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## **Message from the Editor-in-Chief**

**Dear Colleagues,**

TOJET welcomes you. TOJET would like to thank you for your online journal interest. The online journal system has been diffused very fast for last ten years. We are delighted that many educators, teachers, parents, and students from around the world have visited for the last issue. It means that TOJET has continued to diffuse new trends in educational technology to all over the world since October 01, 2002. We hope that this issue will also successfully accomplish our global educational technology goal.

TOJET is confident that readers will learn and get different aspects on how to use educational technology in learning and teaching environments. Any views expressed in this publication are the views of the authors and are not the views of the Editor and TOJET.

TOJET thanks and appreciate the editorial board who have acted as reviewers for one or more submissions of this issue for their valuable contributions.

TOJET, AECT-Association for Educational Communication and Technology, Sakarya University and İstanbul University Cerrahpaşa will organize IETC-2021 - International Educational Technology Conference ([www.iet-c.net](http://www.iet-c.net)) between September 2-3, 2021. This conference is now a well-known educational technology event. It promotes the development and dissemination of theoretical knowledge, conceptual research, and professional knowledge through conference activities. Its focus is to create and disseminate knowledge about the use of instructional technology for learning and teaching in education.

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## A Blended INSET Program Design for Technopedagogical Development in Teaching English

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### ABSTRACT

The aim of this research was to design a blended in-service training program for developing technopedagogical skills (B-INSET for TPD) in teaching English. 12 lecturers in an intensive English language program at a state university formed the study group in the research. In the design-based research, the expectations of the administrators, lecturers, and students about technology integration in the school where the research was conducted were identified. The program that was designed according to the principles of adult education, social constructivism, and blended learning was later improved based on the views of specialists from different fields, tested for ten weeks in the 2018-2019 academic year fall semester, and evaluated by its participants. Questionnaire forms, semi-structured interviews, materials that were produced by the participants, face-to-face video sessions, and a research diary were utilized as data collection tools. The data were analyzed using descriptive statistics, descriptive analysis, and content analysis. At the end of the research, it was concluded that the participants found opportunities for interaction, collaboration, discussion, and hands-on practice when an eclectic teacher training model with the principles of adult education, social constructivism, and blended learning was utilized; and that the participants found adequate trainer support and all of their expectations were met.

**Keywords:** Blended training, Design-based research, Social constructivism, Teacher training, Technology integration

### INTRODUCTION

Technological developments in the 21<sup>st</sup> century related to internet technologies and data transmission, especially in the last decade, have gained high momentum. The positive outcomes of these developments, such as collaborative online office work, artificial intelligence in educational software, and massive online open courses, are easily seen in everyday life. Thanks to these developments, distance teaching and learning are even more accessible and effective than in the near past. Based on a report by the New Media Consortium (2014), an example of the results of these recent developments at the K-12 level are the changes in the roles of teachers, deeper approaches to learning, more importance given to open educational resources, increasing use of hybrid learning environments, and intuitive technologies. Another report on higher education by The New Media Consortium (2019) shows that these developments are seen in the design of blended learning, more focus on the measurement of learning, developing a culture of innovation, and redesigning learning environments.

Maybe a more significant result of these changes has been the updated expectations from teachers about integrating technology into their lessons. CEPPE (2013) reported that utilizing information and communication technologies (ICT) for the measurement and evaluation of learning and learning processes are among the standards of the teaching profession. Similarly, European Commission (2017) published *The European Framework for the Digital Competence of Educators (DigCompEdu)* to encourage educators' professional development in six major areas of digital technologies. Moreover, the International Society for Technology in Education (ISTE) (2017) set technology integration standards for teachers to ensure that their students learn better, and make teaching and learning more effective. Finally, Cambridge Assessment English (2017) published *The Cambridge English Digital Framework for Language Teachers*, in which teachers are expected to develop their skills in all aspects of digital learning and teaching.

There are also examples of national expectations in the Turkish context. For example, the Council of Higher Education (1999) reported that utilizing ICT for content-area knowledge, having a repertoire of ICT for content-area and pedagogical knowledge, and making effective use of ICT in teaching are among the skills of teacher trainees. One more example is that the Ministry of National Education in its *General Competencies for Teaching Profession* (2017) expects teachers to benefit from ICT in teaching and learning processes. Lastly, in the COVID-

19 pandemic, the Council of Higher Education (2020; 2021) urged all the higher institutions to adopt distance learning and teaching, either online or blended, to maintain the quality of teaching and learning at a maximum level, and to provide flexible learning environments. Overall, these international and national frameworks and standards put digital technologies in the heart of teaching and learning at all education levels and stages of lessons as a requirement, especially as a requirement of emergency remote teaching due to COVID-19 pandemic. As a result, it would be true to say that teachers need to engage in professional development activities to realize all these expectations and create favorable learning environments for today's digital learners.

In general terms, teachers' professional development can be defined as continuous activities that are planned by an individual teacher or their institution to meet professional expectations and develop professional skills (Kimav, 2019). A reason for participating in professional development activities related to technology integration is the need to update the knowledge and skills gained during undergraduate education (OECD, 1998). Teachers are also expected to train citizens according to the requirements of the 21<sup>st</sup> century and guide them gain information, media, and ICT literacy (Bautista & Ortega-Ruiz, 2015). Another reason is that there are significant differences between X and Y-generation teachers and Z-generation learners in their use of and preference for ICT (Young, 2009; Linnes, 2017), which might bring about a gap to fill. Related to this technological gap, Günüç (2017) reported that students might have less respect for their teachers, believe that they know more than their teachers, or the internet is more educative than their teachers. In contrast to this, Günüç (2017), again, reported that teachers might think that their students do not have sufficient interest in their lessons or they are not eager to learn; and these contrasting views between teachers and students might cause strong disagreements. However, teachers' participation in professional development activities has benefits for themselves. According to Özer (2012), teachers who participate in professional development activities increase and add variety to their pedagogical knowledge and become lifelong learners. Additionally, they refresh and enrich their understanding of education, develop their skills related to teaching and instructional technologies, update their content knowledge, increase their professional satisfaction, take steps for further promotion, and contribute to their school's overall development. Naturally, the need and significance of teachers' professional development led to the development of some models as well. For example, Wallace (1991) offered to develop a reflective approach in teaching. Another set of models was offered by Loucks-Horsley et al. (2009) around five models of staff development for teachers. More recently and related to technology, Koehler and Mishra (2009) and Mishra (2019) developed the *Technopedagogical Content Knowledge Framework* (TPACK).

Although there are various professional development models and activities for teachers, this fact does not necessarily mean that professional development is problem-free and it contributes positively to teachers' development. There is sufficient evidence in the literature to support this claim. For example, Villegas-Reimers and Reimers, (2000, cited from Özer, 2012, p. 208-209) reported that not meeting teachers' needs, theoretical sessions with limited hands-on practice, and inadequately qualified trainers are some of the barriers in Latin America. They also found that in western Europe these activities might not develop teachers' competences, that trainers share their experiences irrelevant to the training setting; and in India, these kinds of activities are too few, and teachers do not participate in these activities. Additionally, Day (1999) found that the school culture, peer and leader support, and the connection between previous learning experiences and the cognitive and affective needs play an essential role in professional development. There are also findings that are related to adult learning. For instance, Kwackman (2003) concluded that the attitude towards professional development and the perception of how beneficial and meaningful those activities will be could be factors for choosing to participate in professional development. Similarly, OECD (2009) reported that insufficient financial support, not scheduling the right time, not having mentorship programs in schools, conflict with work hours, and high costs are among the barriers that teachers face. Lastly, in their study related to ICT integration, Wachter-Kjaergaard ve Foug (2016) found that not providing enough support during training, confusion of how to use the newly-acquired skills and knowledge in lessons, and not having a clear idea of how to combine theory and practice are among the barriers to professional development.

Apart from the above international findings, the Turkish context has similar findings related to the barriers to effective professional development. For instance, Özer (2004) reported that teachers cannot buy or read publications related to their profession, have a low level of motivation, not all schools organize professional development activities, teachers are not asked about their opinion about professional development, teachers' needs are not investigated, teachers cannot choose the program that they would like to attend, trainers are not qualified enough, they face accommodation problems, or the training is costly. In addition to these findings reported so far, T-Bümen and others (2012) conducted an in-depth literature review and summarized that the lack of motivating factors and cooperation between universities and the Ministry of National Education, teachers' not perceiving themselves as qualified teachers, not benefitting from various professional development models in training sessions, not offering a continuous and systematic professional development framework, unprepared trainers for

the sessions, and participants' not being homogeneously grouped are the problems about teachers' professional development. Lastly, Kabakçı-Yurdakul (2012) reached the conclusion that the content and context of the training, school administration's approach, the role of the trainers, and the career level of the participating teachers are the factors that affect teachers' attendance to professional development activities.

All these examples from the previous studies suggest that the factors that influence teachers' professional development can be high in number, and it is almost impossible to eliminate them in a training program. However, it can be claimed that these factors come together in three dimensions: not considering the characteristics of adult learning, limited collaboration and sharing opportunities, and the setting and delivery of the training, all of which point out the significance of adults' learning preferences, principles of social constructivism, and blended learning in training sessions.

The characteristics of adult learning and how adults learn have long been investigated. Maybe the most influential study on this topic has been the development of the model of andragogy by Knowles (1996) with its six basic assumptions, namely self-concept, experience, readiness to learn, orientation to learn, motivation to learn, the need to know. These assumptions imply that adults need to be included in every stage of training programs, their previous experiences should be considered, experiential learning and self-evaluation opportunities should be offered, a problem-based approach should be preferred, practice opportunities for what is learned in daily life should be given, and methods that promote critical thinking skills and other skills should be utilized (Ada & Baysal, 2013). Aydın (2014) adds some more strategies to this list, like a positive first impression, arousing interest, using reinforcers at an appropriate frequency, and free communication and interaction opportunities.

Literature review reveals that there are studies in which how adults learn were considered. A study by Baylen (2010) on using blogs with online adult teacher trainees showed that blogs were useful for sharing their opinion and learning about others' in terms of professional development. Grant (2011) found that opportunities for interaction, commenting on what others shared, the appropriateness of the online learning environment for their work conditions, and needs-based, straightforward, easy-to-follow features of the course materials were the most favorable elements for the participants. Based on these examples, it can be asserted that considering how adults learn before designing professional development programs and integrating relevant technologies for their needs could play a vital role in the success of these programs. Moreover, these findings indicate that providing opportunities for exchange of ideas and interaction, sharing, and supporting each other to solve a problem are also some of the characteristics of social constructivist learning that need to be incorporated in training programs.

Vygotsky (1979) argued that learners interpret new information and make sense of it based on their previous experiences. Similarly, Mason (2007) claims that learning is social and it exists in rich, social, and physical learning environments when people deal with their daily problems. These two fundamental characteristics of social constructivism were further elaborated on by Kutluca (2013) and Şahin (2015). Kutluca (2013) argued that a learner reconstructs their knowledge during interaction with others in groups in a social learning environment where the teacher is the facilitator. Moreover, Şahin (2015) indicated that learners learn from more knowledgeable others when they interact with them, so they need to learn in groups to develop new ideas, which can be the basis for today's online discussion forums and other web-based collaborative tools such as Google Docs or online chat rooms.

Hawkey's (2003) study can be an example of how the characteristics of social constructivism and technological developments can be used together in online learning environments. Hawkey (2003) found that the participants had positive feelings towards online discussions and some introverts engaged in communication more than the face-to-face setting. The participants also re-engaged in online discussions later and established interactive communication with questions and answers in the discussion forums. Similarly, Bryceson (2007) reported that structured discussion forums enabled interaction and socialization opportunities among the participants, increased sense of belongingness, encouraged students to think critically and establish effective communication in the blended learning environment. Other similar results that pointed out the significance of the characteristics of social constructivism and interaction among the participants in learning environments can be seen in the studies of Hung et al. (2014), Barak (2017), and Forde and McMahon (2019). All in all, the results of these studies signal that social constructivist learning environments that are enriched by various technologies could have a positive impact on learning. However, it would still be fair to say that just considering the characteristics of adult learning with social constructivism and integrating technology may not be enough to eliminate the barriers to professional development because teachers might also face problems related to their workload and the setting, delivery, cost, or time of the training program. These barriers, then, get the program designers to consider a blended learning design for professional development.

The key assumptions of blended learning can be defined as “thoughtful integration of face-to-face and online learning, fundamentally rethinking the course design to optimize student engagement, and reconstruction and replacing traditional class contact hours” (Garrison & Vaughan, 2008, p. 5). If these assumptions are carefully examined, it will be true to say that there is no reason for not utilizing its features to design blended professional development environments, the examples of which the literature review reveals.

The first example of blended professional development is by Roberts-Pittman et al. (2011). The results of their study show that the blended learning environment had advantages like flexibility and reaching out to other tutors as well as the attendance of off-campus students to online discussions. In addition, Ho-yan Chan (2014) found that the participants had practice opportunities and developed their skills at home. The participants also increased their motivation, content knowledge, and developed language skills. Additionally, in Cesur's (2010) study, the participants reported that they considered the blended learning environment a setting that enabled them to use technology effectively, and the works that they produced after collaboration with others helped them think from multiple points of view. Lastly, the participants in Dönmez's (2017) study shared that they had a flexible learning environment and proceeded at their own pace, learned from their peers, and watching the training videos again, pausing or rewinding them as they wished were the advantages of the blended learning environment. Like the ones about incorporating the characteristics of adult learning and social constructivism, these findings show that adding a blended learning solution to the learning environment can have significant advantages to consider when designing professional learning programs.

### **Problem Situation**

Smaldino et al. (2015) claimed that one of the roles defined for teachers is to utilize ICT to improve teaching and learning processes, so teachers should know about the technologies that they can use in their lessons. Smaldino et al. (2015) also argued that teachers need to refresh their computer skills, update teaching and assessment methods and individualize teaching, as a result of which professional development becomes a necessity. Additionally, Sevim (2015) summarized the advantages of using various technologies in education as easier and faster learning, focus on learning, permanent learning, enjoyable and more effective teaching, and independent student learning. Moreover, teachers need to plan their lessons according to the learning styles and preferences of today's digital natives (Prensky, 2001).

In the light of these changing expectations from teachers, Anadolu University School of Foreign Languages has been implementing an updated curriculum into which ICT are integrated. Related to ICT integration, the school plans compulsory or voluntary training sessions organized by the Technology Integration Unit or the publishing houses, the products of which are used in the curriculum. The school also emphasizes the careful selection of ICT and expects the language instructors to benefit from ICT in both teaching and their professional life.

However, Kımav (2018) found that the language instructors had different TPACK levels despite the high number of professional development activities and argued that these differences could lead to an increase in the difference between the methods and techniques that the lecturers who attended and who did not attend to those activities used. These differences might also have a negative impact on the learning environment because students could prefer lecturers with higher levels of technological skills similar to themselves (Günüç, 2017). In addition to this, the school aims to guide the lecturers to reach international and national teaching standards and gain the skills defined in the guides by the European Commission (2017) and Cambridge Assessment English (2017). The school also aims to use a learning management system to provide all the lecturers with learning and training opportunities independent of time and place, with an easily updatable and storable online materials archive. Lastly, there is a limited number of studies on blended professional development (Mouzakis, 2008; Mohanna et al., 2008; Cesur, 2010; Roberts-Pittman et al., 2011; Bu & Bu, 2012; Aydın, 2012; Kokoç, 2012; Dankbaar et al., 2014; Ho-yan-Chan, 2014; Akarawang, 2016; Deegan et al., 2016; Dönmez, 2017) and they offer limited suggestions about how to plan and deliver this kind of program. As a result, it can be claimed that there is a need to conduct further studies on blended professional development programs that could make up for the disadvantages of the face-to-face ones.

