional ethics, which are required to be employed by private establishments or by government sectors, and that they receive salaries within 6 months to 1 year after graduation. Therefore, universities need to create custom-made graduates for job markets so that their graduates can start working straight away after graduation. (Mason, William, and Creamer, 2009). Kathleen Cotton (1993) categorized *Employability Skills* as basic skills; higher-order thinking skills; and effective skills and traits. Knight and Yorke (2002) used the USEM model to define the development approaches of Employability Skills. The acronym refers to the following: 1) Understanding, 2) Skills, 3) Efficacy beliefs, and 4) Metacognition. Dacre Pool and Peter Sewell (2007) suggested "Career EDGE", a 5-key process to *Employability*: 1) Degree subject knowledge, understanding, and skills; 2) Generic skills; 3) Emotional intelligence; 4) Career development learning; and 5) Experience in work and in life. Suchada Sanusan (2012) concluded that employers required graduates to have the following qualities: 1) leadership, 2) strong working determination, 3) foreign language skills, 4) human relationships, and 5) a curiosity for new knowledge. Tang (2018) noted that there are 5 elements in employability as follows: 1) having graduate users participate in curriculum design, 2) using technology to enhance employability, 3) transforming theoretical preparation to practical readiness, 4) transforming knowledge into innovations, and 5) developing successful life and work skills. The production goals for the graduates of Khon Kaen University (KKU) are to produce and develop qualified graduates, who have knowledge, ability, and professional skills along with morality, ethics, and responsibility and who are ready to work in Information Technology and to assist in creating innovations for society. The required graduates must be knowledgeable in critical thinking. They need to be able to analyze problems in real conditions, create new knowledge that leads to innovation and new services, define problem solutions, work in communities with different languages and cultures, and perform well in a work environment of advanced technology. In 2018, KKU offered a total of 331 courses as follows: 95 courses (28.70 %) were for Bachelor's Degree students, 134 courses (40.48 %) were for Master's Degree students, 84 courses (25.38%) were for Doctoral Degree students, 1 course (0.30%) was for graduate diploma students, and 17 courses (5.14%) were for students pursuing Higher Graduate diplomas. During the last 3 years, KKU has offered 28 new courses and has revised 277 courses (Khon Kaen University, 2019). According to the report of employment and continuing education of graduates who graduated in the Academic Year of 2016, it was found that 84.05% of graduates had been employed, 8.35 % had furthered their studies, and 7.60 % had remained unemployed. A satisfaction survey of graduate users showed that 88.04 % had been satisfied (Khon Kaen University, 2016). However, the work tracking report in the Khon Kaen University Action Plan for the fiscal year of 2017 (the 12-month period between 1 October 2016 - 30 September 2017),

revealed that the performance of those employed and the level of satisfaction of the employers towards graduates was not achieving the goal. The learning environment and organizational management had been rapidly and continuously changing. KKU, therefore, needs to improve its quality of Educational Management and the quality of its graduates so that the needs of the labor market can be met in order to be able to increase the employment rate. This research aimed at studying the factors, which are related to the employability of KKU graduates in order to use the findings to serve as guidelines for determining Educational Management strategies, curriculum development, and the process of managing teaching at Khon Kaen University in order to increase the employability of the university's graduates.

Research objectives

- 1) To study the Educational Management factors and the employability of Khon Kaen University graduates.
- 2) To study the relationships between Educational Management factors and the employability Khon Kaen University graduates.

Concept framework



METHODOLOGY

Population and sample: The population consisted of 2,073 undergraduate level graduates from *Sciences and Technology Group*, who had graduated in the Academic Year of 2018 from Khon Kaen University. The sample size was determined by using the Yamane Formula and Stratified Random Sampling according to the size of the faculty. The sample group consisted of the following 336 graduates: a) 62 from the Faculty of Agriculture, b) 26 from the Faculty of Technology, c) 120 from the Faculty of Science, d) 28 from the Faculty of Applied Science and Engineering, e) 83 from the Faculty of Engineering, and f) 17 from the Faculty of Architecture.

Variables used in research

The independent variables were the Educational Management factors in higher education institutions as follows: 1) Employers' involvement in course design, 2) Using technology to enhance employability, 3) Preparing graduates to apply theory in practice, 4) Educational challenges to the global manufacturing industry, and 5) Life skill and career skill.

The dependent variables were the employability of Khon Kaen University graduates, which were measured by the following parameters: 1) receiving employment within 1 year after graduation, 2) receiving employment in accordance with the field of study, and 3) receiving a starting salary, which was in accordance with the qualifications standard criteria.

Research tool

The tool, used to collect the data, was a questionnaire created by synthesizing documents, related research, and the conceptual framework of research. The questionnaire was divided into 3 parts as follows:

Part 1: A checklist questionnaire to obtain the general information of the respondents and their status with questions about gender, age, and field of graduation.

Part 2: A 5-level rating scale questionnaire with questions focusing on the amount of time taken to find a job, their average monthly income, and the characteristics of the job in accordance with their fields of study and their degrees.

Part 3: A 5-level rating scale questionnaire, which covered Educational Management with respect to all 5 factors that had been related to the employability of the graduates.

Instrument quality inspection: 1) The validity of the tool was examined by 5 experts for its content, wording, and other aspects. It was found that the Index of item Objective Congruence (IOC) was between 0.6-1.0 2) The reliability of the tool was examined by utilizing 30 non-sample graduates and determining the

Cronbach's alpha coefficient with an instant computer program. The acceptable reliability should be at 0.60 or higher (Kritkong Sungnern, 2011), and the questionnaire had a reliability coefficient of 0.865.

Data analysis

The researcher analyzed the quantitative data with the software package as follows:

Part 1 - Descriptive Statistic Analysis: It was used to describe the characteristics of the population and the research variables in the forms of frequency distributions, percentages, means, and standard deviations. The input data was from 5-level rating scale questions.

Part 2 - Inferential Statistic Analysis: It was used to analyze the relationship between the independent variables and the dependent variables. The Pearson Correlation Coefficient was determined, and the correlation coefficient (r) indicated the results of analysis.

RESEARCH RESULTS

1) The findings of the factors in educational management at Khon Kaen University showed that the average value was "high" ($\bar{x} = 4.19$). The highest average factor was the *Life skill and career skill* ($\bar{x} = 4.23$), followed by *Using technology to enhance employability* ($\bar{x} = 4.19$), and *Preparing graduates to apply theory in practice* ($\bar{x} = 4.19$). The findings in the study of Employability was "high" ($\bar{x} = 4.03$) as shown in Table 1.

Table 1 Mean and standard deviation of educational management factors of Khon Kaen University

educational management factors	Analysis results		interpret
	\bar{X}	S.D.	
1. Life skill and career skill	4.23	.34	high
2. Using technology to enhance employability	4.19	.31	high
3. Preparing graduates to apply theory in practice	4.19	.36	high
4. Employers' involvement in course design	4.18	.30	high
5. Educational challenges to the global manufacturing industry	4.14	.37	high
Total	4.19	0.34	high

2) The findings from the relationships between the factors of educational management and employability revealed that the correlation coefficient was positive between 0.342 - 0.605 with statistical significance at 0.01 in all aspects. It was found that the top 3 factors that had highly related to employability were the *Life skill and career skill* ($r = .605$), followed by *Educational challenges to the global manufacturing industry* ($r = .563$), and *Using technology to enhance employability* ($r = .549$) as shown in Table 2.

Table 2 Correlation coefficients between factors of Educational Management and employability of Khon Kaen Graduate

Correlation coefficients (r_{xy})	Y	X ₁	X ₂	X ₃	X ₄	X ₅
Employability of Khon Kaen Graduate (Y)	1					
Employers' involvement in course design (X ₁)	.342**	1				
Using technology to enhance employability (X ₂)	.549**	.371**	1			
Preparing graduates to apply theory in practice (X ₃)	.496**	.364**	.507**	1		
Educational challenges to the global manufacturing industry (X ₄)	.563**	.366**	.462**	.575**	1	
Life skill and career skill (X ₅)	.605**	.394**	.448**	.470**	.603**	1

**Correlation is significant at the 0.01 level (2-tailed).

CONCLUSIONS AND DISCUSSION

1) The findings indicated that the 5 educational management factors had been at a "high" level. The highest average factor was the *Life skill and career skill*, followed by *Using technology to enhance employability*. Perhaps one of the effects of globalization, which has created a world of technological science, is that the employers are now attracted to employees with diverse work skills, especially skills in communication and technology. The focus of Modern Educational Management is on the quality of the students, the quality of their knowledge, their high-quality life skills, information technology skills, and their ability to create a paradigm from their experience which is consistent with the Khon Kaen University's 2016-2019 management strategy goals. The strategy states that Khon Kaen University aims to be an excellent organization and seeks to produce

graduates of high caliber by focusing on creating graduates, who are knowledgeable in critical thinking, able to analyze problems under real conditions, able to create new knowledge that leads to innovation and new services, able to define problems and solutions, able to work in communities with different languages and cultures, and who are able to perform well in the working environment of advanced technology. This correlates with THE ASEAN Work Plan On Education (2016 – 2020) which determined the following 8 Key Elements of Education: 1) Promoting ASEAN awareness by strengthening of Southeast Asian history and indigenous knowledge; 2) Enhancing the quality and access to basic education for all, including the disabled, those with fewer advantages, and other marginalized groups; 3) Strengthening the use of Information and Communication Technology (ICT); 4) Supporting the development of the TVET sector, as well as life-long learning in the region; 5) Complementing the efforts of other sectors in meeting the objectives of Education for Sustainable Development; 6) Strengthening the Higher Education sector through the implementation of robust quality assurance mechanisms; 7) Fostering the role of higher education in the area of socio-economic development through University Industry Partnership; and 8) Providing capacity-building programs for teachers, academics, and other key stakeholders in the education community (Khon Kaen University, 2019)

The findings in the area of Employability were at a high level. This might be due to the revision and improvement of Khon Kaen University's curriculum by focusing on the production and development of quality manpower. The following are the educational management schemes of Khon Kaen University: 1) Develop existing courses to meet international standards and place emphasis on the experience of training in ASEAN countries or companies; 2) Focus on managing diverse courses, which could assist in developing knowledge and competency skills for students in the normal system and on creating a curriculum that could meet the high demands of all job markets; 3) Integrate the curriculum with the sciences and develop more international programs, which could support the ASEAN community, and other courses that are required to meet the needs of developing the country; 4) Open short courses targeting the employed, elderly, or disabled people which would allow the learners to accumulate credits in order to obtain a degree; 5) Open learning channels for different students, such as students in normal systems, students of working age, the elderly, and the disabled which can meet the needs of the learners; and 6) Focus on teaching and learning that allows students to practice, learn, and work under the conditions of a real society. Moreover, Khon Kaen University has 2,003 members of the teaching staff, including 1,400 (69.90%) Doctorate degree holders, 533 (26.60%), Master's Degree holders, and 70 (3.49%) Bachelor's Degree holders.

2) The findings, related to the relationships between the factors of Educational Management and the employability of Khon Kaen University graduates, indicated positive relationships which can be sorted into 3 highest relationships as follows:

The first was the relationship between the factor of the *Life skill and career skill* and *Employability*. The reason for this was that Khon Kaen University had focused on producing graduates, who had acquired the knowledge to think critically, the ability to analyze problems under real conditions, the ability to generate new knowledge that can lead to innovation and the creation of new services, the ability to define problem and solutions, the ability to work in communities speaking different languages and having different cultures, and the ability to perform well in the work environment of advanced technology. The results correlated with results from a study by Finch, Hamilton, Baldwin, and Zehner (2013), who examined Factors Affecting the Employment of Undergraduate Graduates. Their findings revealed that after the new graduates had been hired, employers had focused on skills, life skills, and the skills required to be a dedicated worker. These findings were corroborated by Sumanasiri, Yajid & Khatibi (2015), who determined the framework for educational institutions with regard to the employability of graduates. The study suggested that there were 5 elements: 1) Career Development Learning; 2) Work and Life Experience; 3) Mastery of Knowledge, Skills, and Understanding; 4) Generic Skills; and 5) Emotional Intelligence.

The second was the relationship between the factor of *Educational challenges to the global manufacturing industry* and *Employability*. The results were consistent with a study by Sivanan Sivapitak (2014), who stated that the organizations around the world face common challenges and need to improve their operations so that they can better cope with the rapid changes they experience. The previous research mentioned that two important factors, Knowledge Management and Innovation, were the key elements for successfully surviving in business. This also correlated with findings from Florida and Irene (2004), who suggested that promoting the creation of new innovations was the proper approach to achieving a competitive advantage. Creative thinkers, researchers, engineers, and scientists are attracted by the country's innovation system. Therefore, organizations need to focus on creating an atmosphere that encourages the creation of new innovations.

Moreover, the Using technology to enhance employability. It is obvious that technological advances are beneficial in learning, business, daily life, and in communication. The rapid changes in technology have resulted in unlimited access to information and learning resources. It has generated knowledge development and has multiplied wisdom. The Planning Division of Mahasarakham University (2013) stated that the use of Communications Technology and Mobile Learning Systems dramatically increases and affects both the business

operations and the competency levels of graduates. A study conducted by Mahasarakham University on the Employment of Graduates in the Academic Year of 2011-2012 found that one of the special abilities that had helped their graduates to get jobs was computer skills (45.90 percent). The results correlated with those from a study by Sathienpak Mukdee (2015) entitled, *Employment Status of Uttaradit Rajabhat University (Academic Year 2010-2011)*, and showed that most graduates (55.52 percent) had computer skills.

Suggestions

Suggestions for Implementation

- 1) The curriculum should be improved to allow students to acquire both life skills and academic skills.
- 2) Budgets should be allocated in order to promote skills and competencies in the necessary technologies that can actually increase employability after graduation.
- 3) The graduates should be trained in areas that allow them to concretely transform knowledge to into innovation.

Suggestions for further research

- 1) The state of problems or obstacles that exist within the development of operations in producing university graduates should be investigated. Research and development should be carried out in order to obtain data, which can be used to create the effective development of university graduates.
- 2) Other variables should be studied. Moreover, in order to illustrate each variable in clearer detail, the structural equation model of the factors influencing the employability of graduates should be utilized.

Acknowledgement

This work was supported by the graduate school Khon kaen university and the center for research on plurality in the Mekong region (CERP).

REFERENCES

- David J. Finch, Leah K. Hamilton, Riley Baldwin and Mark Zehner. (2013). **Factors affecting undergraduate Employability**, 55(7), 681-704.
- Erabaddage Gishan Tharanga Sumanasiri, Mohd Shukri Ab Yajid & Ali Khatibi. (2015) **Review of Literature on Graduate Employability**. Journal of Studies in Education.
- Florida, R., Irene, T. (2004). **Europe in creative age New York**, Wiley.
- Geoff Mason, Gareth Williams & Sue Cranmer. (2009). **Employability Skills Initiatives in Higher Education : What Effects Do They Have On Graduate Labour Market Outcomes?**. Education Economics, 30-1, (1)17
- Grid Rangsunghoen. (2011). **Factor analysis with SPSS and AMOS for research**. Bangkok: Se-education.
- Jatuphum Ketchatturat. (2012). **Educational research: research into practice**. Khon Kaen: Khon Kaen University.
- Kanlaya Vanichbuncha. (2012). **Statistical data analysis with Excel**. Bangkok: Chulalongkorn University.
- Kathleen Cotton. (1993). **Developing Employability Skills**. School Improvement Research Series, Close-Up # 15. Northwest Regional Educational Laboratory.
- Khon Kaen University. (2016). **Annual report Khon Kaen University 2016**. Khon Kaen: Khon Kaen University Printing Factory.
- _____. (2017). **Report of follow-up work according to action plan 2017, Khon Kaen University**. Khon Kaen: Khon Kaen University.
- _____. (2019). **Strategic Management Plan, Khon Kaen University, 2020 – 2023**. Khon Kaen: Khon Kaen University Printing Factory.
- Knight, P. T., & Yorke, M. (2002). **Employability through the curriculum**. Tertiary Education and Management, 8(4), 261-276.
- Kritkong Sungnern. (2011). **Factor analysis with SPSS and AMOS for research**. Bangkok: SE-EDUCATION Public Company Limited
- Lorraine Dacre Pool and Peter Sewell. (2007). **The key to employability : developing a practical model of graduate employability**. Emerald Group Publishing Limited, (4)46, 277-289.
- Mahasarakham University. (2013). **An analysis of the situation with the work of graduates of Mahasarakham University Academic year 2011-2012**. Mahasarakham: Mahasarakham University.
- Nat Paseerathang and Dusit Uthitsunthorn. (2016). **The Employment Situation of graduates: A Case Study of the Faculty of Industrial Technology, Buriram Rajabhat University, Academic Year 2014 – 2015**. National and International Academic Conference "4th Rajabhat Research". Buriram: Buriram rajabhat university.

- Pakakrong Tapparak. (2014). **A study of job seeking behaviour that affecting Employment of university graduate's technology Srivijaya songkhla campus**. Journal of education research faculty of education, Srinakharineerot university, 8(2), 154-160.
- Sivanun Sivapitak. (2014). **Knowledge Management and Innovation Processes Affecting the Survival of Business Organization**. Suthiparithat Journal, 45 ,(85)28-.60
- Satienpak Mukdee. (2015). **The event has a work of graduates of Uttaradit Rajabhat University, academic year 2010-2011**. Uttaradit: Uttaradit Rajabhat University.
- Suchada Sanoosan and Nijporn Na Phatthalung. (2012). **Conditions of Employment and the Employer's Satisfaction, Faculty of Agricultural Technology at Buriram Rajabhat University**. Buriram : Buriram Rajabhat University
- Sudarat Chomkamsing. (2014). **Graduate work situation and entrepreneur satisfaction with graduates who graduated according to desirable characteristics and graduates according to identity of Chandrakasem Rajabhat University 2012**. Bangkok: Chandrakasem Rajabhat University.
- Tang Keow Ngang. (2018). **Innovate Higher Education to Enhance Graduate Employability**. Journal of Social Sciences and Humanities .Manuscript ID JSSH-2873-2017.
- Thammasat University. (2017). **TU: Good University Report**. Pathum Thani: Thammasat University.
- Thirawat Chantuk. (2015). **A survey study on employment situation and satisfaction of graduated users management faculty, Silpakorn University**. Academic Journal Bangkokthonburi University. (1)4, 28-39.
- Yamane, Taro. (1970). **Statistics :an introductory analysis** .Tokyo : John Weathehill, Inc.

THE RELATIONSHIP BETWEEN THE ACADEMIC PROCRASTINATION BEHAVIORS AND THE ACADEMIC PERFORMANCE OF THE SECONDARY SCHOOL STUDENTS

Dr. Seva Demiröz
Private Arı Schools
sevademiroz@hotmail.com

ABSTRACT

The aim of this study is to examine the relationship between the procrastination behavior and the academic success of the 8th graders of Arı Private Secondary school in the 2017-2018 education year. The research group consists of 154 8th graders in total, 73 of whom are female and 81 of whom are male. In the data collection phase of the research, the “Academic Procrastination Behavior” scale which developed by Çakıcı (2003) was used. For the academic performance the weighted grade average of the students were taken into consideration. Descriptive statistics were used for analyzing of the data. Results showed that there is no meaningful differences between students’ academic procrastination behavior and the gender. However, The results of the Spearman’s correlation coefficient test showed negative correlation between students’ academic procrastination score and their academic performance with $r=-0.91$, with a significance level of $p<0.01$ (two tailed test) indicating that students who showed high academic procrastination scores performed below average in their academics. These findings may help teachers and school administrators create a better school environment that promotes learning engagement and inhibits academic procrastination.