### **Purpose**

Based on the limited number of studies on designing blended professional development programs and the institutional, national, and international expectations from teachers, this study aims to design, test, and evaluate a blended professional development program incorporating the characteristics of adult learning and social constructivism that would enable participants to learn anytime and anywhere. Additionally, the literature review implies that there has been a continuing need to overcome the recurring barriers to professional development and make it more effective, attractive and convenient for teachers. Lastly, at the organization level for technology integration, there is a need to have a comprehensive but less time-consuming, learner-centered, efficiently organized, and updateable training program that can help to realize institutional goals and objectives as well as



indirectly meeting its learners' needs and expectations. Thus, the following research questions were addressed in the study:

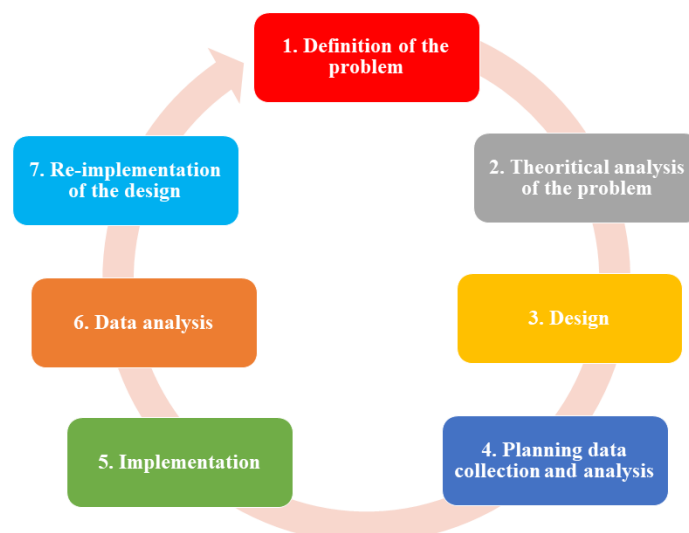
1. How can a blended INSET program can be designed based on the
  - a. administrators,
  - b. lecturers' and
  - c. students' views?
2. In the blended INSET program, what
  - a. is the participants' level of attendance to online activities,
  - b. are the participants' interaction patterns between each other,
  - c. are the participants' preferred web tools in their practice lessons and
  - d. are the participants' views on the skills that they have gained during the implementation?
3. What are the participants' views on the blended INSET program that they have attended?

It is expected that the findings from the study can be used to design flexible, interactive, and hands-on training programs for teaching not only English but also other subjects based on the needs of the participants in homogeneous and heterogeneous groups with peer support. In other institutions, the findings from the study can also be used for school development in ICT integration and as a guide for participants to make teaching and learning more effective.

## METHOD

### Research Design

In this study, design-based research (DBR) was utilized for a variety of reasons (Figure 1). The Design-Based Research Collective (2003) argued that DBR is not just about testing an intervention, but it also combines teaching and learning theories and their relationship with design and implementation. This was true for this study that aims to create a needs-based learning environment with the principles of adult and social constructivism. It also includes cycles of design, implementation, analysis, and redesign, in which researchers and practitioners work together to create significant and meaningful improvements in the learning environment with a focus on learning outcomes. Again, in this study, field specialists, the authors (researchers), and the language instructors as practitioners worked together at various stages of the research. Barab (2014) contributed to this argument by adding that DBR is systematically conducted in natural settings, as in this study, and provided insights related to why and how a specific intervention works in a particular setting. Finally, as in this study where the first author was the trainer, and both authors were the curriculum developers who actively participated in the whole study, Dominguez (2017) emphasized that DBR has a specific focus on testing innovative interventions and considers the researcher an element in the sophisticated ecology of learning and educational innovations.



**Figure 1:** *Design-based research circle*

### Research Setting

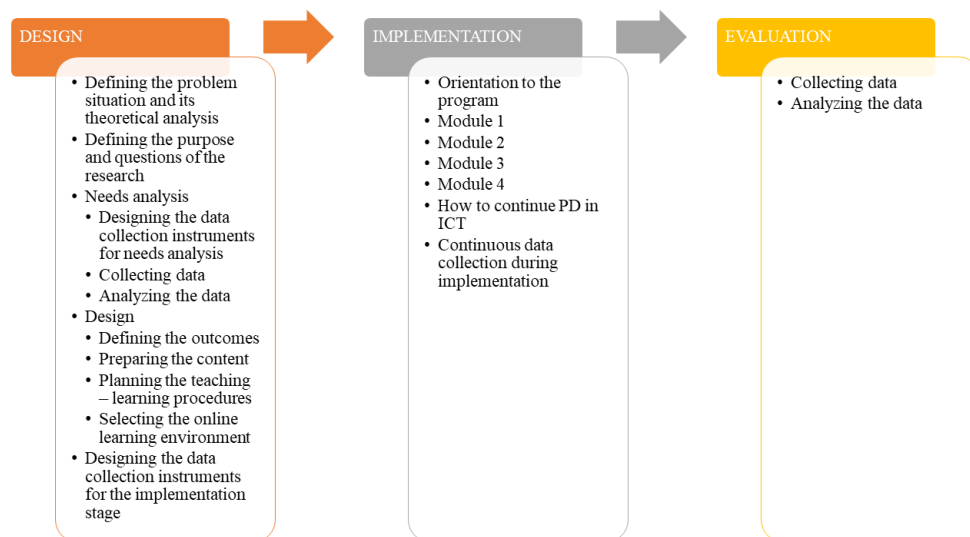
This study was conducted in 2017-2018 Academic Year Spring Semester and 2018-2019 Academic Year Fall semester at the Intensive English Language Program in Anadolu University School of Foreign Languages, Eskisehir, Turkey. In the intensive language program, students have English lessons between 24-26 hours a week



based on their proficiency level, 2 hours of which are in the language computer lab. The program follows a communicative and integrated approach to foster the language skills of the students. As for the training environment, the participants of the study were trained in the computer lab first, but due to physical problems, the meeting room of the school was used as the training room for the reasons described later in the findings section. The online part of the blended training was on Canvas Learning Management System (LMS).

### Research Process

The study was conducted in three main stages, namely, design, implementation, and evaluation of the in-service training program. These stages are visualized in chronological order in Figure 2 below.



**Figure 2:** Research process

The design stage (stages 1-4 in Figure 1) started with defining the problem situation and its theoretical analysis, followed by defining the purpose and questions of the research. The third step was to conduct the needs analysis, which included the design of the data collection instruments, data collection, and analysis. The fourth step was to design the program, namely to define the outcomes, prepare the content, plan the teaching-learning procedures, and select the online learning environment. The last step was to design the data collection instruments for the implementation stage. In the design stage, when a step was completed, field specialists shared their opinion, and then their suggestions were used to improve the content or data collection tools. Only after these revisions were completed, the next step was taken, which is the true cyclical nature of the DBR.

After the content of the program was finalized, the implementation stage (stage 5 in Figure 1) started with the “Orientation to the program”, which lasted one week. Then, four successive modules, each of which lasted two weeks, took place. The last activity was “How to continue PD in ICT”, which lasted one week. The full implementation took ten weeks between 8 October and 14 December 2018. In this stage, data were collected continuously for the evaluation of the specific modules allowing for spontaneous interventions, if necessary. The third and last stage of the study was the evaluation of the program (stage 6 in Figure 1) after it ended, which again included data collection and analysis steps.

### Study Universe and Study Group

The study universe was composed of four administrators, 145 language instructors, and 1000 students who accepted to voluntarily participate in data collection in 2017-2018 Academic Year Spring Semester.

The study group included 12 language instructors who volunteered to participate in the training program. The participants had low, middle, and high levels of technology acceptance (TA) (Davis, 1989) and technopedagogical content knowledge (TPACK) (Mishra, 2019) based on Kimav’s (2017; 2018) findings. Because encouraging fruitful information exchange and peer support was one of the rationales for the program design, the purposive sampling method was used when selecting these participants (Creswell, 2016). Table 1 below shows detailed information about the study group.

**Table 1: Information about the study group**

Participant	Experience (years)	Admin. duty	Proficiency level taught	Course load (hours)	TA	TPACK
Mehmet	27	No	D	16	Middle	Low
Melisa	23	No	A	14	Low	Low
Pelin	20	Yes	D	8	Middle	Middle
Demet	18	Yes	C	14	Low	Low
Gonca	16	No	D	16	Low	Low
Beste	14	No	A	16	High	Middle
Ali	13	No	D	16	High	Middle
Hatice	13	Yes	C	16	Middle	Low
Derin	11	Yes	B	14	Middle	Low
Çağatay	6	No	B	18	High	High
Burcu	5	No	D	18	Middle	Middle
Ayşegül	4	Yes	B	14	Low	Low

As it is seen in Table 1, the study group's experience in teaching ranged between 4 and 27 years, and five of them had administrative duties at school. The members of the group taught at all the proficiency levels at school, from A (the highest, upper-intermediate) to D (the lowest, elementary) between 8 and 18 hours a week.

### Field Specialists

A total of nine field specialists provided feedback and shared their insights at the various stages of the study. Three of these nine specialists from the fields of Curriculum and Instruction and English Language Teaching were also in the thesis monitoring committee and contributed to the research starting from its beginning. The other six specialists were from the fields of Computer and Instructional Technologies Teaching, Curriculum and Instruction, and English Language Teaching. These specialists provided feedback and recommended revisions that were later carried out to improve the design before moving to each step in the design stage.

### Data Collection and Analysis

At every stage of the study, a variety of data collection instruments were utilized to define the expectations of all the stakeholders, namely students, language instructors, and administrators, who were affected by the process of technology integration into the curriculum in the intensive language program. Table 2 shows detailed information about the data collection period, data collection instruments, and data analysis.

**Table 2: Data collection and analysis**

Period	Stage	Data Collection Instrument	Data Analysis
12 April - 30 September 2018	1. Design (Needs Analysis)	Questionnaire form for the instructors	Descriptive statistics
		Questionnaire form for the students	Descriptive statistics
		Semi-structured interview form for the administrators	Content analysis
		Semi-structured interview form for the participants of the program	Content analysis
8 October - 14 December 2018	2. Implementation	Documents and videos that the participants of the program produced	Content analysis
		Questionnaire forms for the participants of the program about the learning outcomes of the modules	Descriptive statistics
		Questionnaire forms for the participants of the program about the content of the modules	Descriptive statistics
		Face-to-face session videos	Descriptive analysis
		Researcher's notes	Content analysis
3 January - 4 May 2019	3. Evaluation	Semi-structured interview form for the participants of the program	Content analysis
		Researcher's notes	Content analysis

For the data collection, the first instruments were the questionnaire forms that included questions about demographics, personal data, and workload. The reason for this choice was that questionnaire forms enable researchers to collect first-person data from big groups in a short time with a relatively lower cost as well as quicker analysis of the data collected through various question types (Baş, 2013; Aziz, 2015; Akalın, 2015). Before collecting data with these instruments, four specialists offered revisions for content validity that were carried out

in the final versions. Later, the data collected with these instruments from the students and instructors were analyzed using descriptive statistics (Büyüköztürk et al., 2016) with frequencies and percentages to understand the general expectations related to ICT integration in the intensive language program.

The second set of instruments for the data collection was the semi-structured interviews with questions about the needs and expectations of the administrators and participants of the program. Semi-structured interviews enable researchers to collect in-depth data, ask additional questions that are not planned before, reform a question that may be misunderstood or misinterpreted by the participant, create a friendly interview environment, and observe non-verbal behaviors (Patton, 2014; Creswell, 2016; Bogdan & Biklen, 2017). A pilot test interview was conducted with a field specialist who also provided feedback on the first draft of the interview form for the administrators. Then, based on the feedback received, the interview form had its final version. The data collected with semi-structured interviews were analyzed using content analysis (Yıldırım & Şimsek, 2013) because content analysis enabled the researchers to have a systematic and comprehensive summary of the data set as a whole (Wilkinson, 2004, p. 182). The steps in content analysis (Bogdan and Biklen, 2007) were as follows: 1) Reading through data, 2) Scanning for regularities in repeated words and phrases and coding them, 3) Developing a list of coding categories and themes 4) Reaching a consensus on the analysis between the researchers. For example, it was seen that individual interviewees repeatedly mentioned codes like a “multi-session” program, “long-lasting” program”, or “not a single-session one”, which were later categorized under “continuous program” using MS Excel software. These codes and categories were later checked by the second researcher and the two researchers came together to reach a consensus on the analysis and finalize it.

The next set of data collection instruments were the documents and videos that the participants produced in the practice sessions in their own classes. The documents were composed of the participants’ work that they produced in the online discussion forums and lesson plans that they shared with others - for the researcher to see if the training served its objectives. Also, face-to-face session videos were used to assess the design of the face-to-face learning environment. These documents and videos were analyzed using content analysis (Sönmez & Alacapınar, 2016).

The last data collection instrument was the researcher’s notes in the implementation and evaluation stages. Those notes were used to serve as reminders to the researcher for keeping his experiences as the trainer and identifying the strengths and possible weaknesses of the program. Those notes were analyzed using content analysis (Yıldırım & Şimsek, 2013).

For the findings after data analysis to be more meaningful for the reader, the findings are reported as *a small minority of the participants* ( $\leq\%25$ ), *a minority of the participants* (between %25 and %49), *a majority of the participants* (between %51 and %75), and *a big majority of the participants* ( $\geq\%76$ ).

### **Trustworthiness and The Researcher’s Role**

To increase the credibility of the study, the two authors worked closely and frequently collaborated to present the data in a descriptive style with the theoretical framework of the study in mind. In the study, the first author was the researcher, and the second author was the supervisor of the dissertation study and an external validator of the data at all stages. Another measure taken was that the researcher defined his role, the participants of the program, the stages of the research clearly; and kept away from subjective justifications in data analysis as much as possible with the external validation of the second author. Additionally, the data collection instruments were designed in a manner that would support each other to reach deeper data (Yıldırım & Şimsek, 2013; Creswell, 2016). Finally, all the data were presented considering its context and relation to the research question, with direct quotes when necessary (Yıldırım & Şimsek, 2013; Creswell, 2016).

### **Ethical Considerations**

Before starting the study, a permit was granted from the Ethics Committee at Anadolu University and another permit for conducting research was granted from the School of Foreign Languages at the same university. The researcher also put maximum effort into maintaining a professional relationship with the program participants, who were also colleagues, and some of whom were social friends of the researcher. Moreover, all the participants at all the stages of the program volunteered to participate in data collection, signing in an informed consent form. Finally, the participants’ identity and privacy were protected using nicknames, and the data from the study were protected on two computers with a password-protected login screen (Glesne, 2015; Hammersley & Traianou, 2017).

## FINDINGS

### Findings Related to The Design

The first research question was about how to design the in-service training program. To find an answer to this question, first, the theoretical framework of the program was defined. Next, the needs and expectations of the administrators, language instructors, students in the intensive language program, and the participants of the program were identified. Lastly, the design had its final version based on the views of the field specialists and participants of the program (Figure 3).

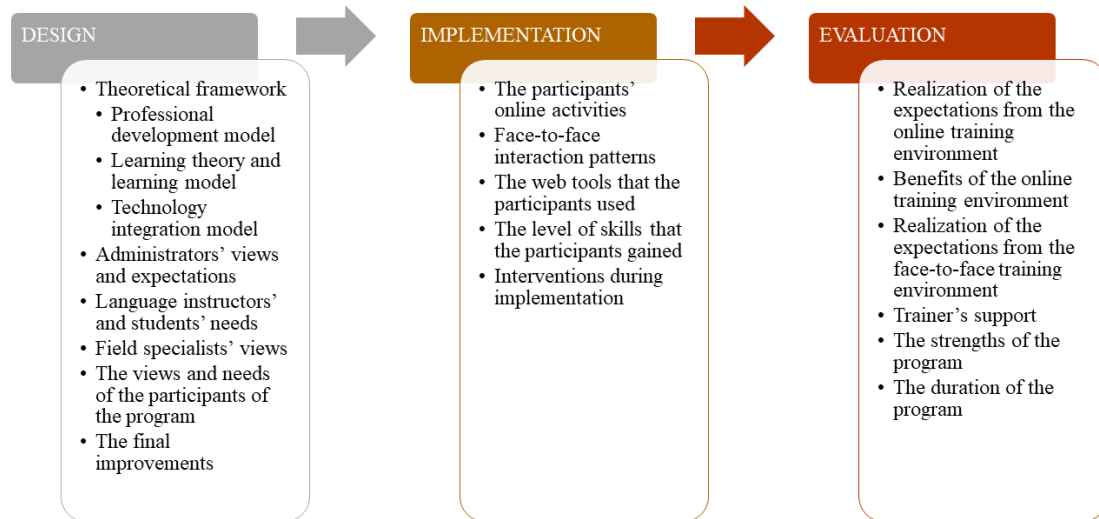


Figure 3: The presentation of the findings

### Theoretical Framework

For the in-service training program to have a sound structure, it was necessary to build it on a theoretical framework. With this aim, a literature review was conducted first. At the end of the literature review and data analysis, it was seen that an eclectic theoretical framework with a curriculum theory that included the principles of The Tyler Rationale (Tanner and Tanner, 2007) and a humanist approach would work best.

The Tyler Rationale (Tanner and Tanner, 2007) has a functional, systematic sequence with an emphasis on considering all the relationships among all the elements of a curriculum, namely needs, objectives, content, learning experiences and evaluation, and argues that the sources of objectives are the learners, society and subject specialists. Another theoretical foundation considered in the design of the program was the humanist approach. This approach considers the individual and their needs in the center of learning and emphasizes the individual's self-realization (Yapıcı, 2017). The other elements of the theoretical framework are discussed below in the following parts.

### Professional Development Model.

In the program's design, instead of adopting one single professional development model that might not cater to the specific needs of the participants, an eclectic approach that combined the strengths of various models was adopted. After the literature review, three professional development models formed the main structure of the design on which all the activities were built. The first model was Adult Learning Model for Faculty Development (Lawler, 2003) because this model argues that adults' previous experiences, educational backgrounds, learning preferences, motivational sources, and aims for learning differ, and so these differences should be considered in the design of a PD program. The second model was Loucks-Horsley's (2009) Professional Development Design Framework. This model emphasizes the need to adapt to various developments and changes as well as personal experiences and the needs of the participants when designing a PD program. The last model that formed the program's main structure was the Craft Model (Wallace, 1991). In this model, the participants work with an experienced trainer and gain new knowledge and skills by observing or listening to the trainer.

### Learning Theory and Learning Model.

Among all the learning theories, social constructivism was the best learning theory for the program's foundation. This choice was also based on the findings from the program's participants discussed in the following section. Social constructivism asserts that an individual spends most of their time and socializes in groups. The interaction between the learner and teacher is an essential element of learning, in which learners with their peers work on to solve problems (Kutluca, 2013). As it is explained in the introduction section, learning environments in which the

principles of social constructivism exist include discussions, collaboration, inquiry. Thus, learners can communicate what they feel or think freely, gain insights from others and stay active in the learning environments (Şahin, 2015). These principles were also supportive of the principles of how adults learn from an andragogic point of view (Knowles, 1996).

Secondly, the learning model for the teaching-learning activities in the program was the blended learning model. Among this model's varieties, the flexible model was the most convenient one because the participants could study the content and complete the assigned activities at their own pace, whenever and wherever they would prefer. This choice was also based on the findings from the program's participants discussed in the following section. Additionally, they could get face-to-face or online support from the trainers (Gedik, 2016). This model could also help the participants to reach the content and follow flexible deadlines on any device they had.

### Technology Integration Model.

In the research setting, Systematic Planning for ICT (Wang & Woo, 2007), which follows a logical and linear order of activities with a justification of when, why, and how to use a specific technology, was used to integrate ICT into the curriculum. This situation was also true for the expectations from the participants of the program since they were expected to transfer what they learn in the program to their own lessons, which also helped prevent confusion between their practices in the lessons and the program. Among Wand and Woo's (2007) suggestions about how this model could be used, micro-level integration was preferred since the participants were expected to integrate ICT in a lesson or a series of lessons.

### Administrators' Views and Expectations

The first group with whom the semi-structured interviews were conducted was the administrators. With the four questions in the interviews, it was aimed to identify their views towards and expectations from the training program. Table 3 below shows the administrators' answers.

**Table 3:** *Administrators' Views and Expectations*

Question	Theme
Q1. Expectations from the language instructors	follow the requirements of the curriculum, expose students to English in a variety of ways
Q2. Positive factors that affect participation in PD	interest in the delivery style of the program, benefits for themselves and their students, peer effects, the qualities of the trainer
Q3. Negative factors that affect participation in PD	feeling no need to participate, showing resistance, using the internet for their own PD, not being satisfied with the previous PD programs, high frequency of the training sessions
Q4. Expectations related to the design of the training program	content (contextual needs, theoretical background and practical implementations, learner-centered), duration (continuous), participation (voluntary)

When they were asked to share their expectations from the language instructors with regards to the ICT integration into the curriculum, the administrators emphasized that they expected the language instructors to follow the requirements of the curriculum related to ICT integration (Table 3).

*"... they can ask their students to transfer their (vocabulary) work to Kahoot and play them (quizzes) together..." (Elif)*

*"... there are listening activities or videos (in the book) ... for the students to increase their interest and motivation ..." (Hakan)*

The administrators also shared their opinion about students' being exposed to English in a variety of ways.

*"There are web pages ... You can show a photo from the digital projector or there are many voice recordings ..." (Göktekin)*

The second and third questions in the interviews were about the factors that affected the participation of the language instructors in a PD program (Table 3). The administrators mentioned having an interest in the delivery style, seeing a benefit of the program for themselves as teachers and their students, the effects of their peers, and the qualities of the trainer were the positive factors. For the administrators, the negative factors included feeling no need to participate in the program, showing resistance, using the internet for their own PD, not being satisfied with the previous programs, and high frequency of the training sessions conducted at school.

*"... activities that we started this year like One Sip of German ... are enjoyable. They expect things in new formats, new styles." (Canan)*

*"... we organized too many workshops about every topic ... this is both good and bad ...I mean they are reaching the level of (full) satisfaction... Maybe their feeling of -I should learn something- has been satisfied ..." (Canan)*



The last question for the administrators was about their expectations from the training program. In terms of content, they expected it to be specific to the school's needs with an emphasis on the activities based on theoretical background and practical implications. They also emphasized a learner-centered approach to offer hands-on practice opportunities to the participants. The administrators also pointed out that the training should be continuous, not a single-session one; and voluntary participation was significant for higher-level learning from the program.

### Language Instructors' and Students' Needs

The second and third groups of stakeholders in the intensive English program when the program was designed were the language instructors and students, respectively. Their answer to the question about the skills that they wanted to develop using ICT is shown in Table 4 below.

**Table 4:** *The language skills that the language instructors and students want to develop*

Language Instructors			Students		
	N	%		N	%
Listening	119	93	Listening	710	78.6
Vocabulary	106	82.8	Vocabulary	672	74.4
Speaking	82	64.1	Speaking	545	60.4
Grammar	76	59.4	Grammar	428	47.4
Reading	67	52.3	Reading	343	38
Writing	43	33.6	Writing	338	37.4

According to Table 4, the language instructors wanted to develop listening (%93) and vocabulary skills (%82.8) more than the others, namely speaking (%64.1), grammar (%59.4), reading (%52.3), and writing (%33.6). The results showed the same order from the students' data. The students preferred to develop their listening (%78.6) and vocabulary skills (%74.4) more than the others, namely speaking (%60.4), grammar (%47.4), reading (%38), and writing (%37.4). The findings confirmed that both groups of stakeholders gave similar importance to the same skills in the same order.

The second question in the questionnaire was about the preferences of the content or activity types that could be done with ICT in the lessons. Table 5 below compares the language instructors' and students' choices.

**Table 5:** *Language instructors' and students' preferred activity types with ICT*

Language Instructors			Students		
	N	%		N	%
Prepare vocabulary activities with visual support	109	85.2	Knowledge tests	816	92.2
Use online videos	107	83.6	Vocabulary activities with visual support	782	90.2
Perform assessment and evaluation with knowledge tests	100	78.1	Lesson presentations with visual support	705	84.5
Use lesson presentation tools with visual support	90	70.3	Interactive videos/animations	693	84.3
Organize online written discussions	89	69.5	Online chat	720	84
Prepare teaching videos	84	65.6	Teaching videos	678	79.6
Give voice feedback to assignments	80	62.5	Online videos	660	78
Use the social media	77	60.2	Interactive images	621	77.8
Prepare interactive images	76	59.4	Activities on the social media	642	75.6
Prepare interactive videos/animations	73	57	Online written discussions	632	74.6
Use podcast to teach	73	57	Podcasts for learning a subject	597	72.8
Chat online	71	55.5	Wikis	491	72.6
Write digital stories	67	52.3	Video conference activities	571	69.3
Write audio stories	67	52.3	Audio stories	581	68.3
Prepare infographics	66	51.6	Oral conference activities	526	66.1
Use wikis	61	47.7	Infographics	515	65.1
Organize online oral discussions	50	39.1	Voice feedback to assignments	485	59.9
Organize oral conference activities	47	36.7	Blogs	402	57.8
Organize video conference activities	46	35.9	Written digital stories	476	57.6
Give video feedback to assignments	43	33.6	Online oral discussions	466	56.8

Use blogs	36	28.1	Video feedback to assignments	401	49.9
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As can be seen from Table 5 above, the language instructors' most preferred activity types were vocabulary activities with visual support (%85.2), using online videos (%83.6), and assessment and evaluation with knowledge tests (%78.1) while their least preferred activity types were organizing video conference activities (%35.9), giving video feedback to assignments (%33.6), and using blogs (%28.1). In contrast to the language instructors, the students' most preferred activity types were knowledge tests (%92.2), vocabulary activities with visual support (%90.2), and lesson presentations with visual support (%84.5), whereas their least preferred activity types were writing digital stories (%57.6), online oral discussions (%56.8), and video feedback to their assignments (%49.9). The research also aimed to integrate the technologies that the language instructors and students were familiar with into the training program to increase its efficiency. Thus, both groups were asked to report those technologies and how often they used them. The findings are shown in Table 6 below.

**Table 6:** *The technologies that the language instructors and students were familiar with*

Language Instructors			Students		
	<i>N</i>	$\bar{x}^*$		<i>N</i>	$\bar{x}$
Smartphone	128	4.73	Smartphone	896	4.77
Computer	128	4.52	Social media tools	900	4.44
Websites	127	4.39	Websites	880	4.23
Social media tools	128	4.16	Computer	897	3.88
Office software	127	4.14	E-sources	896	3.54
E-sources	128	3.99	Office software	902	3.42
Other computer software	128	3.11	Other computer software	901	3.31
Web tools	128	2.7	Web tools	901	3.05

\*1-never, 3-sometimes, 5-always

According to Table 6, language instructors most frequently used smartphones ( $\bar{X}=4.73$ ), computers ( $\bar{X}=4.52$ ), and websites ( $\bar{X}=4.39$ ) in their daily lives while they least frequently used e-sources ( $\bar{X}=3.99$ ), other computer software ( $\bar{X}=3.11$ ), and web tools ( $\bar{X}=2.7$ ). In terms of most and least frequently used technologies, the students gave similar answers. They most frequently used smartphones ( $\bar{X}=4.77$ ), social media tools ( $\bar{X}=4.44$ ), and websites ( $\bar{X}=4.23$ ), but again other computer software ( $\bar{X}=3.31$ ) and web tools ( $\bar{X}=3.05$ ) were the least frequently used ones. Additionally, the technologies that the language instructors used in their lessons were investigated to find out what technologies they were familiar with and then to integrate those technologies into the training program. Table 7 below shows those technologies and the frequency of their use.

**Table 7:** *The technologies that the language instructors used in their lessons*

	<i>N</i>	$\bar{x}^*$
Digital projector	128	4.44
Computer	128	4.2
Office software	128	3.59
E-resources	127	3.5
Web tools	128	3.23
Social media tools	128	3.13
Websites	128	3.12
Smartphones	128	2.97
Other computer software	128	2.68

\*1-never, 3-sometimes, 5-always

Table 7 shows that the language instructors used digital projectors ( $\bar{X}=4.44$ ), computers ( $\bar{X}=4.2$ ), and office software ( $\bar{X}=3.59$ ) most frequently while they used websites ( $\bar{X}=3.12$ ), smartphones ( $\bar{X}=2.97$ ), and other computer software ( $\bar{X}=2.68$ ) least frequently.

Lastly, the language instructors shared their views on the ideal training environment. Table 8 provides the results obtained from the descriptive data related to this question in the questionnaire.



**Table 8: Ideal training environment for the language instructors**

Trainer	N	%	Duration	N	%
Have content knowledge	113	88.3	1-4 weeks	74	57.81
Facilitator	112	87.5	5-8 weeks	11	8.59
Guide	108	84.4	9-12 weeks	8	6.25
Knowledgeable	103	80.5	Depends on the content	7	5.47
Accessible face-to-face	83	64.8	13-16 weeks	5	3.91
Have technical knowledge	74	57.8	17 weeks and more	5	3.91
Accessible online	64	50	Continuous	1	0.78
			No answer	17	13.28
			Total	128	100
Environment	N	%	Participation type	N	%
Blended	84	65.6	Voluntary	118	92.2
Face-to-face	39	30.5	Obligatory	7	5.5
Online	2	1.6	No answer	3	2.3
No answer	3	2.3	Total	128	100
Total	128	100			

According to Table 8, the language instructors preferred a trainer who had content knowledge (%83) with the role of a facilitator (%87.5) and a guide (%84.4). These preferences were followed by being knowledgeable (%80.5), being accessible face-to-face (%64.8), having technical knowledge (%57.8), and being accessible online (%50). For the language instructors, the most preferred training duration was between 1-4 weeks (%57.81), 5-8 weeks (%8.59), and 9-12 weeks (%6.25). There were also others who preferred a longer duration between 13-16 weeks (%3.91) and 17 weeks or more (%3.91), with the exception of one participant who preferred it to be continuous (%0.78).