Keywords: procrastination, academic procrastination, achievement

INTRODUCTION

Life is a system of responsibilities for human beings. As responsibilities are fulfilled, success is achieved step by step. Within this context, students fundamentally have responsibilities towards themselves, their families, society and the world in which they live. In fulfilling the responsibilities, it is necessary to acquire basic social skills such as scheduling, planning, setting priorities, postponing or avoiding things required to be done, setting goals and achieving the objectives.

The main obstacle to the fulfillment of responsibilities is the procrastination behavior. The tendency to procrastination is a tendency to delay or postpone doing a job that needs to be done in a **timely manner** and has **priority** on **unnecessary unrealistic** reasons. The problem of procrastination, which affects every aspect of daily life, leads to a great inconsistency between the plans of individuals and their behaviors to comply with the plans. People who have problems with procrastination start their projects right away but find it difficult to continue. They cannot make the necessary effort to reach a conclusion. People who exhibit procrastination behavior often have two typical attitudes:

- 1) They want to avoid the consequences of procrastination,
- 2) They struggle with extreme effort to compensate for deferred behavior.

Procrastination behavior, in addition to being a tendency that adversely affects an individual’s actions and behaviors, it can also be defined as a state of impediment in taking a decision or performing a task as well (Sriois, 2007; Tice and Baumeister, 1997). One of the most important tasks of the teachers and administrators responsible for education is to understand the problems that the students are experiencing and to find viable solutions for them. And therefore, educators should try to understand the problems the students face in educational environments and the reasons that hinder academic achievement.

Also in school life, every student has tasks that need to be fulfilled. Doing their homework, preparing projects, getting ready for exams, completing daily or weekly reading assignments are some of these tasks. However, these tasks are often left to be performed at another time by the students. Postponement or delaying planned academic tasks to be performed at a later time is named as academic procrastination (Lay, 1986) Academic procrastination behavior, which has been increasing among students in recent years, is one of the most important problems affecting students’ academic performance.

Academic procrastination, a special field of procrastination, is a common problem that is observed among students and that adversely affects their academic performance (Onwuegbuzie, 2004). Academic procrastination behavior is seen among students as delaying to study, leaving the preparation of their assignments to the last minute, missing the deadlines of important projects, and postponing administrative tasks related to academic life (such as returning

library books back, registration for the exams, etc.) (Rothblum, Solomon and Murakami, 1986; Scher and Ferrari, 2000).

Many studies conducted in this area indicate that most of the students do not complete their academic tasks on time and experience academic procrastination problems. Additionally, the studies also emphasize that procrastination behavior is an important source of stress and a major obstacle in front of the academic achievement (Ekşi and Dilmaç, 2010).

The studies conducted in Turkey have parallels with research in the body of literature in the field, and emphasize that students are having trouble because of academic procrastination (such as academic failure, absenteeism, displaying poor performance, etc.) (Aydoğan and Özbay, 2012; Berber Çelik and Odacı, 2015; Uzun Özer, 2009). There are many variables that affect academic procrastination (such as fear of failure, fear of success, perfectionism, and self-regulation) (Ferrari, Parker and Ware, 1992; Flett, Hewitt and Martin, 1995; Frost, Marten, Lahart and Roseblate, 1990; Hewitt and Flett, 1989; Solomon and Rothblum, 1984).

Fear of failure and exam anxiety are experienced together (Aitken, 1982; Beswick, Rruhthblum and Mann, 1988; Senecal, Koestner and Vallerand, 1995) and this is a cause of procrastination. The consequences of procrastination behavior on the other hand are observed as fear, risk taking, defiance to control, and laziness. In the event of delaying the start or completion of a task, procrastinators can avoid failure, and assessment of their performances or competences. The fear of being considered as incompetent is so strong in some individuals that they prefer to leave things to the last moment and endure the consequences of procrastination rather than try and fail. *Fear of success* is another aspect of fear of failure. Here, the individual delays responsibilities because the individual is afraid of the consequences of his/her success. The success of the individual leads to the expectation of greater success in the future, which frightens the individual in return. If the self-appreciation of the individual is based on his/her achievements, failure to respond to increasing expectations after each success would tarnish the individual's own value. Another variable is *perfectionism*. Individuals displaying procrastination behavior while trying to prove that they are good enough, attempt to achieve the impossible by thinking that they will not encounter any problems in achieving their most valuable and important goals. They often put unrealistic demands ahead of them, and when they do not reach them, they feel crushed under the weight of them. Then they feel discouraged and retreat withdrawing completely. Families increasing the expectations from the students, raising the standards and increasing the supervision they impose over them create anxiety in the youth. It causes the family to be perceived as perfectionist. As the family is perceived as perfectionist, academic procrastination increases correlatively (Burka and Yuen, 1983). One explanation for the reason for postponement of work to the last minute is the poor *self-regulation* ability of procrastinating individuals. Time management, balancing of social relations, and internet use also increase the behavior of procrastination. Researchers who study procrastination determined that individuals with high levels of *anxiety* were more likely to postpone their work to the last minute.

The degree and cause of procrastination behavior varies from person to person. In order to be successful in the education process, students are expected to complete a series of tasks on time. These can be challenging tasks such as doing their homework, preparing for exams, completing weekly readings, performing academic and administrative tasks, attending to classes and participating in studies, and they are often postponed.

As procrastination behavior increases, it negatively affects the quantity and quality of the work done and constitutes an important obstacle in front of the academic achievement. Individuals exhibiting academic procrastination behavior are seen as less confident about themselves regarding the outcome. Lack of self-confidence on the other hand, is indicated by fear of failure, desire to escape from detested, unpleasant situations. The fact that academic procrastination behavior leads to academic failure shows the seriousness of the problem. Research shows that academic procrastination adversely affects academic performance (Akinsola, Tella and Tella, 2007; Balkıs and Duru, 2009; Moon and İllingworth, 2005; Wang and Englander, 2010) and that students with academic procrastination behavior have lower academic achievement (Owens and Newbegin, 1997; Seo, 2011; Tuckman, Abry and Smith, 2002; Wesley, 1994). The fact that students with academic procrastination behavior stop performing academic tasks such as completing assignments, studying and preparing for exams, consequently increases their chances of academic failure (Jackson, Weiss, Lundquist and Hooper, 2001).

In the body of literature, studies conducted according to gender differences exhibit variances with respect to variables. For example, while studies show that female students experience higher levels of exam anxiety than male students (Aysan, Thompson and Hamarat, 2001); other research reveal that male students exhibit more frequent procrastination behavior than female students (Uzun Özer, 2009; Uzun Özer, Demir and Ferrari, 2009). In Turkey, although there are studies conducted on adults (Ferrari, Uzun Özer and Demir, 2009) and college students (Balkıs, 2007; Çakıcı, 2003; Uzun Özer, Demir and Ferrari, 2009) with regard to academic procrastination, studies examining academic procrastination on k12 level, and especially on secondary school students were found to be limited (Aydoğan, 2008; Çakıcı, 2003).

Studies conducted abroad in this area suggest that high school students often postpone their academic duties and this behavior causes some negative effects on their academic performance (Wesley, 1994). Owens and Newbegin

(1997) states that the tendency of procrastination, which began in this period, may turn into a troublesome habit that is difficult to overcome in the future.

Therefore, examining academic procrastination behavior among secondary school students gains substantial importance. The findings of the study are thought to provide information to school psychological counselors and school administrators about the procrastination behavior that is frequently exhibited in the academic environment. The findings are also expected to shed light on the creation of new approaches and programs that will be developed to reduce or overcome procrastination behavior in schools.

In this study, answers to the following questions were sought:

Regarding secondary school students;

- a. What is the level of their academic procrastination behavior?
- b. What is their academic achievement average?
- c. Is there a relationship between their academic procrastination behavior and their academic achievement?
- d. Is there a difference between their academic procrastination behavior levels and their academic achievements?
- e. Do their academic procrastination behaviors differ by gender?

METHOD

This is a descriptive study which aimed to investigate the prevalence of academic procrastination among secondary school students.

Sample Study Group

This study was conducted with a group of 8th grade students attending secondary school education in 2017 – 2018 academic year. The data were collected from 154 students by using easily accessible sampling method which is one of the purposeful sampling methods. Of the students participating in the research, 73 were female and 81 were male.

Data Collection Tools

Academic Procrastination Scale: In this study, Academic Procrastination Scale developed by Çakıcı (2003) to determine the academic procrastination behavior of the students was utilized. Academic Procrastination Scale consists of 19 statements – 12 negative and 7 positive – including the tasks that the students are responsible for doing in their learning lives (studying, getting ready for exams, preparing projects, etc.). Reactions to the expressions in this scale are graded in five-digit Likert type as follows: “it does not reflect me at all”, “reflects me very little”, “reflects me some”, “reflects me mostly”, or “completely reflects me”. The highest score that can be obtained from the scale is 95 and the lowest score is 19. If the results obtained are between 19 and 42, it shows low, 43 - 67 medium and 68 - 95 high academic procrastination behavior. In other words, higher scores obtained from the scale indicate that academic procrastination behavior exists. The Cronbach alpha reliability coefficient of the academic procrastination scale was found to be .92. The Cronbach alpha coefficient calculated for the first factor of the scale was .89, and the Cronbach alpha coefficient calculated for the second factor was 0.84. Spearman Brown’s split-half reliability test was calculated as .87 for the 10-item first half test and .86 for the 9-item second half-test for a total of .85. Academic Procrastination The test-re-correlation coefficient calculated from the application of the scale to 65 high school students with an interval of seventeen days was found to be .89. Scale’s test-retest reliability coefficient was calculated as .80 for the first factor and .82 for the second factor (Çakıcı, 2003). In this study, the measurement of academic procrastination was performed on the total score.

Academic achievement: For the academic achievement, students’ year-end grade point averages are taken into consideration.

Data Analysis

In the research, Pearson Product-Moment Correlation and t-test were used for data analysis.

FINDINGS

Regarding secondary school students;

- a. *What is the level of their academic procrastination behavior?*
- b. *What is their academic achievement average?*

Academic procrastination behavior and academic achievement averages of students were examined and the results are presented in Table 1.

Table 1

Academic procrastination behavior and academic achievement averages of students

Academic procrastination behavior level	N	%	\bar{X}	sd	academic achievement	\bar{X}	sd
19 – 42	19	12.4	34,0	5,56	High	99,5	2,13
43 – 67	91	59.0	54,8	12,6	Medium	92,0	1,68
68 – 95	44	28,6	80,0	7,8	Low	83,6	4,43
General	154	100	56,3	11,2		91,7	1.16

When Table 1 is examined, while the percentage of students with low academic procrastination behavior is 12.4%, their average academic procrastination behavior is 34, and their average achievement is 99.5; this rate is 59% for the students with moderate level, their academic procrastination behavior average 54.8, and their achievement average 92.0; and the rate of students with high academic procrastination behavior 28.6%, their average of academic procrastination behavior is 80 and their achievement average is 83.6. According to the results, 28.6% of students exhibit high levels of academic procrastination behavior.

c. Is there a relationship between their academic procrastination behavior and their academic achievement?

The relationship between academic procrastination behavior and academic achievement of the students was examined and the results are presented in Table 2. The relationship between academic procrastination behavior and academic achievement was investigated by Pearson Product Moment Correlation.

Table 2

The relationship between academic procrastination behavior and academic achievement

Pearson corr.	-.0916
Sig. (two tailed)	.01
N	154

The results of the analysis showed that academic achievement was negatively related to academic procrastination behavior ($r = -.091$, $p < .01$). As students' academic procrastination behavior levels increase, academic achievement levels decrease.

d. Is there a difference between their academic procrastination behavior levels due to their academic achievements levels?

In order to determine whether the academic behavior levels of the secondary school students (low - medium - high) show a significant difference according to their academic achievement (general grade point average), one-way analysis of variance was performed for the unrelated samples. The results of the analysis are given in Table 3.

Table 3

ANOVA results of the academic behavior levels of the secondary school students according to their academic achievement

Source of variance	Sum of squares	df	Mean square	F	sig
Between groups		2	1543.242		
Within groups		152	183.209	8.118	.000
Total		154			

As can be seen in Table 3, the results of the analysis exhibit that there is a significant difference between the academic procrastination behavior levels of secondary school students in terms of their academic achievement levels [$F(2,257) = 8.158$, $p < .01$]. In other words, academic procrastination behavior levels of students vary significantly depending on their academic achievement. The effect size (η^2) was calculated as .06. Academic achievement has moderate impact on academic procrastination behavior.

According to the results of the Scheffe test, which was performed with the purpose to determine among with which groups of students there are differences between academic procrastination levels, the achievement averages of students with low $\bar{X} = 34.0$, and medium $\bar{X} = 54.8$ academic procrastination behavior levels are found to be higher than those with high academic procrastination behavior levels. In other words, it was determined that students with lower academic achievement averages exhibited more academic procrastination behavior.

e. *Do their academic procrastination behaviors differ by gender?*

Independent group t test was performed to determine whether or not academic procrastination behaviors of secondary school students differed according to gender. As a result of the analysis, it was observed that academic procrastination did not create a significant difference according to gender ($t = 1,947$, $p < .05$). Obtained findings are presented in Table 4.

Table 4

Academic procrastination behaviors of secondary school students according to gender

Gender	n	\bar{X}	sd	t	Sig.
Girls	73	54,26	13,12	1.947	.067
Boys	81	58,27	12,35		

$P < .05$

CONCLUSION, DISCUSSION AND SUGGESTIONS

When the studies explaining academic procrastination behavior are taken into consideration, it is seen that academic procrastination behavior can cause negative situations in students' lives. The aim of this study is to investigate the academic procrastination behavior of secondary school students according to academic achievement and gender variables.

The results of this study demonstrated that academic success was negatively correlated with academic procrastination behavior ($r = -.091$, $p < .01$). In other words, as the academic procrastination behavior levels of students increase, their academic achievement levels decrease. The study also examined whether or not there was a significant difference between the academic behavior levels (low – medium – high) of secondary school students and their academic achievements (overall grade point average), and the results of the analysis showed that there was a significant difference between the academic procrastination behavior levels of secondary school students [$F(2,257) = 8.158$, $p < .01$]. To put it in other words, academic procrastination behavior levels of students vary significantly depending on their academic achievements. It was determined that students with lower academic achievement scores exhibited more academic procrastination behavior. This situation shows consistency with the findings of studies conducted previously. In fact, many studies demonstrated that academic procrastination is associated with low academic achievement (Balkis, 2013; Bozgeyikli, 2010; Ekinci, 2011; Fritzsche, Young and Hickson, 2003; Seo, 2012; Wang and Englander, 2010). Similar to the results of this study, those studies also found negative relationships between academic procrastination behaviors and achievement status of individuals who exhibit procrastination behavior. According to Ferrari, Keane, Wolfe and Beck (1998), it is expressed that students with low average achievement scores often exhibit procrastination behavior with the fear of making mistakes and failing to get approval from others.

The research also examined whether or not the academic procrastination behaviors of secondary school students differed according to the gender variable, and the results demonstrated that academic procrastination behavior did not differ significantly by gender. There are controversial results in the body of literature about differences based on gender in academic procrastination behavior. While some studies determined differences based on the gender variable (Pala, Akyıldız and Bağcı, 2011; Ptrzek, Sattler, Veen, Grunschel and Fries, 2014; Uzun-Özer and Saçkes, 2011; Pychyl, Coplan and Reid, 2002), similar to this research, some other studies did not encounter differences in academic procrastination behaviors based on the gender variable (Ferrari, 1991; Ferrari, 2001; Karabıyık-Çeri, Çavuşoğlu and Gürol, 2015; Uzun-Öner, 2009; Yiğit and Dilmaç, 2015). According to Uzun-Özer et al. (2009), it is very important to examine the effect of gender on academic procrastination, and is a noteworthy requirement in understanding the causes and consequences of academic procrastination.

If procrastination behavior is a major problem for students, the situations shown in procrastination behavior need to be carefully analyzed. Identifying the factors affecting and contributing to the academic procrastination behaviors that have a negative effect on the academic performance of the students during the academic life will help to better understand the academic procrastination behaviors of the students and to develop early preventive education programs in their educational lives.

In line with the results of this research, the following suggestions were made;

- Qualitative research investigating the causes of academic procrastination in adolescents can be conducted.
- In order to reduce academic procrastination behavior in adolescents, academic motivation trainings can be given and the relationship between motivation and academic procrastination behavior can be examined.
- School administrators' opinion about academic procrastination behavior can be investigated qualitatively to reduce procrastination behavior of the students.

- This study is limited to secondary school students still enrolled in a school. Conducting a similar study in different populations, including high schools, may contribute to understanding the variables that predict students' academic procrastination behavior.

REFERENCES

- Aitken, M. E. (1982). A personality profile of the collage student procrastinator. *Doktoral dissertation*, University of Pittsburg.
- Akinsola, M.K., Tella, A., & Tella, A. (2007). Correlates of academic procrastination and mathematics achievement of university undergraduate students. *Eurasia Journal of Mathematics, Science & Technology Education*, 3(4), 363-370.
- Aydoğan, D. (2008). Akademik erteleme davranışının benlik saygısı, durumluk kaygı ve özyeterlik ile açıklanabilirliği. Yayınlanmamış Yüksek Lisans Tezi. Gazi Üniversitesi, Ankara.
- Aydoğan, D. & Özbay, Y. (2012). Akademik erteleme davranışının benlik saygısı, durumluk kaygı, öz-yeterlilik açısından açıklanabilirliğinin incelenmesi. *Pegem Eğitim ve Öğretim Dergisi*. 2 (3), 1 – 9.
- Aysan, S., Thompson, D. ve Hamarat, E. (2001). Test anxiety, coping strategies, and perceived help in a group of high school students: A Turkish sample, *The Journal of Genetic Psychology*, 162, 402-411.
- Balkıs, M. (2013). Academic procrastination, academic life satisfaction and academic achievement: The mediation role of rational beliefs about studying. *Journal of Cognitive and Behavioral Psychotherapies*.13(1), 57-74.
- Balkıs, M. (2007). Öğretmen adaylarının davranışlarındaki erteleme eğiliminin, karar verme stilleri ile ilişkisi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 1, 67-83.
- Balkıs, M. & Duru, E. (2009). Prevalence of academic procrastination behavior among preservice teachers, and its relationship with demographic and individual preferences. *Journal of Theory and Practice in Education*, 5(1), 18-32
- Berber Çelik, Ç. & Odacı, H. (2015). Akademik erteleme davranışının bazı kişisel ve psikolojik değişkenlere göre açıklanması. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi* 30(3): 31-47.
- Beswick, G., Rothblum, E. D. ve Mann, L. (1988). Psychological antecedents of student procrastination. *Australian Psychologist*, 23, 207-217.
- Bozgeyikli, H. (2010). The relationship between high school students' psychological needs and human value perceptions"-, *Procedia Social and Behavioral Sciences*. 9, 1798-1804.
- Burka, J. B. & Yuen, L. M. (1983). *Procrastination: Why you do it, what to do about it*. New York: Addison-Wessley.
- Çakıcı, D. Ç. (2003). Lise ve üniversite öğrencilerinde genel erteleme ve akademik erteleme davranışının incelenmesi. *Yayınlanmamış yüksek lisans tezi*, Ankara Üniversitesi, Ankara.
- Ekinci, E. (2011). Ortaöğretim öğrencilerinin akademik öz yeterlik düzeyleri ve akademik erteleme davranışlarının öğrenilmiş çaresizlik düzeylerini yordama gücü. *Yayınlanmamış Yüksek Lisans Tezi*. Gaziosmanpaşa Üniversitesi Sosyal Bilimler Enstitüsü. Tokat.
- Ekşi, H. & Dilmaç, B. (2010). Üniversite öğrencilerinin genel erteleme, karar vermeyi erteleme ve akademik erteleme düzeylerinin sürekli kaygı açısından incelenmesi. *Uludağ Üniversitesi Eğitim Fakültesi Dergisi*. 23 (2), 433 – 450.
- Ferrari, J. R. (1991). Self-handicapping by procrastinators: Protecting self-esteem, social-esteem, or both? *Journal of Research in Personality*, 25(3), 245–261.
- Ferrari, J. R., Parker, J.T., & Ware, C.B. (1992). Academic procrastination: Personality correlates with Myers-Briggs Types, self-efficacy and academic locus of control. *Journal of Social Behavior and Personality*, 7, 495-502.
- Ferrari, J. R., Keane, S. M., Wolfe, R. N., & Beck, B. L. (1998). The antecedents and consequences of academic excuse-making: Examining individual differences in procrastination. *Research in Higher Education*, 39(2), 199–215.
- Ferrari, J. R. (2001). Procrastination and attention: Factor analysis of attention deficit, boredomness, intelligence, self-esteem, and task delay frequencies. *Journal of Social Behavior and Personality*, 16, 185–196.
- Flett, G. L., Hewitt, P. L., & Martin, T. R. (1995). Dimensions of perfectionism and procrastination. In J. R. Ferrari, J. L. Johnson & W. G. McCown (Eds), *Procrastination and task avoidance: Theory, research and treatment* (p.113-136). New York: Plenum
- Fritzsche, B. A., Young, B. R., & Hickson, K. C. (2003). Individual differences in academic procrastination tendency and writing success. *Personality and Individual Differences*, 35(7), 1549-1557.
- Frost, R. O., Marten, P. A., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, 14, 449-468.
- Jackson, T., Weiss, E. K., Lundquist, J. L., & Hooper, D. (2001). The impact of hope, procrastination and social activity on academic performance of Midwestern College Students. *Education*, 124(2), 310-320.

- Karabıyık-Çeri, B., Çavuşoğlu, C., & Gürol, M. (2015). Üniversite öğrencilerinin akademik erteleme düzeylerinin incelenmesi. *The Journal of Academic Social Science Studies*, 34 , 385-394. Doi: 10.9761/JASSS2721
- Lay, C. H. (1986). At least my research on procrastination. *Journal of Research in Personality*, 20, 479-495.
- Moon, S. & Illingworth, A. (2005). Exploring the dynamic nature of procrastination: A latent growth curve analysis of academic procrastination. *Personality and Individual Differences*, 38, 297-309
- Onwuegbuzie, A. J. (2004). Academic procrastination and statistics anxiety. *Assessment & Evaluation in Higher Education*, 29(1), 3-19.
- Owens, M. A. & Newbegin, I. (1997). Procrastination in high school achievement: A causal structural model. *Journal of Social Behavior & Personality*, 12, 869-888.
- Pala, A., Akyıldız, M., & Bağcı, C. (2011). Academic procrastination behaviour of pre-service teachers' of Celal Bayar University. *Procedia-Social and Behavioral Sciences*, 29, 1418-1425.
- Patrzek, J., Sattler, S., van Veen, F., Grunschel, C., & Fries, S. (2014). Investigating the effect of academic procrastination on the frequency and variety of academic misconduct: a panel study. *Studies in Higher Education*. doi: 10.1080/03075079.2013.854765.
- Pychyl, T. A., Coplan, R. J., & Reid, P. A. M. (2002). Parenting and procrastination: Gender differences in the relations between procrastination, parenting style and self-worth in early adolescence. *Personality and Individual Differences*, 33(2), 271-285.
- Rothblum, E. D., Solomon, L. J., & Murakami, J. (1986). Affective, cognitive, and behavioral differences between high and low procrastinators. *Journal of Counseling Psychology*, 33(4), 387-394.
- Scher, S. & Ferrari, J. (2000). The recall of completed and noncompleted tasks through daily logs to measure procrastination. *Journal of Social Behaviour and Personality*, 15, 255-265
- Seo, E.H. (2012). Cramming, active procrastination, and academic achievement. *Social behavior and Personality*, 40(8), 1333-1340.
- Senecal, C., Koestner, R. and Vallerand, J. (1995). Self-Regulation and academic procrastination, *The Journal of Social Psychology*, 135 (5), 607-619.
- Seo, E. H. (2011). The relationships among procrastination, flow, and academic achievement. *Social Behavior and Personality*, 39(2), 209-218.
- Sirois, F. M. (2007). ‘I’ll look after my health, later’: A replication and extension of the procrastination–health model with community-dwelling adults. *Personality and Individual Differences*, 43, 15–26
- Solomon, L.J. & Rothblum, E.D. (1984). Academic procrastination: Frequency and cognitive-behavioral correlates. *Journal of Counseling Psychology*, 31(4), 503-509.
- Tice, D. M. & Baumeister, R. F. (1997). Longitudinal study of procrastination, performance, stress, and health: The costs and benefits of dawdling. *Psychological Science*, 8, 454-458.
- Tuckman, B.W., Abry, D.A., & Smith, D.R. (2002). *Learning and motivation strategies: Your guide to success*. Upper Saddle River, N.J: Prentice-Hall.
- Uzun Özer, B. (2009). Bir grup lise öğrencisinde akademik erteleme davranışı: Sıklığı, olası nedenleri ve umudun rolü. *Türk Psikolojik Danışma ve Rehberlik Dergisi*, 4(32), 12-19
- Uzun Özer, B., Demir, A., ve Ferrari, J. R. (2009). Exploring academic procrastination among Turkish students: Possible gender differences in prevalence and reasons. *Journal of Social Psychology*, 149(2), 241–257.
- Uzun Özer, B., & Saçkes, M. (2011). Effects of academic procrastination on college students' life satisfaction. *Procedia-Social and Behavioral Sciences*, 12, 512-519.
- Yiğit, R. & Dilmaç, B. (2015). Ortaöğretimde öğrencilerinin sahip oldukları insani değerler ile akademik erteleme davranışlarının bazı değişkenler açısından incelenmesi. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 31(31).
- Wang, Z. & Englander, F. (2010). A cross-disciplinary perspective on explaining student performance in introductory statistics. What is the relative impact of procrastination? *College Student Journal*, 44, 458-471.
- Wesley, J. (1994). Effects of ability, high school achievement and procrastinatory behaviour on college performance. *Educational and Psychological Measurement*, 54, 404-408

THE STUDY OF MATHEMATICAL PROBLEM SOLVING FOR GRADE 6 STUDENTS USED LESSON STUDY AND OPEN APPROACH

Metta MARWIANG

Faculty of Education, KhonKaen University, Thailand
metmaw@kku.ac.th

Kemmika SUWANNATHADA

Faculty of Education, KhonKaen University, Thailand
Kemmika.thoy@gmail.com

Maneenapa SANGCHOMPU

Faculty of Education, KhonKaen University, Thailand
Manee.sang2539@gmail.com

Putcharee JUNPENG

Faculty of Education, KhonKaen University, Thailand
jputcha@kku.ac.th

ABSTRACT

Assessment and evaluation in education has been developed so that the results can be useful for development of learners and for teaching and learning management. This study aims to 1) study mathematical problem-solving efficiency in numbers and operations of students, and 2) evaluate mathematical problem-solving efficiency of sixth grade student learning with lesson study and an open approach. This study was conducted at Non Chan Tuek Huai Gae Wittaya School in Khon Kaen. Purposive sampling was applied to identify the sample group of this study, which included students in Grade 6 who were taught with lesson study and an open approach. The sample group consisted of six male and eight female students (n=14). Mixed-method was applied and the data was collected from observations including an individual observation log, a group work observation log, classroom observation, and a mathematics efficiency test with open-ended questions. Qualitative analysis was then conducted on the data obtained from the observations and the test.

The results revealed that 1) students can understand and analyze the problem and apply mathematical procedures as grounds to solving a complicated problem which required more than one process. This can indicate that learners can solve a mathematical problem at a basic level applying appropriate reasoning and methods. Additionally 2) the results from the evaluation of mathematical problem-solving efficiency development of the students ranked the mathematics strategies applied by the students as follows: non-response, unrecalled memory, basic memory and reproduction, simple skills and concept, and strategic/extended thinking. The levels of efficiency according to the Progress Map in problem-solving showed that six students (42.85%) were in Level 0, three students (21.42%) in Level 1, and five students (35.71%) in Level 2

Keywords: Problem Solving, Mathematical Procedure, Mathematical Strategies

1. INTRODUCTION

Advanced technology has brought changes to humans' lifestyles. To be able to survive, not only do we have to dominate natural challenges but we also must develop skills and abilities to compete and survive the changing conditions of the world. Hence, developing skills of a learner is crucial. Education is the first step that can pave the way for Thai students to enter the 21st century confidently, so developing "21st Century skills" in learners, especially problem-solving skills which are considered basic skills for development of other facets, is significantly important. Educational policies and guidelines have been changed in many educational institutes (Metta Marwiang et al., 2017) to respond to the needs of society, and the focus is now on problem-solving skill development.

Incorporation of problem-solving culture to class management is to teach students how to solve a problem through doing activities that provide an opportunity for students to learn in a process, to be able to solve a problem, and to promote autonomous learning. In this kind of activity, students can learn content and develop learning skills from engaging in a task. Chanapha Chaiprong (2011) organized classroom activities for her Grade 10 students in a mathematics class, fostering various problem-solving strategies that are useful for learning mathematics. It was found that problem-solving strategies are an important tool because effective ways in solving a problem require

instantaneous application of an appropriate problem-solving strategy. Also, the results from the evaluation can be applied to improve a lesson plan in order to enhance learning development of learners (Metta Marwiang et al., 2017). Hence, it is very important that these skills are cultured in a class. The Programme for International Student Assessment (PISA), which is a worldwide study, evaluated educational systems to gauge how well the students are prepared for real-life situations in the adult world, and the results showed that there is an urgent need for developing Thai students in this area. The low-level of evaluation of the Thai educational system resulted in the adjustment on educational policies. Therefore, the Project of Development of Student's Mathematics Higher-Order Thinking in Northeast Thailand was launched with the aim to develop human resources, to enhance national competitiveness and to respond to global and market needs. In this project, lesson study and an open approach are the two main educational innovations required for a reform of mathematics education in Thailand. These educational innovations are being used in 68 schools across the Northeastern region. In this study, the effectiveness of this educational method was investigated among the students studying in this program, hoping that the results could be useful for the development of students.

2. OBJECTIVES

This study investigated mathematical problem-solving efficiency of students learning with lesson study teaching in an open approach method at Non Chan Tuek Huai Gae Wittaya School in Khon Kaen. The two objectives of this study were:

1. To study mathematical problem-solving efficiency in numbers and operations of students learning with lesson study and open approach.
2. To evaluate mathematical problem-solving efficiency in numbers and operations of students learning with lesson study and open approach.

3. SCOPE OF THE STUDY

The target population of this study was sixth-grade students learning with lesson study and an open approach in the Project of Development of Student's Mathematics Higher-Order Thinking in Northeast Thailand at Non Chan Tuek Huai Gae Wittaya School in Khon Kaen. Fourteen students consisting of six males and eight females were selected by purposive sampling.

Variables in this study were mathematical problem-solving efficiency of students, which consisted of two facets: 1) mathematical procedures and 2) mathematical strategies.

The phases of study were divided into two parts:

Phase 1 covered four weeks of the subject content for a mathematics class taught in Grade 6 at Non Chan Tuek Huai Gae Wittaya School, which included numbers and operations such as greatest common divisor (G.C.D.) and lowest common multiple (L.C.M).

Phase 2 included the mathematics efficiency test in open-ended questions for numbers and operations. The test consisted of six sections with a total of nine questions.

4. CONCEPTUAL FRAMEWORK

Lesson study and an open approach aim at transforming mathematics classes from a passive classroom to a classroom that engages students in various kinds of thinking procedures and rationales. Therefore, the researcher conducted this study to investigate and evaluate mathematical problem-solving efficiency of students learning with these innovations, and to learn the effectiveness of this teaching and learning method (Maitree Inprasit, 2014; Metta Marwiang et al., 2017; Patcharee Chanpeng et al. 2015). The study investigated two key areas: mathematical procedures and mathematical strategies.

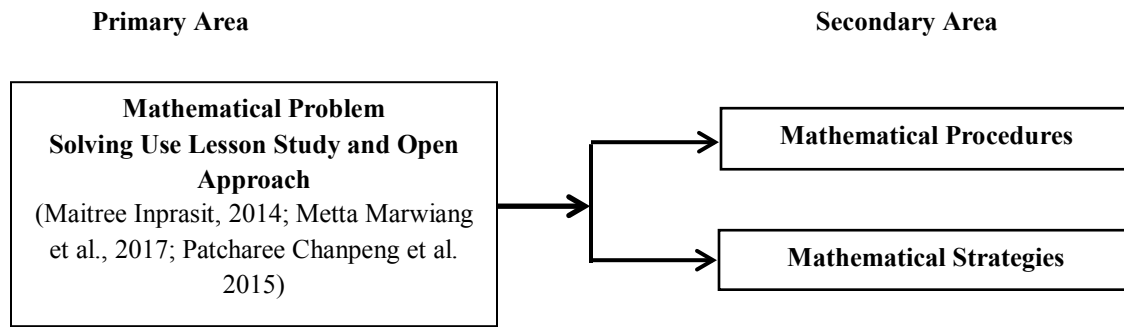


Figure 1: Conceptual Framework

5. THE STUDY

5.1 Research Methodology

This study applied mixed methods and the process was divided into two phrases based on the operation and significance of the study (Creswell & Plano, 2007). Exploratory sequential design was adopted by using qualitative and quantitative methods. The qualitative data was collected during the first phrase of the study, and rich data from the first phrase was analyzed using a quantitative method.

5.2 Research Instruments

Observation forms were designed to collect the data during classroom activities. The areas being observed were three key domains including 1) Cognitive Domain for the observation of students' behaviors and verbal and written interactions, 2) Affective Domain and morals shown in students' verbal and non-verbal expressions, and 3) Psychomotor Domain that was observed when students were doing an activity or group work. Task completion was also part of the evaluation. Moreover, the data was recorded in an individual observation form, a group work observation form, a classroom observation form, and items that were nested in 6 open-ended questions.

5.3 Data Collection

Data was collected at Non Chan Tuek Huai Gae wittaya School in Khon Kaen. The class was observed and video-taped by the researcher and the assistant for four weeks in a sixth-grade mathematics class.

5.4 Data Analysis

The quantitative and qualitative data from Phase 1 were analyzed based on Construct Modelling (Wilson, 2005) to be used as a guideline for development of evaluation framework, as shown below. Standards and indicators for numbers and operations for the mathematics class of Grade 6 were reviewed for a Progress Map and research instruments. The instruments were tested before data collection. Finally, the data was analyzed.

Information on standards and indicators of numbers and operations of Grade 6 were reviewed prior to the development of research instruments. The instruments were tested before the data collection procedure. Then, the collected data was analyzed using a Progress Map for Mathematical Procedure and Mathematical Problem-Solving Strategies developed by Patcharee Chanpeng and Mark Wilson (2015) as shown in Table 1 and Table 2.

Table 1: Progress Map for Mathematical Problem-Solving in Mathematical Procedure

Level	Level of Efficiency	Name
4	Excellent	Strategic/Extended Thinking
3	Good	Simple Skills and Concepts
2	Average	Basic Memory and Reproduction
1	To be improved	Unrecalled Memory
0	Low	Non-Response

Table 2: Progress Map for Mathematical Problem-Solving in Mathematical Strategies

Level	Level of Efficiency	Name
4	Excellent	Abstract (The ability to move from concrete to abstract representations)
3	Good	Visual (A variety of strategies for representing an algorithm)
2	Average	Concrete (Procedure with the minor part of a mathematical basis)
1	Fair	Novice (Unable to use strategies with mathematical basis)
0	Low	Non-Response (Does not answer)

The data gained in the second phase of the study was analyzed by ConQuest 2.0 for statistical analysis and found that the estimate value was 0.52, discrimination value (r_{pb}) was 0.38, and internal validity was 0.82 (Cronbach's Alpha Coefficient; α). These statistical results were used to analyze level of efficiency according to the Progress Map to provide further explanation and suggestion for the improvement of each student.

6. CONCLUSION

The results of the study and a discussion are divided into two parts according to the objectives of the study, as follows.

Part 1. Analysis of mathematical problem-solving efficiency of students from classroom observations at Non Chan Tuek Huai Gae wittaya School in Khon Kaen, where lesson study and an open approach were incorporated.

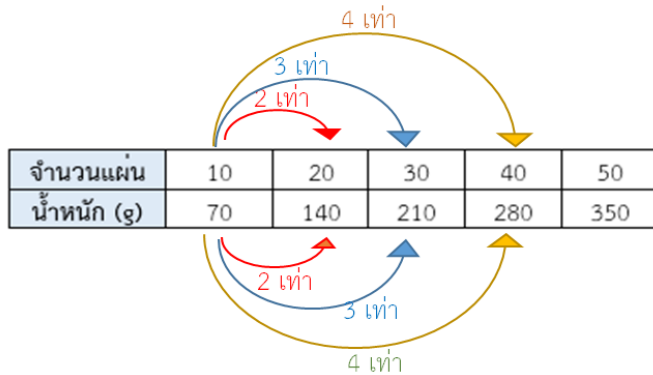
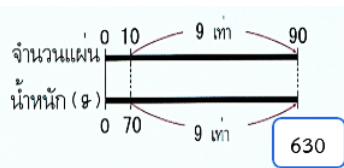
Part 2. Evaluation of mathematical problem-solving efficiency of students learning with lesson study and an open approach at Non Chan Tuek Huai Gae wittaya School in Khon Kaen, from an efficiency test on numbers and operations.

The results are presented below.

Objective 1: Mathematical problem-solving efficiency in numbers and operations of students learning with lesson study and an open approach. The results are shown in Table 3.

Situation: From last time weighing the papers, 10 sheets of paper weigh 50g, but when weighing 10 sheets of a new type of paper, the result was 70g.