As for the training environment, the participants mostly preferred a blended training environment (%65.6), followed by face-to-face (%30.5), and online (%1.6). Finally, the participants preferred voluntary participation (%92.2) to obligatory participation (%5.5).

### Field Specialists' Views

Following the needs analysis and design of the program based on the findings from the data analysis, field specialists shared their opinion about the design, at the end of which some minor improvements were made. Among these specialists, the three members of the thesis monitoring committee from the fields of Curriculum and Instruction and English Language Teaching made suggestions about the teaching-learning activities in the face-to-face and online learning environment and the management of the online learning environment. The other recommendations by the six specialists from the fields of Curriculum and Instruction, English Language Teaching, and Computer and Instructional Technologies Teaching were as follows:

- decreasing the number of the aims and objectives, rewriting them in a general manner,
- revising the whole content and correcting mistakes in language,
- adding more visuals to prevent the feeling of routine progress,
- editing the options in the questionnaires about the learning outcomes and the contents of the modules to be more precise,
- adding zoom-in effects to the “How-to” videos, establishing parallelism between the “How-to” videos” and module outcomes by revising the outcomes and video content,
- creating more peer feedback opportunities for collaboration among the participants of the program,
- adding an online activity for the participants of the program to practice the module-specific web tool,
- emphasizing the use of the “Online Café” in the modules,
- sharing sample lesson plans in .pdf format for reduced size,
- relocating the “I need help” forum in a higher position in the modules to make it more compatible with the chronological order of activities, and
- adding information about the times of face-to-face meeting dates and adding in-class practice dates to the training calendar.

### Views and Needs of The Participants of The Program

After the program was designed, semi-structured interviews were done with the 12 volunteer language instructors of the training program. The reasons for the interviews were to identify these participants' expectations from the program and make more improvements to meet the participants of the program. With this aim, the participants were asked questions about their previous experiences in PD activities, reasons for participating in this program,

expectations from the online and face-to-face training environment, and expectations from the trainer. The results of the data analysis are summarized below in Table 9.

**Table 9:** *The Views and Needs of the Participants of the Program*

Question	Theme
Q1a. What they liked about the structure of the training in their previous PD activities	hands-on learning opportunities, continuous structure, assessment opportunities, online training, communication and interaction among the participants
Q1b. What they liked about the content of the training in their previous PD activities	the features of the web tool, demo activities, the qualities of the training material, learning new things, developing self-awareness
Q2. The reasons for participating in this program	to continue professional development (similarity between this and previous PD programs, the requirement of ICT integration in the lessons, to make a difference in their teaching), to create a more effective learning environment (to do more effective teaching practices, to add variety to their lessons), personal interest
Q3a. Expectations about the interaction in the online training environment	to collaborate, to receive feedback, to share, quick support, considerate group members
Q3b. Expectations about the content of the online training environment	web tool (for teaching different language skills, practical, simple and video introduction of the tool), content relevance (useful for them, references sources for web tools, flexible content, assessment of progress), interface design (user-friendly, personalization, visually attractive)
Q4a. Expectations about the interaction in the face-to-face training environment	social environment, cooperation, sharing
Q4b. Expectations about the content of the face-to-face training environment	hands-on learning opportunities (receive feedback, gain experience as a student and teacher), web tool (demo activities, technical clues, easy to use)
Q5. Expectations from the trainer	to support the participants, to be a guide and facilitator, design the training program in detail

Based on the findings in Table 9 related to the structure of the training in their previous PD activities, it was seen that the participants liked the hands-on learning opportunities given. They were also content with the continuous structure of the program, in other words, a program that lasted for some time instead of having just one session. Another positive factor that satisfied them was the self- and peer-assessment opportunities to improve their weaknesses, if any. The online nature of the training was another factor that they liked in their previous PD activities because the online nature of the training allowed them to prepare a flexible schedule, reach the training materials anytime they wanted, and watch video lessons later to keep up with the schedule. The last factor that made the participants feel satisfied in their previous PD activities was the quality of communication and interaction patterns among the participants. They emphasized that feeling comfortable and relaxed, regardless of the status of the other participants in the program, was significant to them as well as getting support from others and exchanging ideas.

The participants also explained what they liked about the content of their previous PD activities (Table 9). The results indicated that the web tools that they learned about could be integrated into the syllabus and were easy to use. They were also content to see some demo activities done with those web tools, which could also be used in their own lessons later. The quality of the training materials was another satisfying factor for the participants. About the training materials, they shared that those materials promoted active participation and interaction with others, which could also increase the level of motivation. Learning new things in the training, especially the things that they can transfer to their classrooms, was the next factor that made the participants feel content. Lastly, developing awareness of their own practices in their lessons was another factor that made them feel satisfied in their previous PD activities. Related to this, they shared that noticing something that they may have misused or done right in their lessons had been beneficial for them.

The next question in the interviews was about their reasons for participating in the program. The findings from their answers revealed three main reasons. The first reason was to continue their professional development because this program seemed to have all the things that they liked in their previous PD activities. They also believed and agreed that ICT integration into the curriculum was a requirement. Finally, they wanted to make a difference in their teaching. Related to this finding, an excerpt from the interviews is given below:

*“... I wanted to learn something, teach it to my students and make it (learning) more effective ... add something (a new skill) to myself. I need to learn something, I thought. That was the main reason ...”*  
(Pelin)

The second reason was that they wanted to create a more effective learning environment. They wanted to realize this by doing more effective teaching practices and adding variety to their lessons with ICT. Ali’s reason below can be a good example of this finding:

*“... If I participate in this research, maybe I can acquire new habits, I mean my habits might change. I can perform better technology integration into my lessons ...”* (Ali)

Exploring the participants’ expectations from the online training environment was another concern in the interviews. The findings of the expected interaction patterns in the online training environment indicated that the participants wanted to collaborate, receive peer and trainer feedback, learn from others by sharing their experiences and ideas, and receive quick support. They also expected the participants to be considerate towards each other. An excerpt from the interviews is given below:

*“... you can ask what they do to develop that (skill) in their lessons ... Other friends can share what they do us, including me, in a mutual manner ...”* (Beste)

The participants shared their expectations about the content as well. The findings indicated that they expected to learn new web tools that could be used to teach different language skills. They also expected the web tools to be practical and simple, as well as having introductory videos and websites to refer to. They also wanted the program content to be flexible for addition, deletion or extension, and to include assessment opportunities to track their progress.

The participants’ last expectation about the online training environment was about the interface. The results of the data analysis indicated that they wanted the interface to be user-friendly without the possibility of getting lost in the website, to enable personalization to increase the level of feeling of belongingness, and to be visually attractive to increase their curiosity to learn.

The next question in the interview was about the participants’ expectations from the face-to-face training environment. The analysis of their answers demonstrated that they wanted to cooperate and share in a social environment. The excerpt from Demet below can be used to support this finding:

*“... I expect something like cooperation, interaction. Nothing else apart from these, to be frank ...”*  
(Demet)

The participants’ expectations of the content of the face-to-face training environment were similar. For example, they wanted to have hands-on learning opportunities, at the end of which they could receive feedback and gain experience using that tool as a student. They also expected to see demo activities done with a specific tool, be given technical clues like how to use that tool effectively or solve a technical problem. Finally, they expected to learn easy-to-use web tools as they shared in the previous question.

The last question in the interviews was about the participants’ expectations from the trainer. The findings pointed out that the trainer should support the participants instantly when they needed it, act as a guide and a facilitator, and have the role of a designer who not only trains but also organizes each element of the content to work in coherence with other elements.

### Final Improvements

The findings from the interviews showed that all the expectations of the participants from the program had already been met before conducting the interviews. However, two minor revisions were made based on the data obtained. The first revision was adding the dates of some online PD activities and webinars for the participants to attend in their free time. The second revision was removing some of the web tools and documents from the modules and sharing them in the section “This is from me!” when it was time. This would also help to decrease the cognitive load that might be caused by content overload for some participants.

After the first draft of the design was completed and all the revisions were made based on the field specialists’ suggestions and the participants’ needs, the blended in-service training program had its final version as can be seen in a sample module below (Table 10).

**Table 10: Structure and Sample module content from the training program: B-INSET for TPD**

Content	Reason for adding the content
<b>PD Program for teaching English on the Web</b> (in the main content area of the training program)	This module included general information about the program.
<b>Welcome!</b> (in the main content area of the training program)	This module included specific information about the program, introductory videos for the LMS, activity calendar, a getting to know each other activity, assessment of the module, and the video of the orientation session.
<b>Module 1 - Materials with visual support</b> <b>(15-28 October 2018)</b>	This is the title of the sample module
Module 1 - Learning outcomes	To describe what the participants will be able to do when they finish the module and motivate them
What do I know about preparing materials with visual support?*	To check what is already known and plan activities accordingly - if necessary
What are we going to learn in Module 1?	To introduce the general theme of the module and arouse interest
Word clouds	To introduce specific content and how the web tool can be used in teaching English
How to make word clouds?	To show how to use the web tool with a how-to video
Online walls	To introduce specific content and how the web tool can be used in teaching English
How to make online walls?	To show how to use the web tool with a how-to video
Online activity - Online walls*	To familiarize the participants with the web tool and provide learning opportunities as a student
Modul 1 - Face-to-face session	To discuss the general theme of the module, create opportunities for sharing experiences, provide peer and trainer support, do demo activities with the web tool
Module 1 - Sample lesson plans	To show how the web tool can be integrated in a lesson
I need help in Module 1!	To provide peer and trainer support
It's your turn!*	To share individual lesson plans and receive feedback before in-class practice
In-class practice videos and experience sharing*	To share the participants' in-class practice to serve as a model, allow the participants to reflect on their practice and share what works or does not work, when and why in the lesson, and track the participants' progress
What have I learned in Module 1?*	To share individual learning experiences and learn from each other, to track the participants' progress and plan future activities accordingly
This is from me for Module 1!	To share any other web tool that is not included in the content that could be useful for the other participants
Assess yourself in Module 1!*	To provide self-assessment opportunities for the participants and track their progress
Assessment of Module 1!*	To assess the content of the module and give feedback to the module's design to improve it
Module 1 - Face-to-face session videos (19 October 2018)	To provide revision opportunities and create an online library of face-to-face sessions to watch later
<b>How to continue PD in ICT</b> <b>(10-14 December 2018)</b> (in the main content area of the training program)	This module included information about how to continue professional development in using ICT in teaching English, face-to-face session videos, "This is from me!" forum and the assessment of the module.
<b>Online café</b> (in the main content area of the training program)	This module aimed to provide opportunities for extra-curricular ideas, knowledge or for socialization in the online environment

\* The participants were expected to complete these activities while the others were optional to complete.

### Findings Related to The Implementation

In this section, findings related to the participants' activities on the online and in the face-to-face environment of the training program are presented. Firstly, the participants' duration of presence and page navigation, the completion rate of the activities, and video watching duration on the online system were investigated. Then, the

participants' interaction patterns between each other in the face-to-face training environment, the web tools that they used in their in-class practice, and their views on the skills that they gained in the program were investigated.

### ***Participants' Online Activities***

The analysis of the data showed that the participants spent between 2 hours 34 minutes 7 seconds and 17 hours 32 minutes and 36 seconds on the online system. The analysis also showed that a minority of participants ( $N=4$ ) spent less than ten hours while a majority of participants ( $N=8$ ) spent more than ten hours. Additionally, the number of page displays ranged between 83 and 880 times. As the participants reported, their workload and personal reasons were the reasons for this situation. These findings might also indicate that the more the participants wanted to learn, the more time they spent on the system.

As for the completion of the online activities, the findings showed that a small minority of the participants ( $N=3$ ) completed all the activities expected from them while a majority of them ( $N=9$ ) did not. Examples of the online activities that were not completed included, in random order, "It's your turn!", sharing experiences related to in-class practice, "What have I learned?", and assessment of the modules.

Moreover, it was seen that all the participants participated in the optional online activities at least once, but no one completed all of the optional online activities. Among the participants' online activities, it was seen that a small minority of participants ( $N=1$ ) asked for online support in "I need help!", another small minority shared content in "This is from me!", and another small minority ( $N=1$ ) left a comment for a lesson plan that was shared in "It's your turn!".

The findings also indicated that a small number of the videos were watched. The analysis of the data from 21 videos related to the face-to-face sessions revealed that face-to-face session videos 1 and 2 in Module 2, face-to-face session videos in Module 3, and videos in the "Continuing Professional Development" module were not watched. Additionally, the average watching duration ranged between 8 seconds and 15 minutes 53 seconds. Further analysis of the how-to videos revealed that although all of the how-to videos were watched, none of them were watched from the beginning to the end. Finally, all the participants made videos of their in-class practice in Module 1, but then there was a sharp decrease in the number of videos made in Module 2 ( $N=3$ ), Module 3 ( $N=1$ ) and Module 4 ( $N=4$ ). There was also another sharp decrease in the video watching duration from Module 1 to Module 4 as low as 1 minute and 18 seconds while the videos of a minority of participants ( $N=5$ ) were never watched.

### ***Face-to-Face Interaction Patterns***

The analysis of the videos in the orientation session indicated that the participants chatted to each other and asked questions. It was also observed that the participants applauded the other participants who gave the correct answer in the online game. Another finding was that the participants did not hesitate to ask any question and were eager to help others, if necessary.

In the face-to-face sessions of the modules, it was again seen that the participants chatted to and smiled at each other during interactions. It was also seen that the participants did not hesitate to work in groups collaboratively. Another finding from the analysis was that the participants found opportunities for discussion and sharing their professional and in-class practice experiences with the other participants. In the analysis of these interactions, the participants were eager to share their experiences, even if they were negative, and wanted to warn or support the others about what worked or did not work while using a specific web tool. The findings also showed that there were some rare occasions in which some of the participants worked on their own, which might have been due to their learning preferences, or changed seats to talk to someone else.

Like in the previous modules, the participants found opportunities to discuss and exchange ideas in the "Continuing Professional Development" module. They also listened and asked questions to each other.

Finally, the analysis of the data showed that only in Module 3 there were participants ( $N=3$ ) who did not attend the face-to-face sessions due to private reasons, which can signal their motivation to learn and continue their professional development in a 10-week training program while teaching their lessons at the same time.

### ***Web Tools Used for In-Class Practice***

The results of the data analysis revealed that the participants usually preferred to use the web tools whose how-to videos were made. An exception to this finding was two participants who used web tools whose how-to video was not made. Similarly, four participants used both of the web tools introduced in the module in their in-class practice. One last interesting finding was that none of the participants used sound editing software that was in Module 3.



The reason for preferring to use the web tools in in-class practice might be that the participants became familiar with them thanks to the how-to videos made specifically for teaching English with practical implications.

### ***Level of the Skills That the Participants Gained***

Before finishing each module, the participants performed self-assessments to track their progress. This activity also helped the researcher to track the participants' progress and provide support, if necessary. Table 11 below shows the level of skills that the participants gained. Table 11 merges and presents all the data from the individual participants who used a specific web tool within a particular content.