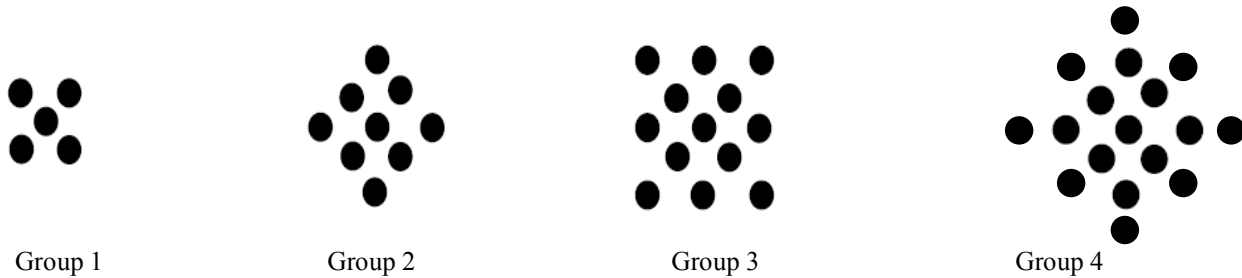
Table 3: Problem-Solving Efficiency in Mathematical Procedures

Instructions	Student Procedures												
1. When the number of sheets increases 2 times, 3 times, 4 times and so on, how will the weight change?	<p>When the number of sheets increases 2 times, 3 times, 4 times and so on, the weight would also increase 2 times, 3 times, 4 times, accordingly.</p> <p>When the number of sheets increases 2 times, 3 times, 4 times and so on, the weight would also increase 2 times, 3 times, 4 times accordingly. The more the number of sheets, the more weight there is.</p> <p>Students multiplied 2, 3, 4 and so on in the table showing relationship of the number of paper and the weight.</p>  <table><tr><td>จำนวนแผ่น</td><td>10</td><td>20</td><td>30</td><td>40</td><td>50</td></tr><tr><td>น้ำหนัก (g)</td><td>70</td><td>140</td><td>210</td><td>280</td><td>350</td></tr></table>	จำนวนแผ่น	10	20	30	40	50	น้ำหนัก (g)	70	140	210	280	350
จำนวนแผ่น	10	20	30	40	50								
น้ำหนัก (g)	70	140	210	280	350								
2. How many grams will 90 sheets of paper weight?	<p>Students kept the list in the table going; the number of sheets was listed up to 90 and the weight added 70 each time.</p> <p>The information of the table showing the relationship of the number of paper and the weight was used. When finding the weight of 90 sheets, the students looked for the information of 40 sheets and 50 sheets ($40+50=90$). So, the weight of 90 sheets equals the weight of 40 sheets (280g) plus 50 sheets (350g). The answer is $280 + 350 = 630g$.</p> <p>Multiple increases in the number of sheets and weight was applied; 10 sheets of paper weighs 70g, so the weight of 90 sheets of paper was 9 times more than the weight of 10 sheets. Hence, the equation is $70 \times 9 = 630g$.</p> 												
3. How many sheets of paper were there if the weight is 700g?	<p>The table showing the relationship of the number of paper and the weight was used. The total weight of 700g is a result of adding 350g to 350g ($350 + 350 = 700g$ or $350 \times 2 = 700g$). So, the total sheets of the 700g weight equals the weight of paper with 350g (50 sheets). The equation is $50+50 = 100$ or $50 \times 2 = 100$. The answer is 100 sheets.</p> <p>Multiple increase in the number of sheets and weight was applied; 19 sheets weighs 70g, so 700g of paper is 10 times of the weight of 70g. Hence, the number of sheets must be 10 times more as well. The equation is $10 \times 10 = 100$ sheets.</p>												

The results revealed that the mathematical problem-solving efficiency of the students was at a basic level, which means that they had simple skills and concepts of mathematics to solve the problem and could apply mathematical procedures to solve a complex problem and generate a reasonable answer and method.

Objective 2: Evaluation of mathematical problem-solving efficiency of students learning with lesson study and an open approach. The results are presented in Table 4.

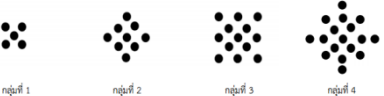

Question 1: Students in class 6/4 at Sukjai School are trying to group class members for an exercise. The number of group members in each group increases as shown in the photo.



From the situation provided, if there are 7 groups, how many members are in Group 7?

Table 4: Mathematical Procedures

Level	Score	Name	Description of Respondent	Example
4 AB	4	Abstract	Students create an understanding of the question using various mathematical strategies and could applied appropriate strategies to solve a complex problem i.e. creating a diagram, making a prediction and testing hypothesis, making a chart or table, reversing the thinking step, giving a reason with logic, and looking for or creating a pattern of a model. Lastly, students can transform concrete images into abstract ideas.	<p>e.g. Question 1</p> <p>1. นักเรียนห้อง ป.6/4 โรงเรียนบ้านหนองสาหร่าย จัดกลุ่มออกกำลังกาย โดยจะมีสมาชิกเพิ่มขึ้นเรื่อยๆ ตามลำดับกลุ่ม ดังนี้</p> <p>Students understood the question and tried to solve the problem in various ways such as creating a table, making a diagram, and drawing. They also provided explanation using mathematic symbols, and could conclude the pattern of the given situation; with more group members in each group, the equation was</p> $a_n = 5 + (n-1)4.$
3 NO	3	Visual	Students can apply various mathematic problem-solving strategies, solve a problem in a systematic way, and can explain concepts using specific mathematic symbols in their explanations, i.e. drawing, making a prediction and testing a hypothesis. Also, students can exclude unrelated or incorrect parts which helps them understand	<p>e.g. Question 1</p> <p>1. นักเรียนห้อง ป.6/4 โรงเรียนบ้านหนองสาหร่าย จัดกลุ่มออกกำลังกาย โดยจะมีสมาชิกเพิ่มขึ้นเรื่อยๆ ตามลำดับกลุ่ม ดังนี้</p> <p>Students created a diagram showing the relationship, and drew images for Groups 5,</p>

Level	Score	Name	Description of Respondent	Example
			the situation more clearly.	6, and 7. They were able to make a conclusion and provided a systematic explanation of the relationship using various calculation methods.
2 CO	2	Concrete	Students can apply basic mathematical problem-solving strategies in solving some parts of the problem. They can explain their ideas and method, and also use simple mathematic equations to solve a few steps of the problem that they are familiar with.	<p>e.g. Question 1</p> <p>1. นักเรียนห้อง ป.6/4 โรงเรียนบ้านหนองสาหร่าย จัดกลุ่มออกกำลังกาย โดยจะมีสมาชิกเพิ่มขึ้นเรื่อยๆ ตามลำดับกลุ่ม ดังนี้</p>  <p>Students understood that the number of the members increases by 4 in each group. They could calculate in a simple process by adding 4 to each group step by step; Group 1 was 5, Group 2 was $5+4=9$, Group 3 was $9+4=13$ and so on until they got the correct answers for all the groups.</p>
1 VI	1	Novice	Students cannot apply a basic strategy for mathematical problem-solving. Explanation is given in a word or a sentence level to explain ideas, yet it is unrelated to the answer.	<p>e.g. Question 1</p> <p>1. นักเรียนห้อง ป.6/4 โรงเรียนบ้านหนองสาหร่าย จัดกลุ่มออกกำลังกาย โดยจะมีสมาชิกเพิ่มขึ้นเรื่อยๆ ตามลำดับกลุ่ม ดังนี้</p>  <p>Students understood that the number of students in Group 2 is higher than Group 1. They provided some explanation to the increasing number but could not find the correct answer to the question.</p>
0 NR	0	Non-Response	No response from students. Students do not try to answer or give an unrelated answer.	Students do not respond to the question or give an unrelated answer.

According to the results of the study, the levels of efficiency according to the Progress Map in problem-solving were as follows: six students (42.85%) in Level 0, three students (21.42%) in Level 1, and five students (35.71%) in Level 2.

7. SUGGESTIONS FOR FURTHER RESEARCH

In this paper, the researcher would like to offer some suggestions, listed below:

1. More studies should be done in a classroom where lesson study and open study are not incorporated so that the two types of teaching and learning methods can be compared and contrasted in order to gain more information on positive and negative effects of these innovations.

2. The data being used for classroom research must be credible; that is, the study period should be at least more than one session so that more elements of an actual mathematical problem-solving efficiency of a student can be drawn and collected. This process can increase validity of the study.

8. REFERENCES

- Chayabha Jaiprong (2011). **A Mathematics Instructional Activities Adapting and Applying a Variety of Problem Solving Strategies to Enhance Ability to Solve Mathematical Problems on Functions for Mathayomsuksa IV Students.** Department of Mathematics, Faculty of Science, Srinakharinwirot University.
- Creswell, J., & Plano Clark, V. (2007). **Designing and Conducting Mixed Methods Research.** Thousand Oaks, CA: Sage.
- Inprasitha, M. (2014). **Preparing ground for the introduction of lesson study in Thailand. Lesson Study Challenges in Mathematics Education.** Editor by Inprasitha, M., Isoda, M., Wang-Iverson, P., & Yeap, B. H. 109-122 *Singapore: World Scientific real world situations.*
- Junpeng, P., Wilson, M., Inprasitha, M., & Marwiang, M. (2016). **Developing the framework for assessing cognitive process of Thai students' mathematical problem solving.** Unpublished manuscript. California: Graduate School of Education, University of California at Berkeley.
- Marwiang, M, Klaharn, J, Saree, L and Junpeng, P. (2017). **Assessing Students' Mathematical Problem Solving Skill Through the Innovative Lesson Study and Open Approach. [Special Issue]. The Turkish Online Journal of Educational Technology. (October), 385 – 395.**
- Wilson, M. (2005). **Constructing measures: An item response modeling approach.** Mahwah, NJ: Lawrence Erlbaum Assoc.

THEORY OF EDUCATION IN A SOCIAL MOVEMENT. AN ETHNOGRAPHIC STUDY ON THE DISPUTE OF EDUCATION

Arminda Álamo Bolaños
University of Las Palmas of Gran Canaria , Spain
arminda.alamo@ulpgc.es

ABSTRACT

The educational projects of the Brazilian government and the Movement of Rural Workers Without Land (hereinafter MST) pose situations of conflict, since they obey different logics. The MST has the land as a place, however, the agribusiness, the land without people. Knowledge in the abstract, but also knowledge practices that allow or impede certain practices in the field and in the real world. The objective of this work was really what really is in dispute between and investigate the friction between the government's official educational project and the educational project of the MST as a social movement. To this end, we conducted an ethnographic study on conflict situations between both educational projects based on the systematization of experiences. The findings show three situations: the place of education, the training of teachers and the educational project as an event. This means that education is a social and permanent field, therefore, it is about projects, historical and political discourses in which the different groups try to define their social function and their hegemony.

INTRODUCTION

In this paper we will problematize about the education in disput, in the current context of advanced capitalism, through approaching the theory of education.

But this question for education requires us to problematize about education, what forces push us to unveil the different pedagogies that weave tomorrow's society today. This interrogative has to do with us, with the social being, with being bound to the territory, to its habitat, to the place, to the land. Starting from problematizing the question about education nowadays, we inquire into the Brazilian reality. We pose the question of field education from its historicity, noting popular education as an essentially critical and dialogical pedagogical experience, as a movement that resists being appropriated by power, as a revolution of knowledge and transformation of the world through popular knowledge, thus giving a turn to educational practice, especially in the Latin American continent, and crucially in the Brazilian country, being a reference of different pedagogical experiences questioning a curriculum or an official and institutionalized education. Likewise, we approach the rurality of this country, the dynamics that are built around the land, the farmers, and the study of education in this context, that is, the pedagogies practices that germinate from the land and their idiosyncrasies.

To inquire about the MST as a social movement and its educational project, because the educational practices are in a context of struggle for the land that leads us to point out the substantive elements of the different cosmological conceptions and the educational materials that are generated from them. It is important to problematize education and analyze the genesis of the respective schools together with the process of taking land and consolidating the settlement specifically in Tiradentes and Zumbi dos Palmares, located in the State of Paraíba, in the municipality of Mari.

Analyze situations that give thought to education, beyond isolated facts. What we have agreed to call "educational situations". The educational situations occur in the interstices, in the folds, and that is where the frictions occur, and they become tensions between the pedagogical practices of the MST and the official educational project. And in each one of the educative situations raised, to analyze its character of incommensurability - its belonging to different logics, which do not have parameters in common - and the elements that compose it: the election, the distance and the exception.

The reflection on the educational project is addressed, related to Brazilian educational programs and the pedagogies that promote the MST that has to do with education on land. As an event, following Deleuze (1994, p.158), "the outbreak, the splendor of the event is the meaning. The event is not what happens (accident); it is in what happens the expressed cigar that beckons us and waits for us ". And as a situation (Badiou and Zizek, 2011) that makes education think, and as a singularity that constructs multiplicities. The educational project from the social movement means that education that has nothing to do with being functional to the productive system, but has endless purpose. It establishes authentic relationships between its materials and pedagogical practices, articulating a system alien to the paradox.

THE STUDY

The methodology that has been used is ethnography, following Goetz & LeCompte (1988, p.51), "the object of educational ethnography is to provide valuable descriptive data of the contexts, activities and beliefs of the participants in educational settings". Ethnography analyzes the processes of teaching and learning; the intentional and unintended consequences of the observed patterns of interaction; the relationships between the actors of the educational phenomenon.

In this sense, Pallasmaa (2006, p.16), states that, "as philosophers reveal the ocular-centric paradigm of our relationship with the world and with our concept of knowledge -the epistemological privilege of sight-, it also becomes important to critically study the role of sight in relation to the rest of the senses".

A systematization of the experiences has been carried out. Experiences of mine, inhabiting the place of research, and experiences of the "Without Land", in particular -of the community, of the students and the educators- generated in the Zumbi dos Palmares and Tiradentes schools, we have taken into account several areas: analysis of the documents and texts studied, interviews with the people involved in the process - from leaders of the MST, educators, Ministry of Education of the municipality of Mari and professors of the University of Paraíba -, and analysis and collection of graphic documentation.

The sources on which we have based about bibliographic, historical and scientific, classified and ordered by different items, files, participatory observation and testimonies of the different subjects involved in field education and in particular in education in the settlements of Zumbi dos Palmares and Tiradentes. Participatory observation has had three areas: the settlements, the municipality of Mari and the Federal University of Paraíba (UFPB). In the three areas we have participated in different classrooms and in research groups. Establishing a conversation, that did not look for any synthesis, or data to found our ideas, but attentive to the displacements, to the educational singularities, to what education had to think as an event. We have critically reasoned the different sources, confronting different interpretations. Research constitutes a device, following Deleuze (1990), traversed by multiple lines of flight, which build situations of thinking. A methodology attentive to the action of thinking, which breaks the framework of a project or program and has been addressed from the systematization of the experience of living, paying attention to what was hidden behind reality. Hoping to produce a matrix. Matrix as a cut, as a section. As something that builds "life", that conceives, hence its relationship with motherhood; matrix as a device, full of devices that in turn build devices.

FINDINGS

The place of education

Today, there are still 14.1 million illiterates in Brazil, which corresponds to 9.7% of the total population over fifteen years of age. One in five Brazilians is functionally illiterate: they read and write, but they can not understand, interpret or write a text. In the Brazilian Northeast, 18.7% of the population is illiterate; that is, more than 7 million people do not know how to read or write and, therefore, their ability to improve their quality of life is greatly reduced. Among people over 15 considered functional illiterate in Brazil, more than a third live in the Northeast, and of these, more than half live in rural areas. The highest concentration of population in the countryside is found in this region. It is in the Northeast of Brazil, where most of the families reside in Agrarian Reform settlement projects. But there is the contradiction, that being one of the regions that presents, in the Brazilian general context, low levels of schooling, it is one of the regions where more schools are closed. In this context, in rural areas of Brazil between 2002 and 2009, more than 24,000 schools were closed. According to the school census of the National Institute of Studies and Educational Research Anísio Teixeira: INEP (2010) of the Ministry of Education, there were 107,432 schools in 2002.

In 2009, the number of educational establishments was reduced to 83,036, meaning the closure of 24,396 schools, with 22,179 municipal schools. In general, the municipalities assume the infantile education and the fundamental education and they are the states more and more, those that assume the responsibility on the average education. There are no clear criteria that determine the closure of schools, that explain the reasons why they are closed, or to what extent it is possible to close a field school. The closure of these schools is manifested as a setback for education in Brazil and as an event that characterizes the current situation through which Field Education passes, pointing out challenges, struggles and proposals.

The MST associates the closing of the schools, to the agribusiness affirming that this one develops more through the creation of monoculture, where the family agriculture does not grow, producing rural exodus and more closures of schools. Another reason would be the expansion of resources for school transport, as the municipalities, having guaranteed transport, chose to close schools in the field and concentrate students in the schools of the city.

Education in the Countryside is different from education in the city, since it is related to the specific conditions of life in the rural area. In a school under the perspective of the field, boys and girls learn the same subjects as in the schools of the city, but with a different approach, rooted in the context of the field. After more than 12 years of what has been called Field Education, it lives very contradictory moments. On

the one hand, in the last decade, progress has been made in some conquests and educational initiatives in the field of education, as is the case of legislation and public policies.

Field Education emerges as a criticism of the situation of Brazilian education in the field. The situation of that time was characterized precisely by the closure of schools in the countryside and the transfer of children, youth and adults from the countryside to the city. Today we return to that situation. Situation that was confronted at the time by the MST that was mobilized against the neoliberal policy of closing schools.

For the MST, the struggle for Education in the Countryside is linked to the struggle for Agrarian Reform, the main demand of the peasants. It is not possible to think of an Agrarian Reform, a social development of the settlements, without thinking about education. Access to the school is associated with cultural and social development in the countryside and is a guarantee of rights for the subjects living there, strengthening the permanence of small farmers in the countryside and also improving food production. The MST problematizes the situation from that vision of the country, in the perspective of guaranteeing that the rural population has access to the production of knowledge and that this access is possible in the territory in which they live: the countryside. The history of the MST makes it clear that the struggle for land was at the same time a struggle for field education.

This clash creates an educational situation, because the closure of schools is a conflict that reveals that what is at stake is not a rationalization of educational infrastructures, as is argued from the different instances of government; it is something of greater magnitude, related to the different conceptions and projects that are disputed over the land and that affect Field Education. And that they put, in turn, highlight the different conceptions about it.

From that logic, the place of education is essential; that is, a Field Education can not take place outside the field. Therefore, the fight against the closing of schools is an expression of the struggle of peasants and communities, against the logic of this neoliberal capitalist model for the countryside. Between these two projects, there is no common parameter, they are strange to each other, they are incommensurable. There is a paradoxical relationship between them.

The closure of schools has to do with incommensurability, with radical choice, with distance and exception. From a thought always occupied in a variable element, inseparably ethical, aesthetic and political.

This conflict leads to plucking rhizomes (aerial roots) from the earth and building schools like trees planted in the city or on the periphery of it, with the will to create "educational systems". Systems that reproduce systems, but do not transform them.

The training of educators

The hiring of teachers, in the schools of the settlements, has always been subject to tensions and conflicts; in principle, because the mobilization of the settled communities has been necessary for the administration to provide the schools with more teachers. But, if the new teacher came from the city, that is, he was not settled and did not assume the pedagogical political project of the school, and he did not show interest in Field Education, the conflict did not end. A new situation was created: the school community did not want that teacher.

But if faced with this situation, we think that the conflict disappears by incorporating settled teachers into the schools of the settlements, and when there are none, teachers of the city that assumes Field Education and the specific pedagogical practices of the MST. We are not facing an educational situation; or to be more precise, we should say, that we do not have sufficient resources or ability to access an event. From the start, from that position, we almost always show the beginning or the end, while an event, even if it is brief, even if instantaneous, continues. Because what is really disputed, is not seen; It is invisible At this point, I remember a fragment of Don Quixote, in which it was said that to see how a tapestry is built, we have to turn it around. Well, let's turn around this situation. And what do we see? A set of lines that intersect and form an educational device. What is disputed is the training of educators, which is the same as the answer to the question: What is an educator in this context of field education?

The teacher must participate in the life of the settlement. Just being in the classroom is not enough. Must participate in the discussions and main actions of the settlement as a whole. The teacher will only be a true teacher as soon as he makes his struggle for the land, for production, as a struggle for education (MST, 2005, p.36).

This position of principles, on what a professor should be, leads one to think that a teacher is a militant. And it is true, the teacher is also trained to be a militant, whose practices in the classroom integrate the demands of the daily life of the settlement and the wider struggle of the movement, and that these demands are perceived and assumed from the context of collective experiences, with intentionality and affectivity. It is a process that requires decisions and commitments.

The creation of pedagogical groups and the ongoing training of educators have been present since the constitution of the movement. The pedagogical groups, created in 1987 as a result of collective learning from the first occupations carried out by the MST, highlight the value that the movement gives to education and the continuous effort of participation of the movement as a whole in the implementation of its project for the education, through the children, of the participation of the community in schools, of the organization of teachers for educational work and of their initial and continuous training.