**Table 11:** *The level of the skills that the participants gained*

			Participants (N)		
		Outcomes (N)	Yes	Partly	No
<b>Module 1</b>	Word clouds	3	12	1	-
	Online walls	5	12	4	-
<b>Module 2</b>	Interactive videos	6	10	3	-
	Animations	4	6	3	-
<b>Module 3</b>	Voice recording	4	9	4	-
	Voice Thread	4	6	2	-
	FlipGrid	7	11	2	-
	Teaching and feedback videos	4	9	2	-
<b>Module 4</b>	Online assessment and evaluation	3	12	-	-

The results in Table 11 indicate that the number of participants who fully achieved the outcomes are highest in Module 1 and 4. A similar level was reached for interactive videos in Module 2 and for FlipGrid in Module 3. Overall, the number of participants who fully achieved the outcomes is higher than the ones who partly achieved the outcomes, which might mean that they need to experiment with those tools a little bit more. A surprising finding was that none of the participants reported that they did not achieve any of the outcomes in any module, which might indicate that the program was successful in terms of achieving the learning outcomes. Moreover, all the participants fully achieved the outcomes in Module 4, which might have been because of their familiarity with similar web tools in their course syllabus.

### ***Interventions in The Training Program During Implementation***

There were three interventions during the implementation of the program. The first intervention was the change in the training environment. In the face-to-face sessions in the computer lab, in which the participants taught some of their lessons, it was noticed that the participants could not engage in discussion or group work easily due to the fixed seating plan. This problem also prevented the participants from gaining hands-on experience because only one participant sat in front of the computer and that participant had to act as the group leader. Thus, from Module 2 and on, the face-to-face sessions were held in the meeting room of the school, where the participants sat in U-style, saw each other, engaged in discussion and group work more often thanks to the free seating plan. The second intervention was to attract their attention to the "Online Café" because the participants had not entered the café and engaged in social interaction until week 4. After this reminder, a higher frequency of interaction was observed.

The last intervention was a reduction in the duration and discussion of the demo activities in the face-to-face sessions, in which the trainer was the teacher and the participants were the students. This was supposed to help the participants gain insights as they learned to use a specific web tool as their students did in their lessons. When watching the face-to-face session videos in Module 1, the researcher noticed that those demo activities with post-activity discussions might take longer than planned in the future. This situation could be a disadvantage because the sessions were held on Friday afternoons in two hours and fifteen minutes when the participants might have been tired, and there was also the risk of not finishing the whole session on time. Considering these issues, the post-activity discussions were removed from the training program, but only the demo activities were kept. This change resulted in having more time for question and answer sessions, experience sharing, and materials design later.

### ***Findings Related to The Evaluation***

In this section, findings related to the third research question, which aimed to investigate how the participants evaluated the training program, are presented. At the end of the ten-week training program, semi-structured interviews were conducted with the participants. In these interviews, the participants answered questions about the level of realization of their expectations before the program started, how they benefitted from the online and face-

to-face training environments, the trainer support, and their general evaluation of the program. The following sections report the findings from these interviews.

### **Realization of The Expectations from The Online Training Environment**

The first question was about the interaction among the participants. A big majority of the interviewees reported that all of their expectations were met while a small majority of them reported that some of their expectations were not met. Excerpts from the interviews below illustrate these findings.

*"I found a lot more than I had expected, I mean collaboration, sharing, encouragement ... We even asked questions that we thought were stupid ... It was very fruitful for me ..."* (Melisa)

*"... I put effort in my lesson plan ... some of our comments and evaluations could have been more critical, like - you could have done that another way - ..."* (Ayşegül)

As for their expectations from the online content, the interviewees reported that all of their expectations were met. The following excerpt from the interview with Burcu supports this finding.

*"... There were the materials to read, videos to watch. I mean when you logged in the system, you could easily reach all the things ... very user-friendly ..."* (Burcu)

Regarding their expectations, the interviewees also shared their opinion about what else they would like to see to improve the online training environment. Their suggestions included live chat, activity checklist to follow their progress, more clear explanations about how to use the LMS, webinars as new learning experiences, synchronous meetings, and shorter how-to videos. These findings suggest that they needed instant or live communication, other new experiences, and less cognitive load from the content of the training materials.

### **Benefits of The Online Training Environment**

The findings from the interviews revealed that discussion forums helped the participants learn new things from each other, raise their self-awareness as well as providing opportunities for self-reflection. Similarly, in the "I need help!" forums, the participants learned new things and got an answer to their question quickly thanks to the previous answers given. A similar finding to the findings above was reached for "It's your turn!" forum. In these forums, the interviewees reported that they learned new things, gained new experiences, received feedback from the trainer, and found opportunities for self-reflection. Lastly, the findings showed that participants learned extra things that were not covered in the content of the program thanks to "This is from me!" forum.

About why they could not benefit from the discussion effectively, a minority of the participants explained that their workload was a barrier while another participant, Ayşegül, reported that she did not find them effective enough.

*"because the (discussion) questions are open-ended ... because we say the same thing many times, I don't read all of them (discussions) ... we repeat the same things ... And when I do this, I miss some important points, but now I want to visit the site (LMS) again because I know there is something (important) there and we need to find them."* (Ayşegül)

In the interviews, the participants also answered a question about the how-to videos. The participants shared that they watched those videos at least once before coming to the face-to-face sessions, experimented with the web tool simultaneously, and watched those videos again for reference later. These findings suggest that how-to videos served their purpose.

Moreover, the participants reported that they learned from each other from their in-class practice videos, which were shared with the other participants. Additionally, those videos served as peer observation tools and helped increase self-thrust. The excerpt below can illustrate these findings.

*"... I was curious (because) I hadn't entered a colleague's or friend's lesson before ... people learn many things from each other ... The fact that our friends who think they are weak in technology can succeed encourages others ... You think I can do it too"* (Gonca)

However, further analysis of the data revealed that these in-class practice videos were not watched until the end. Related to this finding, the participants explained that they could not find enough time, their expectations related to interaction were not fully met, the videos were too long, and they had already learned what the other participants were going to do in the face-to-face sessions. The following excerpt from the interview with Ayşegül illustrates this finding, which also shows that when participants' expectations are not met, their level of participation could decrease.

*"... When we come together in the face-to-face session, we already share what and how we did, we see how it (the lesson) went ... there were too many videos ... I just went over their lesson plans and the comments made ... That was enough for me."* (Ayşegül)

How the participants made use of the online demo activities was another question in the interviews. The findings revealed that the participants experienced the web tool as a student and foresaw any possible problem regarding



their future use of that tool in their in-class practice lesson. They also indicated that the online demo activities helped them become familiar with that web tool.

Lastly, the findings of how the participants benefitted from the online training environment revealed that they showed little interest in the online café in the form of a social forum. The reasons as reported by the participants were that the online café was located in the lowest position in the navigation menu preventing them from seeing it, they did not receive any notifications about the posts in it, they were not expected to participate in it, and the interaction in it was not the same the face-to-face one. These findings were interesting because the participants' attraction had been drawn to it before and they received system notifications from each updated content. However, Ali's comment is worth considering about using the online café in a setting where participants can already see each other face-to-face in the same workplace.

*"... There weren't many things shared in it. Also, it was kind of for chat and humor. And we already had it in the face-to-face sessions ... under every topic, there was an exchange of ideas ..."* (Ali)

### **Realization of the expectations from the face-to-face training environment**

In the second part of the interviews, the participants answered questions about the interaction with the other participants and the content of the program. About the level of realization of their expectations from the face-to-face training environment, all of the participants reported that all of their expectations were met. The excerpt below in the context of the setting illustrates this finding.

*"... face-to-face sessions were very good ... there was a warm, nice environment in which I could ask whatever question I had and say whatever I want ..."* (Derin)

Similar to the findings above, all of the participants reported that all of their expectations related to the content of the face-to-face training environment were met. The excerpts below in the context of the quality of training materials and variety in the activity types illustrate this finding.

*"... that we watched these videos (how-to videos); and if there was an activity that we joined, made the sessions more effective, I think. Because we were ready, I mean sitting and watching those videos were really effective ... we talked about the things we did (in the classroom)..."* (Pelin)

*"... in fact the variety you added worked ... when there is something new, a person might show more interest in that ..."* (Mehmet)

As for the expectations from the activity types, again, all of the participants shared that their expectations were fully met. Ali's answer to this question illustrates this finding.

*"... in the light of the sample lesson plans, everyone prepared short demo activities in the sessions ... I mean the participants were actively engaged in the process (activity)"* (Ali)

The data from the interviews revealed other findings as well. For example, in the one-hour face-to-face sessions spared for preparations for their in-class practice, the participants had sufficient time for planning their in-class practice materials - with few exceptions when some participants could not find the right learning outcome to realize using a specific web tool. In addition to this, the participants' readiness for the next module on a different topic was tested with a Kahoot game at the end of each module. Related to this activity, the findings revealed that this activity increased their awareness related to the next topic, and that this activity was enjoyable, fun and motivated them.

### **Trainer's Support**

In the third section of the interviews, the participants answered questions about the trainer support that they received. Similar to the previous findings above, the findings showed that all of the participants were content with the trainer's support in terms of giving feedback, management of the training, being accessible all the time, receiving answers to their questions, and rapport with the participants.

*"... your feedback was very good ... in every online comment you made, there was something extra ... a research-oriented person can easily learn extra things ..."*

*"All of my questions were answered instantly, I received feedback instantly. So, I never waited or received an incomplete answer..."* (Pelin)

### **Strengths of The Program**

In the interviews, the participants evaluated the strengths of the program and the duration of the module. With regards to the strengths of the program, the participants explained that the program had a systematic structure in which the same content presentation and navigation were maintained, enabling easy access to the materials. The second finding related to the strengths of the program was that each participant was eager to learn and there was a positive learning environment because the participation was voluntary. The last strength of the program was the blended design in which online and face-to-face content had an ideal balance that did not bore or tire the participants. The blended design also provided opportunities for fruitful social learning at an individual pace, without constraints related to time and group meetings, which prevented the possible problems of having to learn at the same speed and time as the other participants in face-to-face training.

### **Duration of The Program**

Regarding the duration of the modules and the program, a big majority of participants found it sufficient because they were not expected to use all the web tools in the content, so it was not an exhaustive program. However, one participant explained that the program could have lasted 12 weeks because she needed more time to learn and use the web tools, which signaled that a more flexible design could be made considering individual learning preferences.

### **CONCLUSION AND DISCUSSION**

In this research, an in-service training program for technopedagogical development (B-INSET for TPD) in teaching English in an intensive language program was designed, implemented, and evaluated. The overall findings indicated that the B-INSET for TPD in teaching English was successful thanks to the diligent work when its framework was designed. The first reason for this success was its sound theoretical background (Tyler, 1949; Taba, 1962, cited from Ornstein & Hunkins, 2009, pp. 214-215; Oliva, 2005; Akpınar, 2017) and comprehensive needs analysis with the stakeholders (Demirel, 2013). As it is done in other curriculum development studies, field specialists provided support and shared their opinion to improve the design of the study. As Eisner (2005) suggested, these specialists shared their useful and illuminating insights on the design without any external criteria, but based on their own experience and criteria, bringing about a higher quality training program.

#### **Discussion Related to The Design**

The first research question in the study aimed to investigate the stakeholders' views, needs, and expectations about the design of the program. The first group whose views and expectations were investigated was the administrators. Firstly, the administrators' expected the language instructors in the school to expose their students to English as much as possible using various technologies. This finding was similar to the expectations defined in *The Cambridge English Digital Framework for Language Teachers* (Cambridge Assessment English, 2017), namely the digital classroom, designing learning, and delivering learning.

As for the positive factors that affected participation in PD activities, the administrators' answers included having an interest in the delivery type of the program, benefits for themselves and their students, peer effect, and the qualities of the trainer. This finding can be supported by previous studies. For example, Grundy and Robison (2004), İlğan (2013) and King (2017) pointed out that teachers' professional dedication and internal and external motivational sources can affect participation in PD activities. Seeing a benefit for themselves was similar to Kwakman's (2003) research with teachers in which he found that taking responsibility for one's own development was a factor that affected participation in PD. The expectation that trainers need to be qualified in their fields was in line with what Villegas-Reimers and Reimers (2000, cited from Özer, 2012, pp. 208-209) and Kabakçı-Yurdakul (2012) suggested.

The administrators reported that there were also negative factors that affected participation in PD activities. Their answers included feeling no need to participate, showing resistance, using the internet for their own PD, not being satisfied with their previous PD programs, and the high frequency of the training sessions. This finding was similar to Kwakman's (2003) research in which he concluded that there was a positive relationship between positive attitudes to PD and participation in PD. Similarly, T-Bümen et al. (2012) concluded that the lack of motivational factors and considering oneself qualified enough could be a reason for not attending PD activities. Additionally, similar to Day's (1999) finding, that the language instructors did not participate in PD activities, but used the internet for this might have been because they took responsibility for their own development; or they did not have sufficient time for those PD activities (T-Bümen et al., 2012; OECD, 2009). As T-Bümen et al. (2012) suggested, again, the high frequency of PD activities might have caused the feeling of satisfaction with one's professional development.

Lastly, the administrators shared their expectations from the program's content, duration, and participation type, which were similar to Muijs et al.'s findings (2004) that suggested an effective program has a continuous structure with opportunities for reflection, learning new things, hands-on practice, and experience sharing. The findings were similar to Knowles et al. (2015) and Mason's (2007) suggestions that adult education should be problem-based in a social learning environment on a voluntary basis.

The second and third groups whose needs and expectations related to technology integration were investigated were the language instructors and students in the intensive English language program. The findings showed that in their lessons, the instructors used websites and smartphones less frequently than in their daily lives, and that they used other computer software less frequently than the other technologies in their lessons and daily lives. It was also seen that there was a general similarity between the frequency of the technologies that the instructors and students used in their daily lives. This finding indicated that no group would have difficulty using those

technologies in the practice sessions and teaching-learning processes would not be disturbed.

Another finding from both groups about technology integration into lessons was that they gave the same importance to learning the same skills with the same priority. This finding was in line with the school's integrated language learning approach and technology integration policy. From the students' aspect, this finding is similar to previous studies in which it was seen that students used a variety of technologies in their daily lives and expected those technologies' integration into their lessons (Bruneel et al., 2012; Gioiosa and Kinkela, 2019; Moyle et al., 2012).

The instructors also shared their views on an ideal training environment in terms of the trainer, training environment, participation type, and the duration of the program. The findings indicated that the trainer should have content and technical knowledge, be a facilitator and a guide, be knowledgeable, and be accessible both online and face-to-face. The ideal training was a blended one with voluntary participation that lasted between 1-8 weeks. These findings were similar to Knowles et al.'s (2015) argument that adults prefer to act based on their needs and wants.

The last group of the stakeholders was the participants of the program whose ideas were used to improve the final version of the design. The findings revealed that the participants, in their previous PD activities, were satisfied by the hands-on learning experiences, assessment and self-assessment opportunities, interaction among the participants, learning new things, and developing awareness, which were similar to Ateşkan's (2008), Kutluca's (2013) and Knowles et al.'s (2015) arguments. Additionally, the participants' reasons for participating in this program were to continue their professional development and this program's similarity to the ones that they had participated in before. This finding drew another similarity to Day's (1999), Knowles et al.'s (2015), and Kürüm's (2007) claims that previous experiences, motivation, readiness to learn, orientation to learning can positively affect adults' choices.