For the MST, the pedagogical groups constitute a privileged space of permanent formation, through the reflection on the practice, of the study, of the discussions and of the preparation for the participation in the formative activities promoted by the MST, by the public organs or by other entities. One of the objectives of the PRONERA, is to attend to the training and education of educators for the fundamental education in the settlements and to implement projects of continuous training of professors in the settlements. But, as we have analyzed previously, a new program that arises without the participation of the Sin Tierra movement, the PRONACAMPO, closes the transition to this training policy and reorients the training of teachers to distance learning, thus implementing a policy of education to distance. The training of teachers in the settlements constitutes an educational situation, because there is a paradoxical relationship between the two positions, that of the MST and that of the educational institutions. There are no common points between them, they follow different logics. Educate, for the MST basically means "to form to transform society", it is an education that does not hide its commitment to develop class consciousness and revolutionary consciousness, both in students and educators. On the contrary, to educate, for the government of the Union, essentially means "to form to reproduce society". The educator encounters the paradox of educating by undoing his education. It is a deployment to replicate the Field Education line that, together with the students and the community, has drawn. Field education that is linked to the movement, in the sense originated by Freire (1973), of popular education. And it is this experience, together with that of the social movements, that makes the settlement think as a political and educational creation.

The educator, the presence of the community in the school does not assume a "dynamic" role of the relationship between subject, knowledge and experience, but an active role. And together with the children of the MST, they constitute a process of "subjectivation". Because you do not learn from the settlement by talking about it, describing it, but by doing it and experiencing it, and that means that the educational practice must inquire about the notion of education, culture and subject. Subjectivity and subject are different but inseparable categories.

For Castoriadis (1998), the human being is constituted in a process of "subjectivation". Being the subjectivity, the realization of the subject, its construction itself. But, subjectivity, is not "the product", but the manifestation of the process through which someone becomes subject.

The educator who teaches what he is looking for and not what he knows. We educate only at the extremity of our knowledge, in that extreme point that separates our knowledge and our ignorance, "and that makes one pass within the other". Only in this way we decided to educate.

Education as an event

In the schools of Zumbi dos Palmares and Tiradentes, education is also shown as an educational situation, because it involves a relationship that is not a true relationship, it is first and foremost a rupture. Between the two educational projects, the official manifested in the textbook, and the pedagogical practices of the MST, there are no parameters in common, only distance. And measuring that distance is one of the tasks when it comes to problematizing school education. But, perhaps, the educational project of Zumbi dos Palmares and Tiradentes, do not let us measure that distance between the two positions. The contents are not alien to the form that contains them and that the form is the substance that rises to the surface. Then, if they give us some content, they are giving us some forms as well; what happens is that sometimes we do not see them, but that we do not see them, does not mean that they do not exist; or, we do not know how to look at them, or we do not want to see them. Let's not forget, that the educational project also gives shape to the educator.

In the educational proposal of Zumbi dos Palmares and Tiradentes, two concepts are used, the curricular axis and the generating theme. And in teacher planning, by way of implication, the relationship between curricular axes and generating themes is considered; the latter being developed into subtopics. In the text of the curricular proposal, occasionally, curricular axis is confused with generating theme and this, in turn, with activities to perform or tasks entrusted to students.

Therefore, the generator concept is important, not as a topic or that is contained in a topic, but as what problematizes the realities. And not only confirms what she is, but what could be. As Freire (1976) reminds us, problematization as an attitude that transforms our consciousness of the world. And the origin of consciousness must be sought in the social interactions that characterize human activity (Vygotsky, 1991). Generator is the quality of an action that generates, that builds, that produces. It is a rhizomatic, human action; therefore, we do not see a territory without people, less a place: the settlement. And we think from its historicity, because the notion of place is inextricably linked to the notion of time. The place as a foundation, what is below - and sometimes on the surface - belongs to cultures that find identity struggling against the passage of time, trying to trap it through ritual and myth. The knowledge of these cultures are part of these myths and rites of the foundation, memory and presence.

CONCLUSIONS

This research shows that education is a social field in permanent dispute constituted by projects, historical and political discourses in which different groups in conflict seek to define their social function and hegemony, we knew about Bourdieu (1998).

When analyzing the different situations of conflict between the educational project of the Brazilian government and the educational project of the MST as a social movement, it concludes: Education, promoted by the MST, is articulated, united, to the struggle for Agrarian Reform and resists the neoliberal education project.

That the pedagogical practices in the settlements are generated by experiences. The question is always present. From what perspectives can different knowledge be identified? What kind of relationships are possible between them? How to make shared decisions and distinguish them from those imposed? How do you identify the perspective of the oppressed?

That the educational project of the MST is an event, because it investigates what is not power, what is not an institution. Generates, builds, other social relationships: egalitarian relationships; Knowledge that has to do with being on land, in territory, in the world. And weaves some knowledge, different, that are not even in the official educational project. Sometimes out of ignorance, laziness or because it does not respond to the economic, political and social project of the agribusiness for the Brazilian countryside that promotes only a field without people.

That the closure of schools, the hiring of teachers and the official educational project are educational situations that reflect on education. In these three areas there is a relationship of incommensurability between the MST and the institutions, a relationship that is not a true relationship. There is an option, a distance and an exception.

That the settlement is a form of curriculum creation that places the subject that inhabits it in a borderline experience: Without Land. "I am the space where I am", as the poet Noël Arnaud said. That when doing and undoing education is the question: what is education today, school, life? What new modes of subjectivation do we see today?

Therefore, this research is not closed in its conclusions, it has a provisional, open nature, in search of connections, openings.

REFERENCES

- Badiou, A. & Zizek, S. (2011). *Filosofía y actualidad. El debate*. Madrid: Amorrortu
- Bourdieu, P. (1998). *Capital cultural, escuela y espacio social*. Mexico: Siglo XXI
- Castoriadis, C. (1998). *Hecho y por hacer*. Buenos Aires: Eudeba
- Deleuze, G. (1990). *Conversaciones 1972-1990*. Valencia: Pre-textos
- Deleuze, G. (1994). *Lógica del sentido*. Barcelona: Paidós
- Freire, P. (1973). *¿Extensión y Comunicación? La concientización en el medio rural*. Buenos Aires: Siglo XXI
- Freire, P. (1976). *Pedagogía del oprimido*. Madrid: Siglo XXI
- Goetz, J.P. & LeCompte, M.D. (1988). *Etnografía y diseño cualitativo en investigación educativa*. Madrid: Morata
- MST (2005). MST Escola. Documentos e Estudos 1990-2001. *Caderno do Educação* Nº 13 Edição Especial. Sao Paulo: Expressao Popular.
- Pallasma, J. (2006). *Los ojos de la piel: la arquitectura y los sentidos*. Barcelona: Gustavo Gill
- Vygotski, L.S. (1991). *Obras escogidas, Vol. I*. Madrid: Visor

WHAT MOVES TEACHERS TO MAKE IDEAS COME ALIVE? EXPLORING THE BRIDGE BETWEEN PROFESSIONAL DEVELOPMENT AND CLASSROOM TEACHING.

Martin Klein
Martin.Klein@phwien.ac.at

ABSTRACT

The aim of this study is to evaluate professional development courses and their impact on classroom teaching. It investigates connections between realizing learnt content and possible influences on this process like the work environment, motivational aspects and course quality. I developed a framework to support an understanding of interdependent processes, based on different teaching and learning concepts and motivational considerations. The research design consists of three different measuring times to catch a large scale of professional development, including relevant background information of participants and experiences about their transfer processes. Results of this study could verify medium effects of an experienced course quality to transfer processes ($\rho=0.361$) and to long-term use (persistence) ($\rho=0.402$). The act of sharing ideas from a seminar with colleagues increased transfer rates as well. The collected data indicates, that intrinsic and autonomous participation relate better to transfer processes than controlled conditions, but also identifies a need for additional research to make secure statements about this assumption.

Keywords: learning, motivation, professional development, transfer

INTRODUCTION

Why does teaching affect some students and others not?

As simple as it might sound, as complex it is to find an answer to this question. Responding to this issue, it challenges researchers to find out more about teaching and learning. In my case, it inspired me to create an understanding of professional development by designing a suitable framework and testing it in the field. An evaluation of professional development courses helped me to find elements, which influence transfer processes, like course quality, the participants' motivation or their act of sharing ideas from a course with colleagues. Besides, in times where output orientation becomes more and more important (not just in the economic sector but also in education) (e.g. Gessler 2011) there's no way around an evaluation of these processes. Results may support the effectiveness of future courses, which institutions like the board of audit request from the university colleges of teacher education (Rechnungshof 2008, Steininger 2010).

Apparently, universities and university colleges evaluate their seminars. Usually this involves a survey at the end of a course, measuring the participants' acceptance towards it (Hölbling 2007). Such feedback might be one indicator for transfer processes but will certainly not explain this process as a whole. In such cases we rely on guesses instead of confirming evidence (e.g. Finkel-Salzer 2002, Gris 2008).

In this paper, I explore multiple parameters, which possibly lead to such a transfer by evaluating English courses for Primary school teachers. I emphasize on teachers' motivation, derived from their work-environment, because I assume that those elements play a crucial role for transfer processes (based on theoretical considerations of Ryan and Deci 2017).

However, the field of transfer research is underdeveloped, especially in tertiary education. In a different discipline like economy Michael Gessler did some studies to face this issue. He investigated business training and transfer effects of participants ($N=633$). One of his findings was a relation between the participants' motivation to transfer and a successful transfer in their work ($r=0.494$) (Gessler 2011). Because of the theoretical relation between transfer and motivation (Ryan and Deci 2017) research in that field is also relevant for this paper.

In contrast to little transfer researches, various studies about motivation exist. Ryan and Deci (2017) collected an immense amount of studies within their work about the self-determination theory, partly from their own research, partly from researchers around the world testing their assumptions. Their findings primarily focus on different effects of intrinsic and extrinsic types of motivation and verify that former result in better learning and improved outcomes. Performed usually in experimental settings or in field studies at schools, there's still a need for studies in the tertiary field. We can only assume that motivation has a similar influence on tertiary education processes like professional development. Indications for that have been found in this study as well. Therefore, the process of choosing a professional development course is already important. To show this connection, I compared controlled, autonomous and intrinsic decision taking with the teachers' intention to transfer ideas/suggestions from a course in their classroom teaching.

Results from my study showed, that teachers under intrinsic conditions had the highest intention to use them (84.5% rated the statement to use ideas with 6 on a six-point-answer-scale), followed by autonomous conditions (81.8%) in contrast to a lower intention under controlled conditions (67.5%). The most revealing results of transfer processes have been found in their relation to course quality and to the act of sharing ideas. The

subjective course quality of participants therefore showed medium effects on transfer processes ($\rho=0.361$) as well as on a long-term use (persistence) ($\rho=0.402$). The act of sharing ideas demonstrated higher transfer rates as well (+27.1% in terms of the highest transfer ratings) compared to teachers, who did not share them.

Besides empirical data, this paper responds to a scientific gap by providing a theoretical framework that can be used for professional development on the one hand and by sharing results about related transfer processes on the other hand.

A THEORETICAL FRAMEWORK FOR PROFESSIONAL DEVELOPMENT

Many occupational groups must educate themselves for enhancing their work. So do teachers, for instance, by gaining experience in their teaching, learning from colleagues and by attending courses that support their professionalization. Such courses usually involve didactic tips, train personal skills or inform about new trends in education. The challenge is to describe this process of professionalization and to locate parameters influencing this process. Several theoretical concepts help us to understand this phenomenon. One of them comes from Carroll (1963), predicting successful learning from the variable time. He calculates school learning with the formula: School Learning = $f\left(\frac{\text{time spent}}{\text{time needed}}\right)$. The divisor of this equation describes how long learners actively engage in learning content. The dividend consists of a relation between the students' aptitude (usually IQ), capacity to understand, their pre-knowledge and the quality of the teaching/instruction. Carroll's model though, does not imply qualitative information about learning time and does not mention social influences on the learners. Proctor (1984), for instance, responds to this conceptual lack of social influences on learning and teaching. According to him, learning achievement depends not only on the quality of instruction (as Carroll's model indicated), but also on the behavior of teachers and students. A different approach comes from the educational researchers Gage and Berliner (1992). Their model describes the instructional process, starting with teachers' objectives and ending with an evaluation. This gives the teacher feedback about learning outcomes and the possibility to repeat content that students did not learn correctly in the first place. Some years later, McIlrath and Huitt (1995) published a model that brought more detail into the learning process of students. According to him the context and classroom processes are important for learning, besides an input and a measureable output.

Well-acknowledged models in the German education landscape come from Helmke (e.g. 2004), who emphasized on teaching (and learning) processes, teaching quality and the importance of evaluation processes in such terms. He collaborated in many evaluation projects for German ministries to enhance educational processes (such as teacher training and professional development), but also engaged in such activities in Vietnam. Helmke created several models to describe teaching and learning processes, suggesting that the social environment of the learner (and teacher) plays an important role in learning (and teaching). For my research, I merged the strengths of his opportunity-uses model (Helmke 2004) and his framework of individual, social and institutional conditions (Helmke 2004). By that it was possible to describe both, influencing parameters on professional development of teachers and the process from motivation to realization of behavior.

The framework for an implementation of professional development content to classroom teaching opens a theoretical explanation of this process and indicates measured elements within this study by highlighted areas (see Figure 1). The column in the middle describes the stages of this implementation process chronologically. The central element of this model is information (highlighted), providing an input for learning processes. However, this information, introduced by a course instructor, is already influenced in the prefield by the instructor's expertise. The information is passed on to participants of a professional development course, who experience its quality subjectively, based on individual differences in pre-knowledge, interest and motivation of the course's participants or contextual elements (like socialization from work environments or expectations from supervisors). Therefore, participants of a professional development will experience their course quality differently, similar to the quality of information in a classroom setting. A teaching quality score (according to Tillmann et al. 2011) describes the subjective impression of each participant with a mean of several ratings. The methodological part of this paper will explain Tillmann's score and his constructs in more detail. Contextual elements (column on the right-hand in Figure 1) illustrate their influences on various processes within this model. The school-context (headmaster, colleagues) consequently might have an impact on the participant's perception, but can also affect the implementation in the classroom as such (e.g. if a teacher coordinates lessons with colleagues, if the headmaster supports or thwarts certain ideas, etc.). Likewise, the role of the parents and expectations from the supervisory board may have an influence on such processes. Depending on the participants' perception (influenced by parameters described before) the provided information will either lead to motivated actions (implementation of ideas in their teaching) or not. The model illustrates even a long-term use, demonstrated by the stage of persistence, where teachers keep their behavior changed, even if difficulties appear. This study does not precisely measure this stage, but collects intentions of participants towards it. In case they manage to be persistent, the intervention will possibly show verifiable effects on their students, which are not included in this research, due to its complexity.

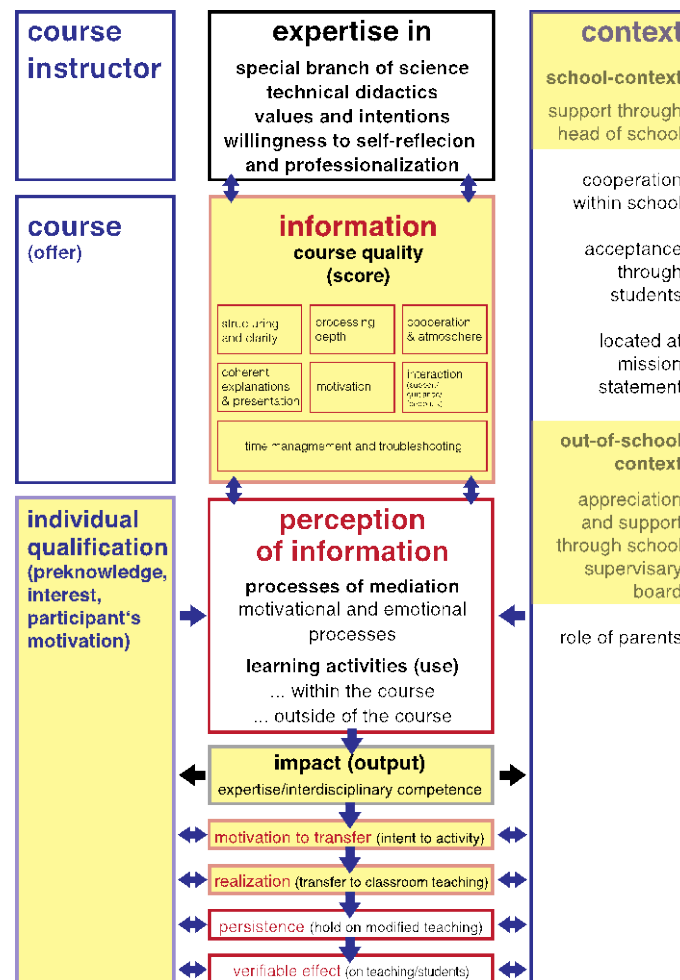


Figure 1: Framework for the implementation of professional development content to classroom teaching (source: author)

A MOTIVATIONAL APPROACH TO PROFESSIONAL DEVELOPMENT

The relevance of motivation as a motor of behavior seems logical, even though underlying reasons might be hard to discover. Therefore, it needs a theoretical explanation to understand motivation within a teaching and learning process.

Especially during the last century many scientists engaged in the challenge to describe a person's behavior. We can structure those theories into need (or content) and cognitive (or process) theories. Former, such as Maslow's hierarchy of needs (1954) or Alderfer's ERG theory (1972), try to understand behavior by internal processes of human beings. Maslow's concept, for instance, distinguishes between different needs, that want to be satisfied in a hierarchical order, beginning with physiological needs (like food, water, warmth and rest) and leading finally in its highest stage to needs of self-actualization (like achievement of someone's full potential) (Maslow 1954). Other theorists like Alderfer based their ideas on Maslow but tried to simplify and adapt them (e.g. by clustering them to three needs with the flexibility to break the strict hierarchical order) (Alderfer 1972). As a counterpart, content theories assume motivation to underlie human decisions. One of these theories suggests that motivation depends on a connection between behavior and outcome. Vroom's valence-instrumentality-expectancy theory (1964) emphasizes on external events such as rewards, which energize a person's motivation. His concept consists of three key elements resulting in a person's motivation for a specific situation. Expectancy regulates the effort someone puts in an action, instrumentality includes a person's faith that the action will lead to the expected reward and valence describes the value of an outcome/reward. Criticism comes for instance from Porter and Lawler (1968), hence to its simplicity. In their opinion the theory does not respond to individual differences of a person. This problem faces, for instance, the equity theory of Adams (1965). He frames motivation as a social comparison, in which people compare their individual efforts and rewards with relevant others. As a result, another person's situation can either be perceived as equal or different compared with oneself. Inequity may increase or decrease the person's effort in similar situations.

A currently widely accepted motivation theory overcomes that border between need and process theories by addressing both. The self-determination theory (Ryan and Deci 2017) relates behavior to internal processes (intrinsic motivation) and human decisions based on their environment (extrinsic motivation). It suggests three basic psychological needs to be responsible for our motivation. Autonomy, as the degree to which a person acts voluntary, competence, as the feeling of being capable to perform an activity effectively, and relatedness, as social integration, therefore result in the degree of self-determination. The authors relate this extent to well-being and further better performance and persistence of behavior. The degree of self-determination also regulates different classes of motivation. First, there's amotivation, which does not lead to the desired behavior (e.g. because the person does not feel competent enough or is just disinterested). Second, there are four types of extrinsic motivation, regulated by events from the outside: external regulation (behavior with complete external control), introjection (actions including choices that actually do not give an alternative to the desired behavior), identification (actions that the person can identify with) and integration (behavior that is in line with personal values, beliefs and needs). Finally, there's intrinsic motivation, which originates from personal interest and pleasure. Schellbach-Zell and Gräsel (2010) simplify the former described model by subsuming external regulation and introjection to (what they call) controlled motivation, and identification and integration to autonomous motivation (see Figure 2 for a visual illustration), which I applied to this research. The self-determination theory combines motivational considerations of various other theories, like satisfying the basic psychological needs (or needs in general as demonstrated in Maslow's and Alderfer's ideas), the influence of external events (e.g. Vroom's valence-instrumentality-expectancy theory) and the emphasis of the social environment on an individual's motivation (like in Adams' equity theory). Consequently, Ryan and Deci's self-determination theory (adapted to Schellbach-Zell and Gräsel) implies all essential motivational aspects for describing the interrelation between the collective onto the individual's motivation. The present criticism about this theory, for being primarily educational, is legitimate, hence most studies which test self-determination arise from an educational background. Since the research field is embedded in an educational context (tertiary education), this does not affect its implication in this study.