Regarding the interaction in and the content of the online training environment, the participants wanted to interact and collaborate in a social learning environment, learn about different web tools for teaching different language skills and subjects that would be useful for them as well as being assessed based on their work. This finding supports previous suggestions by Day (1999), Ateşkan (2008) and Knowles et al. (2015) that adults prefer problem-based learning, want to learn useful things, and expect interaction, peer support, experience sharing, and discussion in the training settings. As for the face-to-face training environment, it was seen that the participants wanted to interact and collaborate like in the online environment.

The last theme that was investigated in the needs analysis was the participants' expectations from the trainer. The analysis of the data showed that the participants expected continuous support throughout the program with facilitation and guidance, and a comprehensively designed program. This finding about the trainer was similar to the arguments for a fruitful training environment by Villegas-Reimers and Reimers (2000, cited from Özer, 2012, pp. 208-209), Özer (2004), Ateşkan (2008), T-Bümen et al. (2012), and Kabakçı-Yurdakul (2012).

### **Discussion Related to The Implementation**

In the ten-week B-INSET for TPD in teaching English program, it was seen that the participants spent considerably different times on the LMS and had considerably different page views. This might have been, as they reported, because they navigated in the system according to their needs or did not have sufficient time for all the activities (T-Bümen et al., 2012). In addition, a small minority of the participants completed all of the activities that they were supposed to complete; and similarly, many of the optional activities were completed by a small minority. As the participants reported, these findings can be explained as the participants did not have sufficient time to complete the activities, they did not find them beneficial, or their expectations in terms of interaction among the participants in these activities were not met (Day, 1999; OECD, 2009; T-Bümen et al., 2012). Moreover, the participants did not watch any videos on the LMS from the beginning to the end, and some of the videos were never watched. In the interviews, it was pointed out that some of the how-to videos were too long, or the participants had already learned about the web tools in the face-to-face sessions. Additionally, the average watch time of the face-to-face session videos was too short, which may have been because the participants had already been and received help in those sessions.

In the face-to-face training environment, the participants had opportunities for interaction, collaboration, sharing, and peer support in a social environment as they expected. This finding indicated that the different types of forums, such as discussion and experience sharing, helped meet their expectations as adult learners in a social constructivist environment.

When the web tools that the participants used were analyzed, it was seen that all of the participants picked the ones that had how-to videos, but only a small minority used two web tools at the same during in-class practice. This may have been because some of the participants were autonomous for discovering additional features or could have taken risks for experiential learning as Ada and Baysal (2013) suggested.

As for reaching the learning outcomes for the web tools, a big majority of the participants reported that they fully reached the expected learning outcomes while a minority partly reached them. The reason for this could be that the participants had different interests and skills, or maybe they found unfavorable practice opportunities. However, their lesson plans and in-class practices were not affected by this situation because they received peer or trainer support when needed.

### **Discussion Related to The Evaluation**

In terms of their expectations from the interaction in the online training environment, the findings showed that a big majority of the participants' expectations were met while a small minority's expectations were not, but this situation did not cause any problems related to training activities or their development. Based on the findings, such as the wish for live chat feature, webinar experiences, and synchronous meetings, it can be argued that this situation was related to their personal expectations. Overall, this finding was similar to previous research findings by Hawkey (2003), Bryceson (2007), Mouzakis (2008), Baylen (2010), Grant (2011), Roberts-Pittman et al. (2011), McLoughlin (2013), Hung et al. (2014), Barak (2017), and Forde and McMahon (2019) in which they structured and implemented a design that included opportunities for interaction, learning from peers, peer support, and exchange of ideas suitable for adult learning and social constructivism.

At the end of the research, a similar finding was that all of the participants' expectations related to the online content were met. In the light of this finding, it can be argued that the program had a successful design based on a comprehensive and realistic needs analysis, the results of which are realized in the content of the program. This finding also indicates the significance of a systematic needs analysis based on theoretical foundations, with the involvement of all the stakeholders and the independent reviews of the field specialists.

There were other positive findings related to the online training environment as well. First, thanks to the discussion forums, the participants learned new things, developed awareness, received trainer feedback, and had opportunities for self-reflection, which positively affected their learning process as it did in previous research by Hawkey (2003), Bryceson (2007), Ateşkan (2008), Mouzakis (2008), Baylen (2010), Grant (2011), Roberts-Pittman et al. (2011), McLoughlin (2013), Hung et al. (2014), Barak (2017), and Forde and McMahon (2019). This finding also shows that the needs-based training program allowed the participants to learn in a social environment with assessment opportunities, and the participants established a connection between the activities and their cognitive and affective needs. Second, the reason why in-class practice videos were not watched until the end was reported as not having sufficient time for those long videos and not receiving any comments from the others, which supports Day's (1999) argument that peer support can be a significant element in PD activities. Third, online demo activities allowed the participants to experience learning with web tools as a student and gain hands-on experience as they explained in the needs analysis interviews, which also shows that the training environment was designed according to how adults learn (Knowles et al., 2015). Lastly, the online café did not work as it was supposed to, and the reasons reported were its lowest location in the navigation menu, the optional activities in it, preference for face-to-face interaction in training and school. As a result, it can be argued that if participants can frequently see and chat to each other either in the training environment or workplace, they do not need to interact in an online setting.

As for the extent to which the participants' expectations from the interaction and content in the face-to-face training environment were met, the findings again showed that all of the participants' expectations were met. This finding is similar to the findings in the previous studies by Hawkey (2003), Bryceson (2007), Mouzakis (2008), Baylen (2010), Grant (2011), Roberts-Pittman et al. (2011), McLoughlin (2013), Hung et al. (2014), Barak (2017), Çam (2018), and Forde and McMahon (2019), in which an interaction-based design enabled trainees to learn new things, find hands-on practice opportunities, and interact with the others.

About the time allocated for materials design and lesson planning, the participants reported that they had sufficient time to prepare their lesson plans. They also found "An overview of the next module" activities using Kahoot was beneficial for them because it increased awareness and motivation, it was enjoyable, and it encouraged them to fulfill the program's requirements as Gülseven suggested (2015).

The findings also revealed that the participants were happy with the trainer support in the program, such as the content of the feedback, management of the training process, being accessible, receiving support, and interaction with the participants. Based on this finding, it can be argued that the participants did not experience any negative



learning experiences or did not assess the trainer negatively, which are reported to be strong factors that may prevent teachers from participating in PD activities (Villegas-Reimers and Reimers, 2000, cited from Özer, 2002; Kjaergaard & Foug, 2016; Özer, 2004; Kabakçı-Yurdakul, 2012c).

Lastly, the strengths of the program were its systematic blended structure with motivated and volunteer participants, and its duration. The finding related to the blended structure's effectiveness is similar to Cesur (2010), Aydın (2012), Kokoç (2012), Ho-ya Chan (2014) and Dönmez's (2017) studies in which the participants were content with the blended structure. Related to the program's and individual modules' length, the participants found them sufficient to fulfill the requirements. Thus, it can be claimed that this type of program structure and participation type can be a factor to make PD programs more efficient and effective.

Maybe the most significant conclusion was that adopting a systematic view of curriculum development, in other words, carrying out a comprehensive needs analysis with the stakeholders, working with field specialists, creating a flexible design and instant intervention opportunities that DBR offers, and designing a user-friendly interface on the LMS, can be the other strengths of the program.

### **Implications**

Based on the findings and discussion from the study, some implications for further practice can arise. First, selecting a training environment right in the beginning in which the participants can socialize and use their computers easily without a fixed seating plan can prevent interventions in the implementation stage. Second, longer how-to videos can be split into two or more pieces, and how-to videos for all the web tools can be made to provide opportunities for additional learning experiences with more web tools. Third, for the participants in the same institutions, the online café can be removed because the participants seem to prefer face-to-face interaction. Lastly, homogeneous groups can be formed based on the level of participants' skills to ensure the same interaction quality and learning speed.

There are also implications for further research that arise. An LMS with personalization features can be used to increase the feeling of belongingness and cater to visual design preferences, and the effect of personalization can later be measured. Next, a live chat or instant messaging plug-in can be added to the LMS and whether this feature increases the level of interaction and sharing can be tested. Another implication is that this program can be tested with the same content to further analyze its strengths and weaknesses. Similarly, it can be tested with a different content to test if its design and structure can work for all the training settings. In addition, digital badges can be given to the participants based on their work or participation and the effect of this can be tested to increase motivation and engagement. Finally, the online café can be tested with participants in different geographical locations to see if it is a useful element in online training settings.

### **Final Remarks**

The researchers would like to share their final remarks. First, as the literature suggests, this research once again showed that an effective INSET program could cater to the real needs of the participants only after a comprehensive needs analysis. Secondly, investigating the needs and views of the participants both before and during the implementation stage can help the features of the program function almost flawlessly thanks to the immediate intervention opportunities that design-based research provides. Next, as in other curriculum design processes, teamwork, including the thesis monitoring committee and field specialists, proved how essential it was to make this process run smoothly and have a sound background thanks to the individual contributions and experiences of those specialists. Lastly, it was again seen that feedback, discussion, and sharing opportunities among the trainer and participants is a crucial factor in adult education. It was observed and confirmed by the participants that those opportunities contributed a lot to their professional development.

On the other hand, as in other educational research, this research has several limitations. First, the findings are limited to the context, so if this B-INSET for TPD in teaching English program is implemented in another setting, contextual factors should be considered. Secondly, the trainer was also a colleague in the same institution and a social friend of some participants, so this might have affected the success of the program positively. However, this prediction was not mentioned by any participant. Lastly, the content of the B-INSET for TPD in teaching English program was limited to the free web tools that could be used for improving English language skills. However, some other paid options are available or some other new alternatives to those web tools could be incorporated into the program.

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\*\*\* A part of this research, engaging factors in a blended professional development program about web 2.0 tools, was orally presented at the 7<sup>th</sup> *International Congress on Curriculum and Instruction (2019)*, Ankara, Turkey.

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## **An Integrative Mixed Method Approach to Investigate the Types of Video Devices Used by Secondary School Teachers: A Jordanian Context**

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### **ABSTRACT**

Teaching pedagogy is constantly shaped by the environment and the socio-demographic background of teachers and students. Continuing technological developments enabled videos to be accessed more easily, faster, and across multiple platforms and devices. There has been a growing use of video technology for teaching in the Middle Eastern region, particularly in Jordan, which is one of the growing technological hubs in the region. However, there is very limited research on its use by teachers and students in Jordan. To fill this knowledge gap in relation to Jordan, the present study aims to investigate what kinds of devices, and how frequent, instructional videos are used for teaching in secondary school teachers in Amman city, Jordan. To address these questions, a survey was devised and 378 secondary school teachers in Amman participated. An Integrative Mixed Method study was conducted where both quantitative and qualitative methods were used. In the quantitative phase, descriptive statistics were calculated for frequency and percentage on the kinds of devices used by the teachers in relation to their gender, teaching grade and type of schools. Cross-tabulation chi-square statistical tests were then undertaken to assess whether there is a link between the frequency of video technology use and percentage of class time it occupies, time of day it is being used and the number for video titles used per academic year. In the qualitative phase, interviews with teachers were conducted and the data was analysed to investigate how the experiences of the teachers compliment quantitative data. The results of this study were then viewed through the lens of the Technology Acceptance Model framework. It was found that smartphones, laptops, and desktop computers were the most popular devices used in teaching. Most of the teachers who participated in this study, particularly female, those who teach Grade 11 and 12 and those in public schools, used these popular devices in their teaching. In relation to the frequency of use, and it was found that the teachers mostly used video technology in the morning classes for teaching but rarely used videos on a daily basis. Cross-tabulation chi-squared tests showed that there is a statistically significant relationship between the number of videos used in an academic year and the frequency of video usage.

### **1 Introduction**

Environment and the socio-demographic background of teachers and students constantly affect pedagogy (Beyer et al., 2003). Modern computer technologies has vastly changed the way teachers and students interact, teach, and learn as well as their future prospects in terms of skills and job opportunities. Education technology was initially considered as a separate, but necessary part of pedagogy in the middle of the 20<sup>th</sup> century (Mishra & Koehler, 2006). Training teachers in technology education was not a priority until late 20<sup>th</sup> century (Cox, 2008) and it was largely maintained as a separate subject matter in teacher education programs (Graham et al., 2004).

Continuing technological developments enabled videos to be accessed more easily, faster, and across multiple platforms and devices. Videos can now be viewed on multiple devices and in multiple formats before, during, or after class hours (Ajloni, 2019). The increasing prevalence of technology in education is driving the viability and availability of online teaching and open academic resources. Video technology (VT) defined by Woolfitt (2015) as “digitally recorded content[s] containing sound and motion that can be streamed, stored or delivered live” (p. 4), is playing a role in facilitating these developments (Kleij et al., 2017). Woolfitt (2015) believes that “Education is undergoing a major shift” and that “brick-and-mortar classrooms are opening up to rich media content, subject matter experts, and to one another” (p. 5).

There has been a growing use of VT in the Middle Eastern region, particularly in Jordan – one of the growing technological hubs in the region. Unlike other Arab countries, Jordan is considered to be among the safest Arab

nations in the Middle East because it has been stable in the midst of ongoing regional turmoil (Hodges, 2015; Sylvester, 2019; Williamson, 2019). This has led to making Jordan a growing technological hub in the Middle East, with an increasing population of young people aged 15 years and younger (35%) (World Population Review [EPR], 2018). Education has consistently been a top government priority and King Abdullah II of Jordan has upgraded the quality of education in his country, ensuring that all students are capable of both leading future development and competing for the best jobs in modern knowledge economies (Ajloni, 2019). The Jordanian government drive has led to lots of educational reforms in the country, including equipping Jordanian schools with the right technological tools, aimed at improving the educational systems to meet contemporary needs.

Whilst VT is widely adopted in teaching practice in various parts of the world, it is less prevalent in Jordanian schools. While the provision of Information and Communication Technology (ICT), including video technology (VT), in Jordanian schools has improved over the past few years (Abuhmaid, 2011; Alkawaleh, 2014), educational technology (e.g., instructional video technology) in contemporary Jordan continues to face a number of challenges. This includes the problem of funding, accessibility to the right tools, limited ICT training, poor technological literacy, among others (Aloraini, 2012; Oliemat et al., 2018). The use of VT provides an array of new tools for harnessing the benefits of educational technology and improving educational productivity. These tools help in facilitating learning experiences that enhance connection with others in real time using social media, recorded devices, instant messaging, audio and video devices (Benitez & Galbraith, 2019). Technological devices such as interactive whiteboards, touch tablet screens, smartphones, personal computers, and projects, can be used in viewing and playing videos where both teachers and students converge for educational purposes. However, the use of such devices to play and view videos can be dependent on a lot of factors such as technological (e.g., lack of access to the Internet), environmental (e.g., locations that are out of reach with technology), educational (e.g., some schools only use video technologies at the tertiary levels), and socio-economic factors (e.g., lack of finance to purchase an appropriate video device for teaching and learning; some technological devices are also expensive and unaffordable by teachers from low-income backgrounds) (Ajloni, 2019).