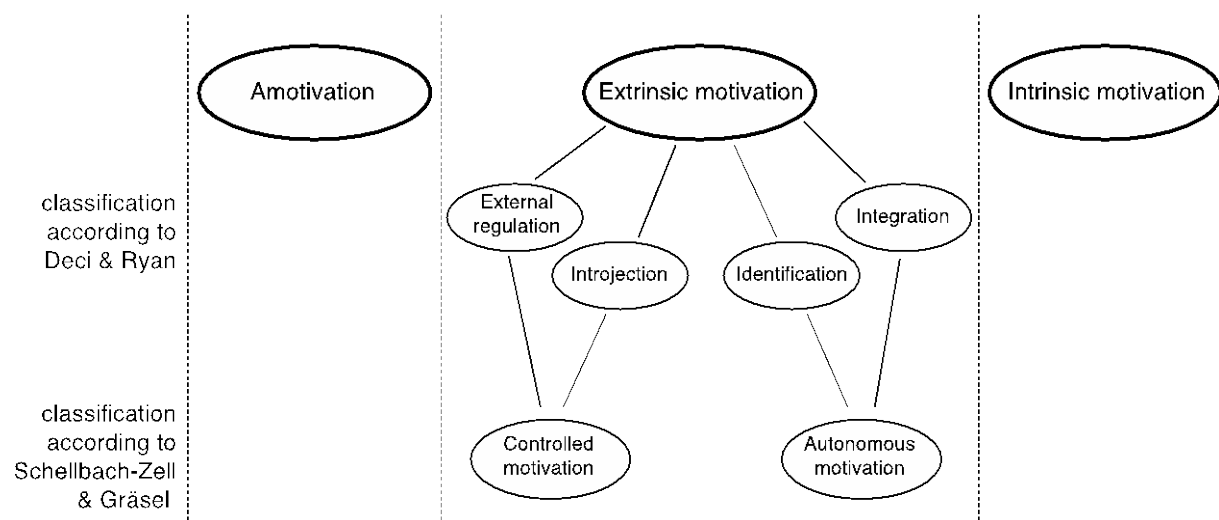


Figure 2: Types of motivation according to Ryan and Deci (2017) and Schellbach-Zell and Gräsel (2010)
(source: author's comparison)

RESEARCH QUESTIONS & HYPOTHESES

Three research questions categorize the study according to the three basic psychological needs of Ryan and Deci (2017). According to self-determination theory, all three needs are essential for well-being. The categorization helps to understand different needs and their relation to transfer processes as well as their sum (well-being) in relation to them.

R₁: How does autonomy influence transfer processes in professional development?

R₂: How does competence influence transfer processes in professional development?

R₃: How does relatedness influence transfer processes in professional development?

The hypotheses were tested in a field study. The results produce information to address each research question. Concerning the first one about autonomy, I assume that the degree of self-determination will have an impact on transfer processes (short term and long term), as theory suggests. I expect the same to be valid for the group of

English Experts¹, where autonomy already applies in terms of being nominated as an English Expert. Consequently, I assume that voluntary English Experts show a higher rate of transfer and persistence than teachers who have been forced to fulfill this function at their school. The hypotheses regarding autonomy are:

H1: The degree of self-determination influences transfer processes of teachers.

H2: The degree of self-determination influences transfer processes within the group of English Experts.

In terms of competence, I expect that the experienced course quality of participants supports transfer processes, as Helmke suggests in his models, which emphasize on course quality as well (Helmke 2004). Ideally some constructs of Tillmann et al.'s teaching quality score will correlate better to it than others. I assume that the participants' motivation (as a construct of Tillmann et al.) is comparable to their motivation to transfer (item 4.14). The hypotheses regarding competence are:

H3: Participants experiencing a high qualitative course (demonstrated by a high quality score) will use ideas more frequently in their classroom teaching than others.

H4: The respective constructs of Tillmann et al.'s STUD-FEL (2011) differ in relation to their transfer impact.

H5: The construct motivation (according to Tillmann et al. 2011) can be compared to the participant's motivation to transfer.

In terms of the last research question, I assume that environments supporting relatedness will have a positive impact on transfer processes and on the act of sharing ideas from a professional development. Latter, in turn, is expected to affect the transfer as well. This importance of social influences is supported, for instance, in theories of Adams (1965), Proctor (1984) and McIlrath and Huitt (1995) as well as from Ryan and Deci (2017). The hypotheses regarding relatedness are:

H6: Participants of a professional development share more ideas with colleagues, when experiencing self-determined participation (intrinsic/autonomous) than under controlled conditions.

H7: Participants of a professional development have a stronger intention to use ideas in classroom teaching, when experiencing self-determined participation (intrinsic, autonomous) than under controlled conditions.

H8: Sharing ideas of a professional development course with working-colleagues increases their implementation.

METHODOLOGY

Sample

The quantitative research took place at the University College of Teacher Education Vienna, Austria and evaluated 36 professional development courses (40 groups, because some courses have been offered twice) for teachers in the winter semesters of 2016/17 and 2017/18. The content was limited to the subject English, emphasizing on the Primary level (teaching children between 1st and 4th grade) with lots of practical information such as methodological and didactic suggestions. This involved all offered courses of the semester program except two, where the course instructors forgot to hand out the survey sheets. Nevertheless, the sample demonstrates the population of those two semesters very well. The courses ranged from three to nine units (each 45 minutes long) and lasted either for one or two dates. The sample consisted of 602 participants in total, voluntarily invited in advance via e-mail to participate in the study. The performance of this study has been approved by the vice dean for research and quality management and was positively accepted by the course instructors, who were also voluntarily asked to evaluate their courses. Hence to the study's emphasize on the Primary level, 92.7% of its participants teach in that type of school (N=575). Other groups consisted for instance of New Middle School teachers (5th until 8th grade) and teachers from gymnasiums (5th until 13th grade).

¹ Teachers, who are approved by the Vienna Board of Education to teach English in a high qualitative way. They are supposed to professionalize themselves continuously and they should teach English in several classes of their school (if other colleagues can't provide such high qualitative English teaching) to ensure the quality of this subject. Becoming an English Expert is either a volitional or a forced process (Klein 2014).

Research design

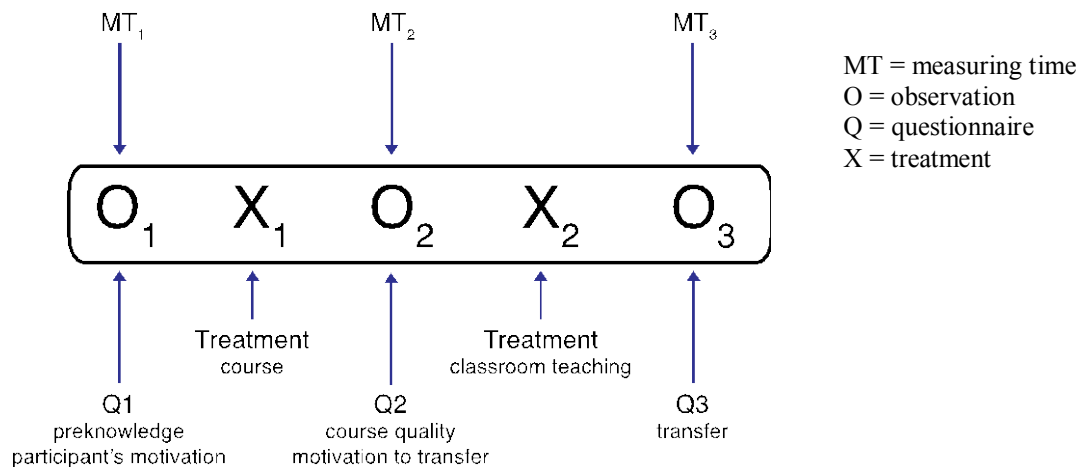


Figure 3: Research design

The research consisted of three measuring times, described as MT_1 , MT_2 and MT_3 . The sample size of the three questionnaires varied, which I relate to the different survey types. The questionnaires within the course were handed out as paper-pencil forms (Q_1 and Q_2), the third survey (Q_3) was sent to the participants as an online-link. The return rates were: MT_1/Q_1 ($N=575$), MT_2/Q_2 ($N=563$) and MT_3/Q_3 ($N=190$). The evaluation process began with the first survey (Q_1), indicating the first observation (O_1) right before the professional development course started. The purpose of this questionnaire was to collect information about subjective pre-knowledge regarding the course's topic and the participants' initial transfer motivation, both measured by a six-point answer-scale (see table 1).

Table 1: Initial questions (from Q_1), translated from German to English

Please rate yourself!		-	-	←	→	+	++
2.1	How do you rate your pre-knowledge about topics of this course?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2	I intend to use suggestions/ideas from this course in my classroom teaching.	disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agree

Additionally, the first survey measured the participants' motivation in terms of their self-determination. Responses about participation reasons categorized the type of motivation into the constructs intrinsic, autonomous and controlled motivation (according to Schellbach-Zell and Gräsel 2010). For intrinsic motivation two items (see 2.3 and 2.6 in Table 2) had to show a high extent of self-determination, demonstrated with the symbol (+). Thus, autonomous motivation applied if one item had at least a positive (high extent of) self-determination. Otherwise the construct of controlled motivation applied. Table 2 shows the participants' choices. In case that someone chose multiple answers, which was allowed to do, the highest self-determined choice for each item counted for constructing that person's motivation. The open-ended option about other reasons (in items 2.3 and 2.6) was assessed retrospectively. The indication of high or low self-determination, as illustrated in Table 2, was not displayed on the original survey to avoid influenced responses.

Table 2: Calculation of participant's motivation type (from Q₁), translated from German to English

2.3 I attend this course ... (multiple answers possible)		
<input type="checkbox"/> because I'm interested in the topic. (+)		
<input type="checkbox"/> because I want to professionalize especially in the subject English. (+)		
<input type="checkbox"/> because I have to attend this seminar. (-)		
<input type="checkbox"/> to fulfill my requested amount of annual professional development courses. (-)		
<input type="checkbox"/> Other reasons: _____		
2.6 Who influenced your decision about participating this course? (multiple answers possible)		
<input type="checkbox"/> Appointment through the supervisory board (FI/PSI). (-)	<input type="checkbox"/> Appointment through my headmaster. (-)	
<input type="checkbox"/> Own decision. (+)	<input type="checkbox"/> Recommendation through colleagues/headmaster/supervisory board.	
<input type="checkbox"/> Other reasons: _____		

Calculation of motivation		
	2.3	2.6
intrinsic motivation	*at least+	*at least+
autonomous motivation	*at least+ /	/ *at least+
Controlled motivation	*at least-	*at least-

*at least+ = at least one of the chosen options has to ticked in a field with (+)

*at least- = at least one of the chosen options has to ticked in a field with (-)

The instructor began the course, which represented the first treatment (X₁), after the first survey was finished. Depending on the duration of the course the participants either received the second survey (Q₂) at the same or on a different day, after the last unit was completed. This questionnaire consisted of twelve statements, representing the STUD-FEL (Tillmann et al. 2011), which creates a teaching quality score by a mean of all ratings. The participants chose from a six-point answer-scale. Seven constructs that consisted of two or more² statements provided a detailed information about the course's teaching quality. According to the authors, teaching quality involves structuring and clarity (items 4.02, 4.08 and 4.09), coherent explanations and presentation (items 4.05 and 4.07), time management and troubleshooting (items 4.04 and 4.05), cooperation and atmosphere (items 4.05, 4.06 and 4.12), interaction (support/guidance/feedback) (items 4.03, 4.06, 4.07 and 4.11), processing depth (item 4.11) and motivation (items 4.10 and 4.11) (see Figure 4). The questionnaire has been tested by Tillmann et al. with a large population (N=26.543) and achieved a high reliability with values of Cronbach's $\alpha = 0.94$ (measuring the quality of whole courses) and Cronbach's $\alpha = 0.91$ (measuring on participants' level of the surveys).

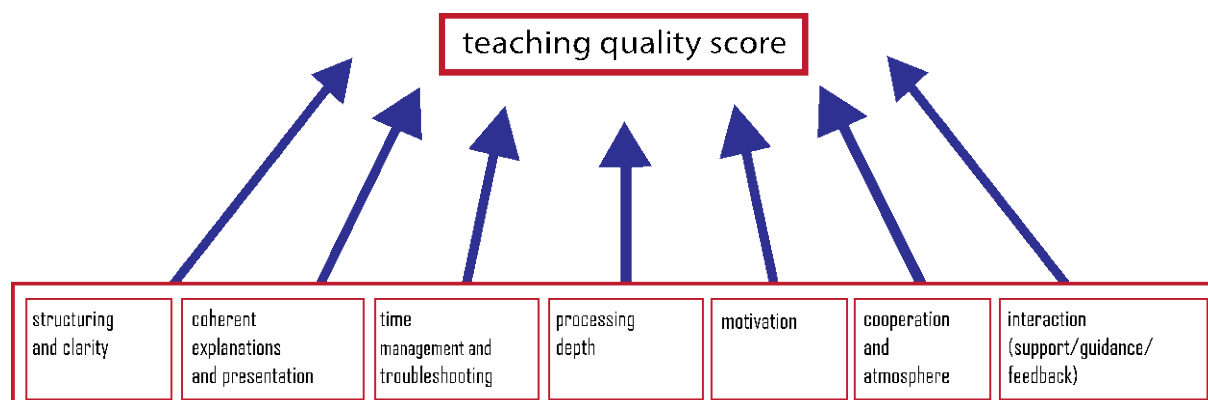



Figure 4: Teaching quality score according to Tillmann et al. (2011) (own illustration)

² Some statements were used multiple times to create different constructs.

One question from the first survey was reused to measure the teachers' current motivation to transfer and to detect possible differences to the first measuring point (MT₁) (see item 2.2 in table 1).

After the participants completed their professional development course they moved back to their school environment and started with the second treatment (X₂), represented by their daily work in the classroom. During that period, they had six weeks time until they received a link to an online survey (Q₃). This last questionnaire provided information about the participants' transfer experiences.

Table 3: Transfer experience/closed-ended (from Q₃), translated from German to English

		
7.2	I used a lot of suggestions/ideas from this course in my classroom teaching.	disagree <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> agree
7.3	I intend to use suggestions/ideas from this course long-term in my teaching.	disagree <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> agree
7.4	My teaching has changed thanks to this course.	disagree <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> agree
7.5	At least one suggestion/idea of this course has been used ... <input type="checkbox"/> once in my teaching. <input type="checkbox"/> repeatedly in my teaching. <input type="checkbox"/> The use of suggestions/ideas of this course was not possible in my classroom teaching.	

The third questionnaire indicated the relatedness between working colleagues, by asking participants if they shared suggestions/ideas from an attended course.

Table 4: Sharing ideas with colleagues (from Q₃), translated from German to English

7.6	I shared suggestions/ideas of this course with colleagues. <input type="checkbox"/> Yes. <input type="checkbox"/> No.
-----	---

For the complete version of all three surveys (translated) see the appendix.
The original surveys were handed out in German language.

RESULTS & DISCUSSION

The chapter of results is organized according to the statistical analysis of each hypothesis. A discussion of the results and respective research questions follows the statistical data.

Results about the first hypothesis

H₁: A higher degree of self-determination increases transfer processes of teachers.

The sample was divided according to their participation reasons into intrinsic (N=513), autonomous (N=49) and controlled motivation (N=12). For a detailed explanation about this distinction see the chapter about methodology. In terms of statistical analysis, the sample size decreased according to the composition of corresponding items, which were the degree of self-determination combined either with the actual transfer (item 7.2) or with tendencies to persistence (item 7.3). This decline of the sample size resulted from different return rates of the three surveys. Therefore, I added a correlation between the degree of self-determination and intentions of teachers to use ideas/suggestions from the seminar in their classroom teaching (item 4.13). By that, I could compare two items with high return rates. Consequently, Table 5 demonstrates a correlation showing a small effect of the participants' degree of self-determination with their intention to transfer with rho=0.153 (N=533). Additionally, Table 5 shows a correlation between the degree of self-determination with the actual transfer (N=180) and tendencies to persistence (N=189), though with decreasing effects. I conclude the diminished results of the items 7.2 and 7.3 from lower return rates and a low variety of self-determination.

Table 5: Correlation between the degree of self-determination and transfer processes

		4.13. ... intention to use ideas/suggestions.	7.2 transfer	7.3 persistence
Degree of self-determination	Spearman's rho	,153**	,067	,049
	Sig. (2-tailed)	,000	,372	,507

** . Correlation is significant at the 0.01 level (2-tailed).

Accurate statements about the degree of self-determination (ranging from intrinsic to controlled motivation) need a more heterogeneous sample in regard to this issue, which could be subject to future research. The following comparison of transfer processes is limited to autonomous and intrinsic motivation, because this analysis consisted of only one person experiencing controlled motivation. Nevertheless, we can still detect small differences of the two selected types of motivation. Therefore, the mean of intrinsic motivation is slightly higher compared to autonomous motivation and shows a smaller standard deviation for the item 7.2 (transfer) and 7.3 (tendency to persistence), which is illustrated in Table 6.

Table 6: Report different types of self-determination in terms of transfer/persistence

7.2 Transfer			
Self-determination	Mean	N	Std. Deviation
Intrinsic motivation	4,86	161	1,170
Autonomous motivation	4,50	18	1,505
7.3 Persistence			
Self-determination	Mean	N	Std. Deviation
Intrinsic motivation	5,26	169	1,048
Autonomous motivation	5,11	19	1,243

In sum, results indicate that different degrees of self-determination produce a different degree of transfer and persistence (within this small sample). To extend the statements also for controlled motivation it would need a sample with enough participants experiencing it. However, it seems that professional development courses for the subject of English do not consist of such a population (within the two semesters evaluated at the University College of Teacher Education in Vienna, Austria).

Results about the second hypothesis

H₂: A higher degree of self-determination increases transfer processes within the group of English Experts³.

For an analysis of the second hypothesis I distinguished participants, who worked as an English Expert according to their nomination (voluntary vs. controlled). Then I compared both groups (voluntary and controlled English Experts) in terms of their transfer (item 7.2) and their tendency to persistence (item 7.3). Results showed that the mean of voluntary English Experts was higher, for transfer (+0.71) and for tendencies to persistence (+0.47), compared to Experts who have been pushed to fulfill that function (see table 7).

Table 7: English Experts in terms of transfer and persistence

			7.2 Transfer						Total	Mean
			1 do not agree at all	2 -	3 <-	4 ->	5 +	6 agree entirely		
\$Experts ^a	Voluntary	Count	0	1	0	9	22	31	63	5.30
		Percent	0.00	1.59	0.00	14.29	34.92	49.21	100	
	Controlled	Count	0	1	1	8	8	4	22	4.59
		Percent	0.00	4.55	4.55	36.36	36.36	18.18	100	
			7.3 Persistence						Total	Mean
			1 do not agree at all	2 -	3 <-	4 ->	5 +	6 agree entirely		
\$Experts ^a	Voluntary	Count	1	1	0	3	17	44	66	5.52
		Percent	1.51	1.51	0.00	4.55	25.76	66.67	100	
	Controlled	Count	1	0	1	4	5	11	22	5.05
		Percent	4.55	0.00	4.55	18.18	22.73	50.00	100	

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

Answering research question one

³ English Experts are specialized teachers for the subject English (in Primary schools). For a detailed description see the chapter about research questions & hypotheses.