Although access to VT is limited in Jordanian schools, instructional video technology does exist in some public and private schools in the region despite the above-mentioned challenges. Research on using different forms of VT and video devices in Jordanian classrooms is relatively new and it has been limited to middle, high, and university school teachers and students, while no research yet exists for primary and pre-school pupils (e.g., Abed Al-Latif, 2015; Ajloni, 2019; Oliemat et al., 2018; Qunaibi, 2016). The adoption of VT in some Jordanian schools and its increasing use by students at home, have created the need to explore how video technologies are viewed and used among teachers. The growing trend of technology in Jordan is largely influenced by the widespread use of social media platforms in the country, although VT devices used for viewing instructional videos (e.g., IWBs, touch-screen devices, computer-assisted data projectors, etc.) are not widely available in Jordanian schools (Abuhmaid, 2011; Hamadneh & Masaeed, 2015; Oliemat et al., 2018). Despite this challenge, the number of schools using VT in their classrooms are expected to increase, according to Oliemat et al. (2018).

## 2 Present study

The adoption of VT in educational environments has resulted in the need to explore its functionality and applicability. There is currently limited research and studies that focus on the use of VT devices in secondary school settings (e.g., Bautista et al., 2019; Bruce, 2009; Manero et al., 2015; Marklund, 2015), particularly in the context of secondary schools in Jordan (e.g., Ajloni, 2019; Ajlouni & Aljarrah, 2011). It has been reported that teachers with access to VT devices are more likely to make use of them in their teaching practice in order to elevate students' learning experiences (Abuhmaid, 2014; Al-Shboul, 2012; Alzyoudi et al., 2015; Basheti et al., 2016; Hamam et al., 2008; Khasawneh, 2015; Oliemat et al., 2018; Qudah et al., 2013).

The Jordanian Ministry of Education (MoE) has teamed up with UNICEF and private schools to initiate its Digital Schools Program. This program aims to provide students with various technological devices for their learning. As a result, the number of schools employing VT in Jordan is expected to increase dramatically in the near future (Ajloni, 2019; Ajloni & O'Toole, 2021; Oliemat et al., 2018). To capitalize on this technological shift, understanding how teachers' adaptation of educational VT's in the classroom is thus of utter importance. The present pioneering study, therefore, aims to answer the following research questions:

1. What kinds of devices are frequently used to view instructional videos in secondary school teachers in Amman city, Jordan?; and
2. How frequently do secondary school teachers in Amman city (Jordan) use video as a tool for teaching?

Amman city is the focus of this study as VT is not widely adopted by teachers in other cities of Jordan due to lack of experience with this type of technology in other cities. Another reason for focusing on Amman is because it is



the capital and most populated city in Jordan, and a growing technological hub in the Middle East (Abdallah, 2010; Assaad & Saleh, 2016; Irvine, Jaber, & Bickerton, 2018) as well as having high-speed Internet access, representation of young people and greater number of mixed gender teachers and schools and, a progressive Islamic province with freedom of worship for both Muslims and people of other faiths compared to other cities (Alzyoud et al., 2016). These features have made Amman an international city, with both English and Arabic speaking teachers from different parts of the world serving in the province.

Although it would also be worthwhile to consider the research questions in the context of primary schools, this study focuses on secondary schools instead in order to keep the scope of this study manageable. In addition, it is easier to discern the relationship between subject matter being taught and the type of video devices being used because most secondary school teachers deliver single subjects whereas primary school teachers tend to teach multiple subjects. This study may be expanded to include primary schools in the future, but the current focus is on secondary schools only.

The results of this study will be considered in the context of the Technology Acceptance Model (TAM) framework. A description of the TAM framework and how it is relevant to this study is provided in the section below.

### 3 Literature review

The rise in the adoption of technology in education is driving the viability and availability of online teaching and open academic resources and VT is playing a role in facilitating these developments (Fokides & Arvaniti, 2020) which has largely been influenced by technological trends and enthusiasm of people of all cultures, as well as uptake of VT and widespread access to the internet (Woolfitt, 2015). The impact of VT on teaching continues to influence pedagogy (Woolfitt, 2015).

The internet bandwidth is currently dominated by the use of videos since “globally, total internet video traffic (business and consumer, combined) will be 77% of all internet traffic in 2019, up from 59% in 2014” (Ajloni, 2019). The increasing adoption of videos is reflected in how it is used within the educational environment (Ajloni, 2019). A number of studies (e.g., Ajloni, 2019; Voogt et al., 2013) have conceptualized the integration of technology in pedagogy.

The introduction of modern computer technologies has vastly changed the way teachers interact. Before now, education technology was treated as separate but necessary to pedagogy (Mishra & Koehler, 2006). Training pre-service teachers in educational technology was not a priority until the mid-1990s and it was largely maintained as a separate course in teacher education programs (Graham, Culatta, Pratt, & West, 2004).

The shift in pedagogy to include technological literacy has led to the conceptualization of technology as a form of pedagogical competence in teaching practice (Mishra & Koehler, 2008). This involves the skills and processes required to operate particular technologies and use videos in teaching practice. These skillsets complement teacher knowledge, thus enabling the effective use of videos in educational technology.

There are barriers and limitations to adopting VT in education as it is becoming prevalent. For example, poor resources and inadequate training may cause loss of confidence in integrating VT into classroom practice. Lack of training in information technology and video-based learning (VBL) may hinder its effective use (Mustafa & Cullingford, 2008; Unal & Ozturk, 2012). In order for VT to be effective, educators need adequate training in the creative process to effectively select appropriate videos and manage them in the classroom. Other barriers to using videos in the classroom include the digital divide that might be affecting the use of VT in developing countries (Khasawneh, 2015), paucity of educational information (Bakri, 2013), and the concern that the social elements of teaching (e.g., classroom interaction, student engagement, knowledge transfer) could be swamped by technology. Financial constraints associated with VT may also influence the lack of time and insufficient infrastructure to build a vibrant, dynamic classroom environment that incorporates the environment-fit model (Joseph, 2012). Ajloni (2019) noted that the lack of teacher confidence and lack of appropriate background knowledge in educational technology can make VBL difficult to implement. Poor access to resources or limited technological experience may also hinder implementation of VBL in developing countries (Mustafa & Cullingford, 2008). Besides, Besides, VBL faces a number of challenges, for example copyright issues and the proliferation of videos from ‘wannabe’ teachers and educational video creators who practice as experts without a teaching qualification. Further studies could consider ways to implement these pedagogical processes and what they look like when using VT in teaching practice (Ajloni, 2019).

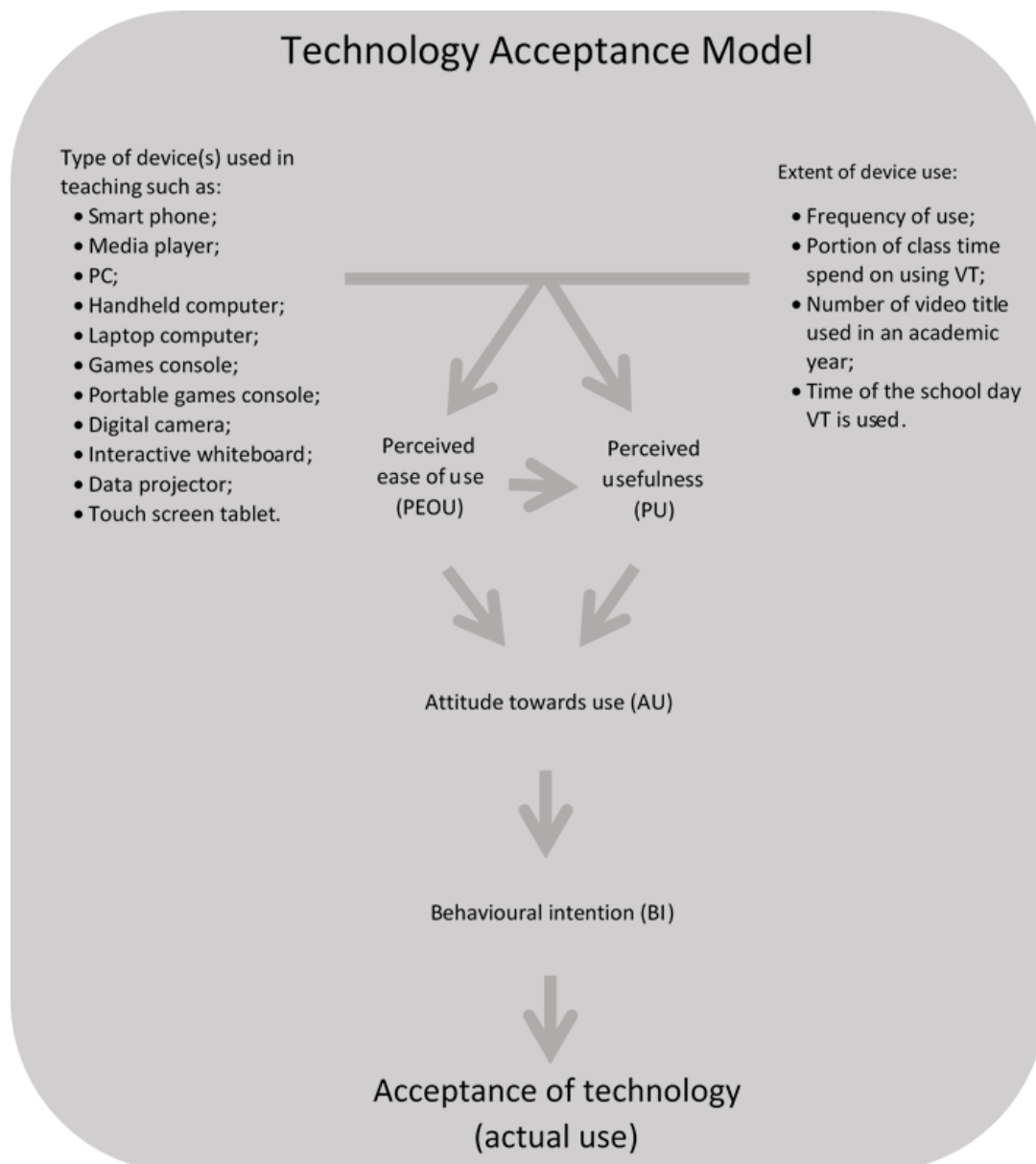
#### 4 Video technology and acceptance – a theoretical perspective

The outcomes of this study are viewed and interpreted through the lens of the Technology Acceptance Model (TAM). The first Technology Acceptance Model (TAM) was updated by Davis et al. (1989) based on the “Theory of Reasoned Action” and “Theory of Planned Behavior” (Fishbein & Ajzen, 1975). The TAM was initially conceptualised by Davis (1989) and it postulates that the level of adoption of technology in teaching practice is related by certain perceptions including perceived usefulness (PU), perceived ease of use (PEOU), attitude towards use (AU) and behavioural intention (BI). The definition of PU is the extent to which a person believes that using a system (being VT in the context of this study) will increase the performance of a task, and PEOU is defined as the extent of a person’s believe that it is effortless in using the system. The definition of BI is the “measure of the strength of one’s intention to perform a specified behavior” (Davis, 1989, p. 984), whereas AU is defined as “an individual’s positive or negative feeling about performing the target behavior (e.g., using a system)” (Fishbein & Ajzen, 1975, p. 216).

The TAM framework in the context of this study is diagrammatically illustrated in Figure 1. The external variables are the types of VT devices being used for teaching practice and the extent of use of the devices. Video technology devices may include smart phone or PCs etc. The extent of use refers to how often VT is used, the time of the school day it is being used, portion of the school day it is being used and the number of video titles used per year. It is expected that if the appropriate VT device is used in the right time and the right extent, the more likely PU and PEOU are positively present in both teacher and student. This would in turn lead to the positive attitudes of teacher and students (AU) towards the use of VT, subsequently leading to the intention of use (BI). This sequence of behaviour would ultimately lead to the VT as being accepted or successfully adopted by both teacher and students (actual use). Acceptance and use of VT will likely lead to an enhanced pedagogical outcome (Loera-Varela et al., 2018; Loera-Varela & Mejía, 2018). It should be noted that PEOU affects PU, which also mediates the effect of PEOU on attitude towards use (Davis et al., 1989).

This interpretation of the TAM is best illustrated with an example. If an English teacher uses a media player to screen a Shakespearean play in an appropriate frequency such as a daily use (an appropriate frequency), then this will likely result in the perception that the VT device (media player) as being useful and is easy to use. This will then lead to the change in attitude towards the device, and intention to use the device follows. The acceptance of the VT device as an effective tool for teaching and learning will thus likely eventuate. On the other hand, a teacher who screens Shakespearean plays once a week (inappropriate frequency) will unlikely generate the perception that the VT device as being useful, thus the acceptance of it as an effective tool for teaching and learning can be considered improbable.





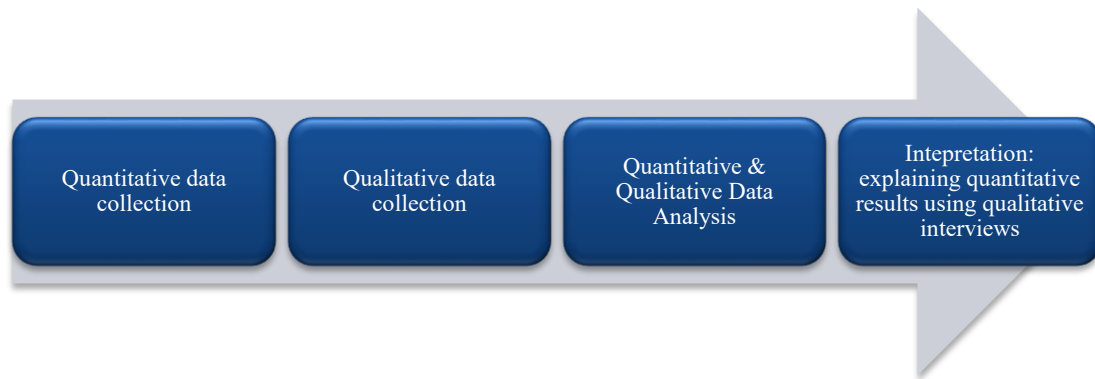
**Figure 1:** TAM theoretical framework in the context of this study

## 5 Methodology

### 5.1 Research design: An integrative mixed methods study

This study employed an integrative mixed methods (IMM) design by incorporating both quantitative and qualitative techniques. According to Creswell (2007), a mixed-methods research design provides a more in-depth understanding of issues being investigated than the use of either a quantitative or qualitative method alone. The IMM design may “offer the strength of confirmatory results drawn from quantitative analyses, along with explanatory descriptions as drawn from qualitative (interview) analyses” (Castro et al., 2010, p. 342).

This design was chosen to combine the quantitative and qualitative data in order to provide reliable and complementary results. The IMM technique is good for conducting “rigorous data analyses that meet scientific standards of reliable and valid measurement and analysis” (Castro et al., 2010, p. 342). For this reason, quantitative research data via surveys was utilised to provide a baseline measurement of video usage while qualitative research data via structured interviews provided a more detailed account of teacher experiences of video usage in Jordanian secondary schools. The mixed method design employed in this study enabled the triangulation of results by unifying participants’ responses using quantitative and qualitative data simultaneously. The design of the integrative mixed-methods study is shown in Figure 1 below.