R₁: How does autonomy influence transfer processes in professional development?

Results suggest that autonomy has an influence on transfer processes in professional development. The differences of means from intrinsic motivation compared with autonomous motivation indicate this conclusion, even though they are little (0.35 for the actual transfer and 0.15 for tendencies to persistence on a six-point answer-scale). Latter results would support the findings from Pelletier et al. (2001), declaring intrinsic/autonomous motivation as positive predictors for long-term use (persistence). Therefore, we could indicate that the experienced autonomy of teachers influences their behavior in transfer processes (short and long term). An inclusion of controlled motivation could strengthen this suggestion, but hence to a low representation of it within this sample no concrete statements regarding controlled motivation can be made.

The same assumptions apply within the group of English Experts. Therefore, the kind of nomination for such a function (voluntary or controlled) indicates a difference in both, transfer (difference in means of 0.71) and long-term use (persistence) (difference in means of 0.47). These results of this study undermine the findings of Grolnick and Ryan (1987).

Results about the third hypothesis

H₃: Participants experiencing a high qualitative course will use ideas more frequently in their classroom teaching than others.

The evaluation of courses showed, that the course quality was perceived as very high in general, even though some variation occurred. The teaching average quality score (six-point answer-scale) showed a mean of 5.58 and a standard deviation of 0.679 (N=563). The transfer (item 7.2) had a mean of 4.81 with a standard deviation of 1.234 (N=181). Results demonstrate that the teaching quality score (according to Tillmann et. al 2011) has a medium effect on transfer of $\rho=0.361$ (N=170). Additionally, the teaching quality score (according to Tillmann et. al 2011) also correlates with long-term use (persistence), at a medium effect of $\rho=0.402$ (N=178).

For the third hypothesis, we can conclude that the data confirms a significant correlation between the teaching quality score of a professional development and its transfer. This statement also applies for persistence.

Results about the fourth hypothesis

H₄: The respective constructs of Tillmann et al.'s STUD-FEL (2011) differ in relation to their transfer impact.

Table 8: Correlation between transfer and constructs of Tillmann et al. (2011)

		7.2 Transfer
Construct motivation	Spearman's rho	,402**
	Sig. (2-tailed)	,000
Construct processing depth	Spearman's rho	,322**
	Sig. (2-tailed)	,000
Construct structuring and clarity	Spearman's rho	,322**
	Sig. (2-tailed)	,000
Construct interaction (support/guidance/feedback)	Spearman's rho	,319**
	Sig. (2-tailed)	,000
Construct time management and troubleshooting	Spearman's rho	,317**
	Sig. (2-tailed)	,000
Construct cooperation and atmosphere	Spearman's rho	,289**
	Sig. (2-tailed)	,000
Construct coherent explanations and presentation	Spearman's rho	,258**
	Sig. (2-tailed)	,001

N=170

** . Correlation is significant at the 0.01 level (2-tailed).

An analysis of correlations between each construct of the teaching quality score with the transfer (item 7.2) showed following results: The construct motivation (mean of items 10 and 11) correlates with transfer, $\rho=0.402$, the construct processing depth (item 11), $\rho=0.322$, the construct structuring and clarity (mean of items 2, 8 and 9), $\rho=0.322$, the construct interaction (support/guidance/feedback) (mean of items 3, 6, 7 and 11) correlates with transfer, $\rho=0.319$ and the construct time management and troubleshooting (mean of items 4 and 5), $\rho=0.317$. The described constructs showed medium effects onto the dependent variable (transfer).

The construct cooperation and atmosphere (mean of items 5, 6 and 12) correlates with transfer, $\rho=0.289$ and the construct coherent explanations and presentation (mean of items 5 and 7), $\rho=0.258$. Consequently, both constructs had a small effect on transfer.

Summarized all constructs of Tillmann et al. (2011) correlate very well with a transfer of professional development, even though there are small differences in their effect impacts.

Results about the fifth hypothesis

H₅: The construct motivation (according to Tillmann et al. 2011) can be compared to the participant's motivation to transfer.

The construct motivation shows a mean of 5.62 (on a six-point answer-scale) and a standard deviation of 0.717 (N=563). Very similar is the mean of 5.68 and the standard deviation of 0.810 from the participants' motivation to transfer (item 4.13).

These results suggest that both, Tillmann's construct motivation and the participants' motivation to transfer perform very similar within this sample.

Answering research question two

R₂: How are transfer processes in professional development influenced in terms of competence?

Results from hypotheses three to five confirm, that the experienced quality of a professional development course has medium effects ($\rho=0.361$) on the transfer and an intended long-term use (persistence) ($\rho=0.402$). This means that the course quality has an even higher impact on persistence than it has on the actual transfer. A more detailed investigation of Tillmann et al.'s (2011) constructs showed that motivation ($\rho=0.402$) was the most effective one. Additionally, the participants' subjective knowledge at the end of a course showed small effects ($\rho=0.154$) (N=165) on the transfer as well.

Results about the sixth hypothesis

H₆: Participants of a professional development share more ideas with colleagues, when experiencing self-determined participation (intrinsic, autonomous) than under controlled conditions.

The sixth hypothesis tested, if the decision of teachers for participating in the course affected their act of sharing ideas with colleagues. This decision process was either controlled (appointed by their headmaster or supervisory board), autonomous (recommended by colleagues, headmaster or supervisory board) or intrinsically determined (own decision). Due to a low return rate of participants who experienced controlled participation (N=11), I limited the comparison on intrinsic and autonomous motivation reasons (see Table 9).

Table 9: Correlation between sharing ideas, controlled, autonomous and intrinsic participation

2.6 Participation reason		7.6 Idea Sharing		Total
		Yes	No	
Own decision (intrinsic)	Count	137	39	176
	Percent	77.8	22.2	100.0
Recommendation (autonomous)	Count	22	8	30
	Percent	73.3	26.7	100.0

Results from Table 9 show slightly higher idea sharing among participants with intrinsic participation reasons (+4.5%) than under autonomous participation reasons.

Results about the seventh hypothesis

H₇: Participants of a professional development have a stronger intention to use ideas in classroom teaching, when experiencing self-determined participation (intrinsic, autonomous) than under controlled conditions.

For testing hypothesis seven, I compared the participants' intention to use ideas in their classroom (item 4.13) with the influence on their participation decision (item 2.6). Latter was either regulated under controlled conditions (appointed by their headmaster or supervisory board, which I subsumed in one variable), autonomous conditions (recommendations from colleagues, the headmaster or supervisory board), or under intrinsic conditions (own decision).

Table 10: Cross-tabulation: Intention to transfer and decision about participation

			4.13. ... intention to use ideas/suggestions.						Total
			1 do not agree at all	2 -	3 <-	4 ->	5 +	6 agree entirely	
Participation reasons item 2.6) ^a	controlled	Count	1	0	3	4	5	27	40
		Percent	2.5	0.0	7.5	10.0	12.5	67.5	
			10				90		
	autonomous	Count	1	2	0	4	5	54	66
		Percent	1.5	3.0	0.0	6.1	7.6	81.8	
			4.5				95.5		
	intrinsic	Count	2	7	4	19	43	410	485
		Percent	0.4	1.4	0.8	3.9	8.9	84.5	
			2.6				97.3		
	Total	Count	2	7	7	21	51	440	528

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

For clearer representation of the data I subsumed the six-point-answer-scale to two values, each demonstrated in the third cell of a variable. When analyzing this data, we experience a relation between the degree of self-determination and the intention to use ideas/suggestions in classroom teaching. Therefore, 90% of the participants tended to transfer ideas to their classroom (ratings 4-6) under controlled conditions, whereas 95.5% under autonomous and even 97.3% under intrinsic conditions. On the other hand 10% tended not to use them (ratings 1-3) under controlled conditions, whereas only 4.5% under autonomous and 2.6% under intrinsic conditions preferred not to transfer them into their teaching. Considering the maximum ratings, we can see that there's also an increase in the transfer intention when self-determination rises. The percentage of the highest intention (ranked with 6 on a six-point-answer-scale) was present at 67.5% of the participants under controlled conditions and increased to 81.8% under autonomous conditions and 84.5% under intrinsic conditions. The opposite is true for the lowest intention (ranked with 1 on a six-point-answer-scale), which was selected by 2.5% of the participants under controlled conditions, 1.5% of autonomous and 0.4% of intrinsic conditions.

We can conclude that the data shows a connection between the decision of participation and the teachers' intentions to use ideas in the classroom teaching.

Results about the eight hypothesis

H₈: Sharing ideas of a professional development course with working-colleagues increases their implementation.

The last hypothesis suggests that the social event of sharing ideas from a course with working colleagues increases the transfer process itself. Therefore, I limited the investigated data on participants who had a possible chance to transfer such ideas in their classroom teaching⁴. Table 11 demonstrates this interrelation between idea sharing and transfer processes.

⁴ Cases, which were excluded, consisted of participants who did not teach the subject English at the time of the third survey or teachers who did not have a necessary equipment (e.g. IT devices) to use the ideas in their classroom. Excluded cases have been judged, based on a qualitative analysis of item 7.9 of the third survey.

Table 11: Crosstab between idea sharing and transfer

			7.6 Idea sharing		Total		Yes	No
			Yes	No				
7.2 Transfer	1 disagree	Count	1	3	4	1-3 Count	2	7
		Percent	0.8	7.9	2.5			
	2 -	Count	0	1	1	1-3 Percent	1.6	18.4
		Percent	0.0	2.6	0.6			
	3 <-	Count	1	3	4	4-6 Count	122	31
		Percent	0.8	7.9	2.5			
	4 ->	Count	18	9	27	4-6 Percent	98.4	81.6
		Percent	14.5	23.7	16.7			
	5 +	Count	54	17	71	Total	124	38
		Percent	43.5	44.7	43.8			
	6 totally agree	Count	50	5	55	Percent	100.0	100.0
		Percent	40.3	13.2	34.0			
Total		Count	124	38	162		124	38
		Percent	100.0	100.0	100.0		100.0	100.0

			7.6 Idea sharing		Total		Yes	No
			Yes	No				
7.3 Persistence	1 disagree	Count	2	2	4	1-3 Count	3	4
		Percent	1.6	5.0	2.4			
	2 -	Count	0	1	1	1-3 Percent	2.3	10.0
		Percent	0.0	2.5	0.6			
	3 <-	Count	1	1	2	4-6 Count	125	36
		Percent	0.8	2.5	1.2			
	4 ->	Count	9	7	16	4-6 Percent	97.7	90.0
		Percent	7.0	17.5	9.5			
	5 +	Count	37	15	52	Total	128	40
		Percent	28.9	37.5	31.0			
	6 totally agree	Count	79	14	93	Percent	100.0	100.0
		Percent	61.7	35.0	55.4			
Total		Count	128	40	168		128	40
		Percent	100.0	100.0	100.0		100.0	100.0

Results from Table 11 show that idea sharing positively influences transfer processes (short and long term). As a result, 98.4% of the participants who shared ideas reported a better transfer (ratings 4-6) than the group of teachers who did not share them (81.6%). The same is valid for an intention to long-term use (persistence) with 97.7% for the group who shared ideas in contrast to 90% for teachers who did not share them. When we focus on participants who totally agreed with the statement of transferring ideas, we experience once more high differences of both groups, with +16.8% (idea sharing for the actual transfer) and +26.7% (idea sharing for persistence).

In sum, results demonstrate that idea sharing is an important parameter for transfer processes in the field of professional development.

Answering research question three

R₃: How are transfer processes in professional development influenced in terms of relatedness?

A comparison of different participation reasons (controlled, autonomous and intrinsic) illustrates, that controlled participation has the lowest intention to transfer, whereas autonomous and intrinsic participation resulted in high intentions to use ideas in the classroom. Surprisingly autonomous participation reasons showed higher transfer rates than intrinsic ones (see Figure 5). However, it needs more research to make secure statements about the impact of hierarchical structures in the field of work onto transfer processes of teachers.

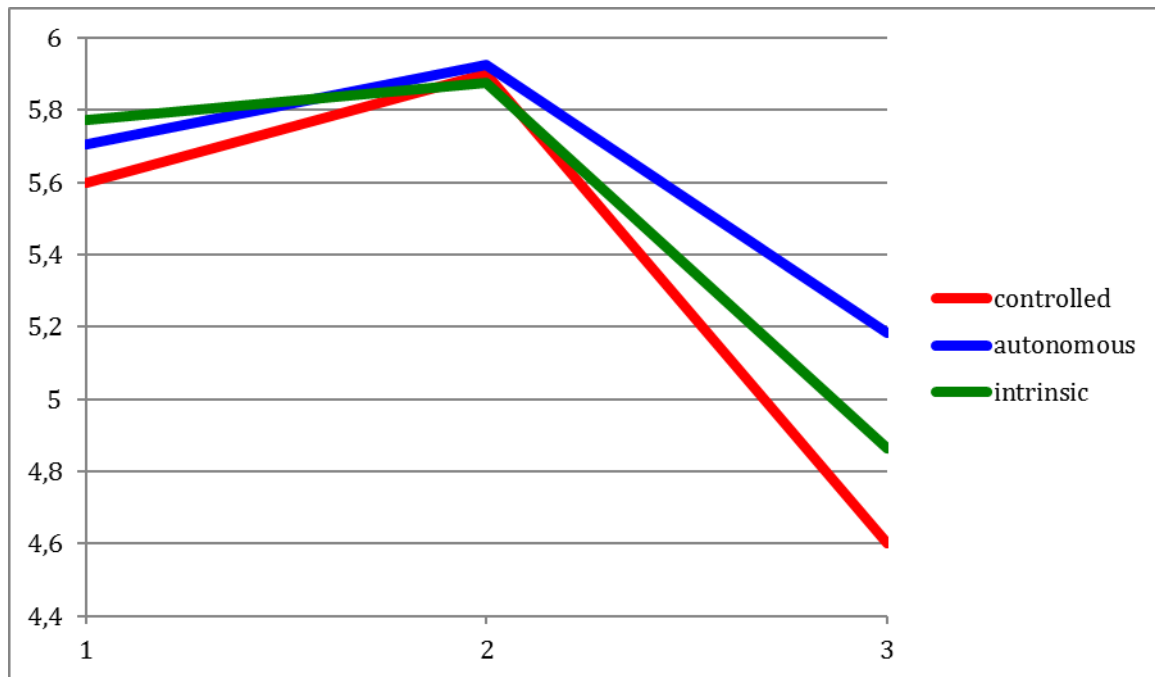


Figure 5: Comparison of motivation and realization between controlled, autonomous and intrinsic participation reasons

Relatedness between teachers and their working colleagues seems to be important for transfer processes, as observed by the event of idea sharing. Results from H_8 illustrate higher transfer rates (+27.1% on the highest transfer rating) when sharing ideas. The same is valid for the participants' intentions for long-term use (+26.7% on the highest rating). These results indicate that relatedness between colleagues is important for transfer processes.

CONCLUSION

The developed framework for the implementation of professional development to classroom teaching, beginning with motivational aspects and pre-knowledge of participating teachers and ending with experiences of transfers and expectations, seems to illustrate parameters that influence these processes. Results show that competence enhancing parameters correlate well with transfer processes. Correlations between experienced course quality and transfer processes ($\rho=0.361$) or expected long-term transfer (persistence) ($\rho=0.402$) reveal this connection within this sample. These results confirm that participants' feedback and communicating this feedback to course instructors and course coordinators is very important. By doing so, institutions can monitor the subjective course quality of participants to ensure the quality of future courses, work with constructive criticism (by open questions within surveys) and provide good possibilities to transfer ideas/suggestions in the work environment (classroom). Similar to course quality, the item subjective knowledge of participants shows a small effect ($\rho=0.154$) on transfer processes. Therefore, professional development may consequently be used to deepen existing knowledge, as its original meaning implies. In terms of relatedness, findings likewise suggest an influence on transfer processes. Results demonstrated higher transfer rates (+27.1% on rating 6) when ideas were shared, compared to participants who did not share ideas.

Insufficient variation of the sample in terms of motivational aspects prevents secure statements about their influences on transfer processes, though indications for differences have been found. An example for that is a relation between nomination motives of English Experts (voluntary/forced) and subsequent transfer processes, which showed higher means for an actual transfer (+0.71) as well as for intentions for a long-term use (+0.47). Nevertheless, results confirm that the quality of professional development courses is an important issue and should be continued in the quality management of educational institutions such as the University College of Teacher Education. For headmasters, results of this study suggest that processes of idea sharing and an attitude of teachers rising from intrinsic/autonomous motivation enhances transfer processes in their teaching in contrast to controlled behavior (often influenced by their headmasters and supervisors). Consequently, headmasters may support such an atmosphere to enhance transfer-integrating conditions at their school.

In sum, results of this research showed that parameters such as course quality, idea sharing and motivation to transfer were good indicators for transfer processes. I would argue that transfer processes rely on a good quality of courses, but that it also needs the support in the field of work to ultimately succeed in implementing new ideas for better learning in the classroom. To extend these findings with motivational aspects it needs further research with samples, including more variation. Therefore, courses with a higher amount of controlled motivation might

be an interesting research field. I assume that courses about quality management or educational standards might illustrate such a variation. Another suggestion is to add qualitative research exploring motivational impacts to professional development. Interviews with teachers could produce new findings in this matter. Anyway, I think it is worth to continue studying transfer processes of activities such as professional development to understand how ideas come to life in the classroom.

FUNDING

This study has not received any funding.

COMPLIANCE WITH ETHICAL STANDARDS

The author declares that he has no conflict of interest.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent was obtained from all individual participants included in the study.

REFERENCES

- Adams, J. S. (1965). Injustice in social exchange. In L. Berkowitz (Ed.), *Advances in Experimental Psychology* (pp. 267-299). New York: Academic Press.
- Alderfer, C. (1972). *Existence, Relatedness and Growth*. New York: The Free Press.
- Carroll, J. (1963). A model for school learning. *Teacher College Record* 64 (pp. 723-733). Cambridge, MA: Harvard University.
- Finkel-Salzer, M. (2002). Seminauswertungsbögen sind wenig aussagekräftig. *wirtschaft & weiterbildung*, 5th ed. (pp. 22-23). Würzburg: Max Schimmel Verlag.
- Gage, N.I.L., & Berliner, D. C. (1992). *Educational psychology*. 5th ed. Princeton, New Jersey: Houghton Mifflin Company.
- Gessler, M. (2011). Nutzen von Weiterbildung im Arbeitskontext. Der GPM Lehrgang „Projektmanagement-Fachmann (GPM)/Qualifizierungslehrgang IPMA Level D“ auf dem Prüfstand. *projektManagement aktuell*, Heft 4 (pp. 45-52). Köln: TÜV Media Verlag.
- Gris, R. (2008). *Die Weiterbildungslüge. Warum Seminare und Trainings Kapital vernichten und Karrieren knicken*. Frankfurt am Main, New York: Campus Verlag.
- Grolnick, W. & Ryan, Richard M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology* 52(5). 890-98.
- Helmke, A. (2004). *Unterrichtsqualität erfassen, bewerten, verbessern*. 2nd ed. Seelze: Kallmeyersche Verlagsbuchhandlung GmbH.
- Hölbling, G. (2007). *Handlungshilfen für Bildungsberater: Qualitätssicherung betrieblicher Weiterbildung*. Bielefeld: W. Bertelsmann Verlag GmbH & Co. KG.
- Klein, M. (2014). Fachbezogen in der Grundschule unterrichten. *SchulVerwaltung aktuell* Heft 5/2014 (pp. 145-46).
- Maslow, A. H. (1954). *Motivation and Personality*. New York: Harper & Row.
- McIlrath, D. & Huitt, W. C. (1995). A systems model of the teaching/learning process. *Educational Psychology Interactive*. Valdosta, GA: College of Education, Valdosta State University. Retrieved January 10, 2019. Available: <http://www.edpsycinteractive.org/materials/tchlrnmd.html>.
- Pelletier, L. G., Fortier M. S., Vallerand R. J. & Brière N. M. (2001). Associations among perceived autonomy support, forms of self-regulation and persistence: A prospective study. *Motivation and Emotion*, 25(4). 279-306. doi:10.1023/A:1014805132406.
- Porter, L. W. & Lawler E. E. (1968). *Managerial Attitudes and Performance*. Homewood IL: Irwin-Dorsey.
- Proctor, C. P. (1984). Teacher expectations: A model for school improvement. *The Elementary School Journal* (pp. 469-481). Retrieved January 10, 2019. Available: <http://www.jstor.org/stable/1001371>.
- Rechnungshof. (2008). *Bericht des Rechnungshofes. III-2 der Beilagen XXIV. GP - Bericht - Hauptdokument*. Retrieved January 10, 2019. Available: http://www.parlament.gv.at/PAKT/VHG/XXIV/III/III_00002/imfname_143742.pdf.
- Ryan, R. M., & Deci E. L. (2017). *Self-Determination Theory. Basic Psychological Needs in Motivation, Development, and Wellness*. New York, London: The Guilford Press.
- Schellenbach-Zell, J., & Gräsel C. (2010). Strategien überdauernden Engagements von Lehrkräften in Schulinnovationsprojekten. In F. H. Müller, A. Eichenberger, M. Lüders & J. Mayr. (Eds.), *Lehrerinnen und Lehrer lernen. Konzepte und Befunde zur Lehrerfortbildung* (pp. 463-478). Münster: Waxmann Verlag GmbH.

- Steininger, E. (2010). Nachhaltigkeit in Bildungsprozessen und in der LehrerInnenfortbildung. Erste Schritte am Institut für Fortbildung an der Privaten Pädagogischen Hochschule der Diözese Linz. In R. Steiner, F. Rauch & A. Felbinger (Eds.), *Professionalisierung und Forschung in der LehrerInnenbildung* (pp. 193-203). Wien: Forum Umweltbildung.
- Tillmann, A., Reiß S., Moosbrugger H., Krömker D., Schweizer K., & Gold A. (2011). Qualitätssicherung der Lehre an großen Universitäten: Psychometrische Studien zum Frankfurter Studierendenfragebogen zur Evaluation von Lehrveranstaltungen (STUD-FEL). *Qualität in der Wissenschaft (QiW)* 3/2011 (pp. 79-88). Bielefeld: UniversitätsVerlagWebler,
- Vroom, V. H. (1964). *Work and Motivation*. New York: Wiley.

APPENDIX

Questionnaire 1 (Q1)

Title of the course: _____

Dear colleague,

you can support this seminar's improvement in quality by answering this questionnaire, as already mentioned in advance via e-mail.

Thank you for your support.

Best regards,

Martin Klein

(martin.klein@phwien.ac.at)

1. Information about the participant

First letter of your mother's first name: <input type="text"/>	First letter of your father's first name: <input type="text"/>
Your favorite animal: <input type="text"/>	Age: <input type="text"/>
Currently I am teaching in:	
<input type="checkbox"/> Primary School <input type="checkbox"/> New Middle School <input type="checkbox"/> Special School <input type="checkbox"/> Secondary Academic School <input type="checkbox"/> other: <input type="text"/>	

2. Statements about the participation of this course

Please rate yourself!		--	-	←	→	+	++
2.1	How do you rate your pre-knowledge about topics of this course?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2	I intend to use suggestions/ideas from this course in my classroom teaching.	<div> </div>					
2.3	I attend this course ... (multiple answers possible)	<input type="checkbox"/> because I'm interested in the topic. <input type="checkbox"/> because I want to professionalize especially in the subject English. <input type="checkbox"/> because I have to attend this seminar. <input type="checkbox"/> to fulfill my requested amount of annual professional development courses. <input type="checkbox"/> Other reasons: <input type="text"/>					
2.4	Are you an „English Experts“ (according to the Vienna Board of Education) at your school?	<input type="checkbox"/> Yes, I volunteered for this function. (multiple answers possible) <input type="checkbox"/> Yes, I was appointed for this function. <input type="checkbox"/> No.					
2.5	For how many professional development courses in the subject English did you sign up in this semester? (in addition to this course)	<input type="text"/>					
2.6	Who influenced your decision about participating this course? (multiple answers possible)	<input type="checkbox"/> Appointment through the supervisory board (FI/PSI). <input type="checkbox"/> Appointment through my headmaster. <input type="checkbox"/> Recommendation through colleagues/headmaster/supervisory board. <input type="checkbox"/> Own decision. <input type="checkbox"/> Other reasons: <input type="text"/>					

Questionnaire 2 (Q2)

Title of the course: _____

3. Coding

First letter of your mother's first name: <input type="checkbox"/>	First letter of your father's first name: <input type="checkbox"/>
Your favorite animal: _____	

Dear colleague,

below you find several statements regarding this course. Please rate them by ticking the check box, matching the statement best according to the attended course. Please read the following statements and answer them spontaneously.

4. Statements regarding the course

4.01 Attending the course has resulted in a noticeable increase in my knowledge level.	do not agree at all <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> agree entirely
4.02 The topics presented are well structured.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.03 The seminar offers sufficient course material (handouts, texts, literature lists, etc.)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.04 The seminar was held in a suitable pace.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.05 Difficult content is being explained in an understandable way.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.06 The professor / lecturer provides helpful feedback to their comments and questions.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.07 Media (e.g. texts, blackboard, slides) are used in an appropriate way.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.08 The course provides a good overview of the treated content.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.09 A "central theme" of this course is clearly identifiable.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.10 The course discusses actual trends, within its possibilities.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.11 The course supports a self-reliant and active engagement with learning content..	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.12 The course provides a constructive, positive atmosphere.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.13 I intend to use suggestions/ideas from this course in my classroom teaching.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Please rate yourself!	-- - ← → + ++
4.14 How do you rate your current knowledge about topics of this course?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

5. Perspectives

5.1 Which suggestions/ideas of this course would you like to use in your classroom teaching?	5.2 Would you recommend this course? <input type="checkbox"/> Yes, because ... <input type="checkbox"/> No, because ...
--	--

Questionnaire 3 (Q3)

Title of the course: _____

(Online)

6. Coding

First letter of your mother's first name: <input type="text"/>	First letter of your father's first name: <input type="text"/>
Your favorite animal: _____	

7. Statements about realization

Please rate yourself!		--	-	←	→	+	++
7.1	How do you rate your actual knowledge about topics of this course?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.2	I used a lot of suggestions/ideas from this course in my classroom teaching.	disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agree
7.3	I intend to use suggestions/ideas from this course long-term in my teaching.	disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agree
7.4	My teaching has changed thanks to this course.	disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	agree
7.5	At least one suggestion/idea of this course has been used ...						
	<input type="checkbox"/> once in my teaching. <input type="checkbox"/> repeatedly in my teaching. <input type="checkbox"/> The use of suggestions/ideas of this course was not possible in my classroom teaching.						
7.6	I shared suggestions/ideas of this course with colleagues.						
	<input type="checkbox"/> Yes. <input type="checkbox"/> No.						
7.7	Which suggestions/ideas of this course have you used in your classroom teaching?						
7.8	Those things supported me to use suggestions/ideas of this course in my classroom teaching: (e.g. handouts, support through colleagues, ...)						
7.9	Those things made it difficult/impossible for me to use suggestions/ideas of this course in my classroom teaching: (e.g. school equipment, currently I don't teach this subject, ...)						

YOUR CUSTOMER IS CHANGING: THE END OF A 100-YEAR BUSINESS CYCLE

Barry Cross

Assistant Professor and Distinguished Faculty Fellow in Operations Strategy, Smith School of Business at Queen's University, Kingston, ON, Canada

Barry.cross@queensu.ca

ABSTRACT

Significant market, demographic and technology elements are driving unprecedented change in today's economy and society. Numerous fields are reaching maturity in decades-old business cycles, including automotive, telecom and education. Many of these changes are a result of the intersection of changing behavior, developing technology and the needs of younger demographics. Collectively, the impact of these shifts are driving the need for new approaches in pedagogy and delivery models.

This paper uses the evolution of the automotive industry and the concept of *Peak Auto* as a scenario to both emphasize the importance of an instructor's pedagogy to students and to bring attention to massive changes happening in academia.

Keywords: Peak, Business Cycle, Pedagogy, Story Telling, Anecdotes

BACKGROUND -

As an educator or academic, I would ask you to consider your favourite course or preferred subject to teach; what is the real *purpose* of that course? Do your students always appreciate the importance or relevance of that course? At times, we all may struggle with demonstrating or communicating the relevance or importance of why we are here today when talking about a particular subject. Anecdotes, examples, stories and examples can help bridge that gap.

The purpose of this paper is two-fold: one, to demonstrate the value of a good story or anecdote in connecting our work to the perceived needs of the student or audience, and two, to highlight significant changes that are happening right now that will have an impact on all of us, especially those of us in academia.

RESEARCH METHODOLOGY -

Direct interviews, literature review, observations and researcher experience were applied in developing the *Peak Auto* research. Information and examples were collected across multiple organizations and analyzed for similarities around the premise of the industry in its current format 'peaking'.

Supporting data was collected through a literature review of publicly available industry-wide and society studies and examples. These examples are presented and discussed herein.

SCENARIO -

The story or canvas built on here is referred to as 'Peak Auto', where *Peak* in this case refers to the largest volume or consumption state in an industry. *Peak Auto*, therefore, presumes society has reached the maximum necessary output of cars and trucks (light vehicles) per capita in North America and Europe, and as time moves forward, we will need fewer vehicles in western society.

As an example of the *Peak* concept, consider *Peak Oil*, a consensus of prevailing wisdom presented roughly 20 years ago that suggested we had tapped into all sources of available oil, and that oil availability would begin to decline in coming years (Lynch, 2018). Prices rose and some level of panic ensued as, at the time, there were no widely available substitute for oil as a fuel or energy source, especially for transportation. New exploration techniques and other factors proved later that oil had not indeed peaked, and that society essentially had sufficient oil. We will return to this example later in the paper.

Interestingly, something that did peak was the horse population in North America. *Peak Horse* happened around 1920, when there were 25 million horses. By 1930, the population had dropped to 19 million, and by 1960, horse population had dwindled to 3 million (Riley, 2015). The number of cars per capita surpassed horses in around 1930, and it is important to point out that this happened quickly, over a period of about 10 years. Those closest to an industry are often blind to the end or demise of our current business model life cycle.

Moving ahead almost 100 years, it is now the existing automotive business model that is peaking, what we could call Peak Auto. In the existing model, a vehicle is the primary mode of transportation for the public, with the operator in control. Each operator (who is often the vehicle owner) determines the purpose of a trip, the destination, and operating parameters such as speed, route. The operation of the vehicle should be the primary focus of the driver in what we could call a ‘Do it Yourself’ (DIY) automotive model.

There were recently several announcements regarding large automotive companies exiting different product lines, closing certain plants and laying off large numbers of staff (McKenna, 2018; Krisher, 2019). Unions for these companies naturally reacted strongly, stating their beliefs that these are cost-cutting measures and intended to reduce the number of union employees. Unions suggested people boycott General Motors, as an example, and engaged in aggressive marketing and negotiation to protect their workers.

The unions’ position is based on the assumption that society will require the same number of vehicles per capita in the future as they do now. That is, it assumes that as society continues to grow in population, individuals and families will continue to need essentially two cars in the driveway. But what if that assumption is incorrect? What if we really have reached *Peak Auto*, future production volumes will actually be lower, and proactive car companies are adjusting their footprint to that of their emerging new reality?

Consider several contributing factors. First, there are fewer young drivers today than in the past. In fact, the number of drivers between the ages of 17 and 25 years of ages has declined 20% in North America and almost 30% in Europe over the last 30 years. Anecdotally, we can infer that the high cost of operating a vehicle may be a reason for this trend, as is more widely available and effective public transit and alternatives. Many of us, who became certified drivers shortly after reaching legal age, know young people who have not yet applied for their license (Beck, 2016).

Second, ride-sharing services such as Uber and Lyft are widely available (and may contribute to the first factor). Uber’s own data suggests their customers are primarily between the ages of 18 and 29, hold Bachelor’s and advanced degrees, and earn 6-figure incomes. From that, we can interpret that people using these services do so because they choose to, not because they cannot afford a car (Clewlow and Mishra, 2017).

Third, capacity utilization in society’s current fleet of vehicles is unreasonably low. Many of us spend an hour or two at most in our vehicles, while it sits in a garage or parking lot the rest of the time.

Finally, and most important, emerging technologies supporting autonomous vehicle operation is just around the corner. Mainstream companies such as Ford, BMW and Toyota have been testing and piloting self-driving prototypes for several years, and we can expect these vehicles to be on the streets within the next decade (Bentley, 2018, Griffith, 2016).

Imagine the following scenario, where the family of four owns one self-driving vehicle, rather than the two cars they owned in the past. First thing in the morning, Mom drives to work. After she exits the vehicle, the car then returns home empty, and picks up the two kids and drops them at school. The car returns home again and picks up Dad and drops him at work a little before 9. The car picks up the kids from school in the afternoon, and then Mom, and then in time for dinner, picks up Dad.

This vehicle is operating closer to 50% capacity utilization – still not good in the mind of an Operations person, but far better than most family vehicles today. This family will spend less on parking, insurance and perhaps buy one nicer vehicle instead of what they could afford buying two in today’s DIY model.

In this new scenario, the car is in control, freeing up operator and passenger attention to work, read, make phone calls or converse with their companions more freely. We could call this a ‘Do it for me’ (DIFM) automotive model, and in this DIFM model, car volumes will be much lower than they are today. Already, we have seen ongoing reductions in the number of vehicles produced and sold, and the four factors outlined above will continue to be the driving force behind further reductions (Bloomberg, 2019; Marotta, 2019). The DIY automotive model has been in existence for a hundred years, and it is over. As technologies and behaviours enable greater capacity utilization of society’s fleet and make other use of their time in the vehicle itself, we will see a substantial reduction in the volume of cars required.

It is important to point out that this emerging scenario is a natural phenomenon – all business cycles eventually end, as behaviours change, technologies emerge and competition forces leaders and businesses to evolve. This is not new. What is important is how this model plays out again and again over time, where successful leadership teams find a way to reinvent their business or agency and begin a new life cycle, and unsuccessful managers see their business fail. In the past two decades alone, we have witnessed the end of VCRs, 35mm cameras, typewriters, Blackberry cell phones, compact disks and the exit of services such as Blockbuster Video and Sears.

One may comment, ‘*Peak Auto* is interesting, but my students are not entering the automotive or manufacturing industries. How does this affect us?’ Students in many classes may respond the same way.

WHY THIS MATTERS TODAY –

Here is the hook - Such a scenario as *Peak Auto* will have broad reaching impact and influence in society and the economy. Fewer cars being produced (and volumes could drop by 30%) mean fewer manufacturing jobs in automotive and its related parts and service companies. This part is obvious. There are roughly one million automotive related jobs in North America alone (Wickham, 2017). Many of the manufacturing jobs that remain will be automated, as we see new levels of inexpensive, capable 6-axis assembly robots (Korus, 2017). Ancillary services such as transportation and logistics, natural resources and others will suffer as well.

Fewer vehicles being purchased means fewer bank loans at a retail level for consumers and commercial level for industrial investment. Fewer (and different) insurance policies will be needed, and less parking will be necessary in cities and towns, changing the real estate dynamic.

Peak Oil referred to the maximum availability of oil, where *Peak Oil II* refers to the declining demand for oil, including not only that required for a reduced volume of vehicles, but other consumption requirements as well.

CONCLUSIONS -

My purpose here is not to create a picture of dire circumstances or one of doom and gloom. These business model life cycles are normal and have had significant impact on many industries and society in the past. We are still witnessing the impact of the transition from traditional retail and malls to on-line and on-demand shopping, and the evolution of entertainment as the Internet kills the Cable Television industry.

Returning to my opening message, the purpose of this paper is two-fold. First, to highlight the value of a good story as part of your pedagogy. ‘Peak Auto will affect all of us, so that is why we here today in this class.’ Tell the story to highlight the impact and importance of your subject matter. Industries, organizations and individuals that succeed will be those that have found a way to differentiate themselves, and be ‘best’ at something, creating value in new ways. Those that do not evolve, will become extinct, like VCRs and Blackberry cell phones. There will be no room for mediocrity.

This is where, then, we focus on how we as educators create value. ‘We study history because, yes, it is interesting, but more importantly to learn from it’, and, ‘The frameworks we discuss in class, the processes we learn, and the historical cases we study will give you the perspective and capability as students to differentiate in new ways, and as an educator, I am very excited about your potential.’

Second, and finally, while the automotive industry in its current form is approaching the end of a hundred-year-old business cycle, think about academia. The majority of learning is still delivered by teachers and professors, standing at the front of a room in primarily one-way dialogues. Blackboards and chalk are gone, but the model itself is centuries old and needs to be refreshed, or even reinvented. Students learn differently today. On-line content, delivered on the students’ schedule rather than the institutions, is evolving quickly. Micro credits, blended degrees and specialized content are becoming more available. How much longer will the idea of students earning full degrees be the norm, rather than getting specialized shorter content and moving on?

As professors, teachers and administrators in academia, it is critical that we appreciate the significant changes happening around us, and use that canvas to not only give students the ability to lead and shape the next impactful stages in society, but to lead the evolution of our own industry at the same time. ‘Peak Classroom’ is approaching.

REFERENCES -

- Beck, J. (2016) *The Decline of the Driver’s License*, The Atlantic
Bentley, D. (2018) *Driving So You Don’t Have To*, Fortune Magazine

- Bloomberg (2019) *Canadian auto sales decline 7.3 per cent in January as downward trend continues*, The Canadian Press, BNN Bloomberg
- Clewlöw, R.R. and Mishra G.S. (2017) *Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States*, ITS UC Davis Institute of Transportation Studies, Research Report UCD-ITS-RR-17-07
- Cross, B. (2018) *There is no stopping Peak Car*, Smith Insight
- Griffith, E. (2016) *Some Assembly Required*, Fortune Magazine
- Korus, S. (2017) *Industrial Robots Costs Decline*, Ark Investments, <https://aurk-invest.com/industrial-robots-costs/>
- Krisher, T. (2019) *Ford to cut 7,000 jobs in global restructuring*, The Globe and Mail
- Lynch, M. (2018) *Whatever happened to Peak Oil?* Forbes Magazine
- Marotta, S. (2019) *Canada's auto sales continue to sputter even as broader economy speeds ahead*, The Globe and Mail
- McKenna, B. (2018) *No, the GM closing isn't a knockout blow*, The Globe and Mail
- Riley, K. (2015) *We hit peak horse...will we hit peak car?* Yahoo Finance
- Wickham, A. (2017) *The Automotive Industry Employs More People Than You Think*, Engineering Pro, www.fircroft.com/blogs/the-automotive-industry-employs-more-people-than-you-think/

ACKNOWLEDGEMENTS –

The Author gratefully acknowledges funding support for this research from Smith School of Business, and the support of Editor Alan Morantz