**Figure 1:** Flowchart of the integrative mixed-methods design model used in this study.

## 5.2 Procedures

Issues of confidentiality, anonymity and informed consent must be addressed prior to the conducting of research (Ajloni, 2019). Therefore, before conducting this study, the researcher sought approval from the relevant stakeholders including the Human Research Ethics Committee (HREC) at the University of Newcastle (with ethics approval number H-2018-0459) and the Jordanian Ministry of Education (MoE). Prior to visiting schools, the researcher was required to secure further clearance from the Amman regional directorates of the MoE prior to contacting the relevant authorities before visiting the schools.

Participation for this study was voluntary and optional, thus participants could withdraw at any time and without any adverse consequences. The Participant Information Statement (PIS) and Invitation to Participants forms included an explanation of research purpose and process; the amount of time required for data collection; the time required of participants; information on protecting participants' rights to know the nature of this study and how data and results would be used and the benefits that will result from the research. After teachers read the PIS, they were able to complete the survey.

Culturally, there is a large power gap between male and female teachers in Jordanian schools (Adely, 2004), which meant that some female teachers could be shy and reluctant to be interviewed. Hence, information from them may be incomplete or even inaccurate because they may not speak frankly or be afraid to tell the truth (Shohel et al., 2015). As a preventative measure, two research assistants (one male and one female) who are aware of such cultural barriers were recruited to handle such matters. Particularly, the female assistant obtained permission from female teachers prior to recording their interviews. The researcher's email address, phone number and the contact details of the female research assistants were available to female participants in the event that they had concerns about their participation in the study. Given the cultural values of the Jordanian society as an Islamic nation, the researcher further sought approval from families or husbands of the female teachers before face-to-face interviews with the teachers. This was undertaken with the help of the female research assistant who explained the voluntary nature of the research to the teachers. This process enabled the researcher to collect study data in two stages: stage one (survey) and stage two (interviews). It is important to note that the involvement of the research assistants did not interrupt the data collection process in anyway. They were recruited to facilitate the data collection 'on the ground' and did not play any role in running the data analysis or interpreting or writing any section of the thesis. The participation of the research assistants was voluntary and without any financial reward.

## 5.3 Quantitative survey

A survey was designed to assess the extent of the use of VT and the type of devices being used by teachers in Amman. Data collected include the following:

- Type of device(s) used in teaching (e.g., smart phone, PC etc);
- Teaching grade (Grade 11, Grade 12 or both);
- Gender;
- Type of school (public or private);
- Frequency of use;
- Portion of class time spend on using VT;
- Number of video title used in an academic year;
- Time of the school day VT is used.

A literature review of this subject matter has been undertaken during the development of the survey questions. The questionnaire was available in both Arabic and English because English is the first language of some of the teachers. The researcher used different methods to translate the survey from English to Arabic. First, the researcher translated an initial version to Arabic in order to make it easier for respondents to understand the questionnaire items because the majority of the teacher participants were Arabic native speakers. A professional translator, fluent in both English and Arabic, then translated from Arabic back into English. This process was very useful in identifying errors in the originally translated version (Maxwell, 1996; Mullis et al., 1996).

In terms of the language quality, the original questionnaire was devised in both English and Arabic by the researcher before being sent to four scholars both within and outside the University of Newcastle (UoN) to examine and comment on its validity. Subsequently, the researcher modified and revised the questionnaire based on this feedback. The questionnaire was administered in a paper format and completed in approximately 15 minutes.

#### 5.4 Qualitative interviews

The second stage of the study comprised of structured face-to-face interviews to investigate the teachers' experiences in using video as a teaching tool in order to complement the survey's quantitative results. Interviews occurred in the schools between February 2019 and May 2019 and took an average of 30 minutes with a possible five-minute break in between. The face-to-face interviews used structured questions related to the quantitative results, with interviews being audio-recorded and transcribed before analysis. The transcriptions provided the data used to interpret the teachers' use of VT in the classroom. Any notes taken in Arabic were translated into English and verified by a certified translator. The translator signed the confidentiality agreement prior to accessing the transcripts. Some interviews were in English language with teachers whose first language is in English. To maintain confidentiality, the schools included in the qualitative stage were identified as number 1 to 12. Hence, the teachers' transcripts were numbered in accordance with their schools.

The interview protocol for the teachers was developed with consideration to the trends identified from the quantitative data. Below are some examples of the interview questions:

1. What is your preferred device(s) on which to screen videos for your students? Explain why.
2. Can you give an example of your own teaching material which engages students better when presented using VT?
3. Do you use the Technology Acceptance Model (TAM) integration model when planning to teach using different type of video devices? If yes, how do you integrate the TAM model?

#### 5.5 Participants

##### 5.5.1 Quantitative survey stage

The survey targeted Jordanian secondary school teachers in Amman city, Jordan. Interested participants were given the opportunity to opt in and complete the survey if instructional videos were used in their teaching practice. A total of 378 teachers, from 632 interested participants had fallen into this category and completed the survey. Data collected from these participants ( $N=378$ ; age mean of 37.2,  $SD = 7.9$ ) were used for quantitative analysis.

The majority of the teachers were females (58%) with males making the remaining portion. Teachers working in public schools (64%) exceeded those in private schools (36%). Amman city has nine districts and the survey ensured that teachers from all districts were recruited. The directors of education in each of the nine districts provided names of public and private schools in the region, thus helping in the distribution of surveys to teachers in those regions. A summary of the profiles of the participants is shown in Table 1.

**Table 1:** Demographic characteristics of the participants ( $N = 378$ )

Variables		Percentage
<b>Socio-demographic factors</b>		
<b>Age group</b>	Less than 30 years	24%
	30 to <40 years	48%
	40 to <50 years	24%
	50 years or more	4%
<b>Gender</b>	Male	42%
	Female	58%
<b>Geographical factors</b>		
<b>Teacher residential location</b>	Rural	40%

	Urban	60%
School districts	University	13.2%
	Al-Jiza	9.3%
	Kasaba	11.4%
	Al-Quesmah	15.9%
	Al-Muwaqqar	10.3%
	Sahab	6.6%
	Um al-Basatin [Marka]	13.2%
	Na'oor	7.1%
	Wadi al-Sayr	13.0%

### 5.5.2 Qualitative interview stage

Qualitative data was collected through interviews from a total of 24 secondary teachers in Amman to understand their experiences of using video. The female research assistant interviewed female teachers while the researcher and the male research assistant interviewed male teachers.

Teachers from 12 secondary schools from Amman participated in the interview stage. Six were located in urban areas and the other six in rural areas. The interview sample was determined by excluding those people who had been teaching for less than one year. This is because most of these teachers have less experience in teaching practice, especially in using VT within a professional context. Therefore, their responses may not provide the substantial information needed to examine the use of VT in Jordanian secondary schools.

The remaining teachers were grouped by school. One male and one female teacher was selected from each school, with care being taken to ensure that the numbers of Grade 11 teachers matched the number of Grade 12 teachers and the number of teachers from public schools matched the number from private schools. This yielded a stratified interview sample that is representative of second secondary teachers in Amman, Jordan. The distribution of the sample used for interviews is shown in Table 2.

The respondents were coded using combinations of the letters and numbers explained in the following sentence: a male respondent would be represented as “T1-MUP1\*” and a female respondent would be represented as “T2-FUP1\*\*” in order to preserve anonymity. In this particular order, T represents teacher, M represents male, F represents female, P1 represents public school, P2 represents private school, \* represents Grade 11, \*\* represents Grade 12, U represents schools in urban areas and R represents schools in rural areas of Amman, Jordan. Further information on the respondents for the qualitative interview stage is presented in Table 2 below.

**Table 2:** Interview respondents

Amman City (12 schools)					
Urban area			Rural area		
6 urban schools Each selected school has two participants			6 rural schools Each selected school has two participants		
Type of institutions		3 public schools	3 private schools	3 public schools	3 private schools
Teacher participants		Two teachers in Grade 11 & two teachers in Grade 12 (male & female) alternately in selected region (Urban). Each urban selected school has two teacher participants (male & female) alternately		Two teachers in Grade 11 & two teachers in Grade 12 (male & female) alternately in selected region (Rural). Each rural selected school has two teacher participants (male & female) alternately	
Teachers	Male	3 Teachers *	3 teachers **	3 teachers **	3 teachers *
	Female	3 teachers **	3 teachers *	3 teachers *	3 teachers **

\* Grade 11

\*\* Grade 12

## 5.6 Data analysis

### 5.6.1 Quantitative survey stage

Data collected in relation to the frequency of use and the type of VT devices used by teachers was analysed to answer the research questions outlined in the *Present Study* section. The first type of analysis was tabulation of results to discern the types of VT devices being used and the extent of use. Chi-square tests were then performed on the cross-tabulation of the data to ascertain the potential link between the frequency of video device being used and (a) time of day VT is being used in teaching practice; (b) proportion of class time being delivered with VT; and (c) the number video titles used per academic year.

### 5.6.2 Qualitative interview stage

In the qualitative analysis, data are reviewed, synthesised and interpreted in order to explain and describe a particular phenomenon being investigated (Olafson, Feucht, & Marchand, 2013). Interview data were analysed using a deductive analytical approach, as opposed to the inductive analysis, in order to investigate how the experiences of the secondary teachers in this study amplify the experiences of video usage assessed in the quantitative stage while also identifying new patterns of ideas. The application of deductive analysis was necessary since the qualitative component of the study was designed to complement the quantitative data and themes. This approach significantly strengthens the overall survey results, thus avoiding the risk of reaching faulty conclusions (Hyde, 2000; Popper, 2014). This is true since the “adoption of formal deductive procedures can represent an important step towards assuring conviction in qualitative research findings” (Hyde, 2000, p. 82). This approach enabled reaffirmation of existing theories and quantitative results, as well as demonstrate the similarities or differences between the quantitative and qualitative data.

Data analysis of the qualitative stage was guided by the step-by-step procedures designed by Braun and Clarke (2006). These guidelines include:

1. Becoming familiar with the data;
2. Generating initial codes;
3. Searching for themes that match patterns of thoughts in the quantitative results;
4. Reviewing themes;
5. Defining and naming themes and
6. Reporting the observations from cases in the interviews.

All 24 interview transcriptions were carefully read by the researcher to familiarise himself with the data. This helped in identifying similar patterns and meanings and matching them deductively with the quantitative results as undertaken by studies such as Braun and Clarke (2006) and Saldana (2015).

## 6 Result

This section presents the analysis results of the collected data in relation to the two research questions outlined in the *Present Study* section, which are:

1. What kinds of devices are frequently used to view instructional videos in secondary school teachers in Amman city, Jordan?; and
2. How frequently do secondary school teachers in Amman city (Jordan) use video as a tool for teaching?

### 6.1 Types of video technology devices

A combination of quantitative analysis and descriptive statistics (qualitative) were utilised to answer the first research question. Quantitative analysis results revealed the distribution of the different types of VT devices used by teachers in Amman city. In general, 77% of the teachers owned the smartphones they use in the classroom compared to 26% of those who use their school smartphone devices. Female teachers reported an overall higher ownership and usage of devices compared to male teachers. Table 7.2 indicates that teachers who taught both Grade 11 and Grade 12 reported a higher level of ownership and usage of VT devices for educational purposes. Similar higher levels of video usage for educational purposes were reported by public school teachers. Interview data suggests that these teachers have some previous experience with VT. For example,

“In Computer Science I use videos every day. I use a laptop with a projector and microphone or my smartphone, IWBs, speakers, lights and everything” (T3-MRP1\*).

“I have good experience with video use and how to deal with different kinds of equipment. I have a good background in this area” (T3-MUP2\*\*).

These teachers' experiences reflect those of many of the participants from the qualitative research interviews in relation to previous experience with technology as well as the variety of video devices used by teachers at secondary school students in Amman.

One interesting finding from the qualitative interviews, however, was how the teachers used their own personal devices in the classroom rather than devices provided by the schools. Some of the respondents said it was convenient for them and others mentioned the lack of VT devices in their schools. The following statements confirm this finding:

“Sadly, we lack equipment, especially in boys’ schools. Sometimes I bring my own equipment into the rooms, like a Smartphone or laptops. If I want to screen segments, I take the boys to the lab. We also have problems with electricity shortages. If I use my own equipment, I save time and try to involve every student” (T1-MUP1\*).

“Devices I mostly use are the IWB, data projector and also my own mobile phone. I have a cable handy if I need to attach my phone to the IWB in class. I usually use my own laptop to screen videos in the classroom. I find this easier because I can edit the segments more easily with programs that I am familiar with” (T2-MUP2\*).

“I use my own laptop, smartphone, lights, microphone, and portable camera and tripod in class and sometimes I assign students tasks in class like carrying the camera while I explain things...I have my own projector and I’m continually trying to improve the equipment. I have a cable to connect my smartphone with the projector and screen videos this way. This is expensive though” (T1-MUP1\*).

“Sometimes I use my own laptop, as there is a projector in the lab or students bring in their iPads, smartphones, speakers, microphones and cables. These mostly come from me or from the students - not from the school” (T1-MUP1\*\*).

The following sections explore in further details the different devices owned and used by the teachers in relation to their gender (male vs. female), teaching grades (Grade 11, Grade 12, and both 11 and 12) and school type (public vs. private).

## 6.2 Gender

Study results show that female teachers used their own devices more often compared to their male counterparts (see Table 3 below). It was found that 58.1% of the participants who owned smartphones (mobile phones) were female, while male teachers make up the remaining 41.9%. Just below half (49.5%) who used smart phones for teaching were females, with males making the other half (50.5%). In other words, more female teachers owned smartphones than male teachers, but male teachers used them more in class proportionally. When gender is combined, a total of 76.9% of the teachers used their own smartphones in their teaching practice compared to only 25.7% who used school provided smartphones.

With regard to the use of media players such as iPods or MP3 players, 58.7% of female teachers reported ownership of these devices with a 46.5% usage rate while male teachers reported an ownership rate of 41.3%, but with a higher usage rate of 53.5%. As with the use of smartphones (mobile phones), male teachers utilized these media players more than female teachers.

In the case of personal computers (PCs), female teachers own and use PCs for teaching at the same rate (both at 53.6%) as male teachers, who however report a lower total percentage (46.4%). Female teachers report a higher rate of ownership of handheld computers such as PDAs and Blackberries (62.9%) compared to their usage (57.6%) while male teachers' ownership (37.1%) and usage (42.4%) are lower overall, though male teachers report using the devices more in class.

The reporting of ownership and usage of laptop computers shows some interesting data. More female teachers (60.1%) reported owning a laptop compared to male teachers (39.9%), and a higher percentage of female teachers (55.9%) reported using them for teaching duties compared to their male counterparts (44.1%).



**Table 3:** Types of devices male and female teachers used and owned to view instructional videos

Video Devices	Gender					
	Male		Female		Total N = 378	
	<i>Own</i> N (%)	<i>Use</i> N (%)	<i>Own</i> N (%)	<i>Use</i> N (%)	<i>Own</i> N (%)	<i>Use</i> N (%)
<b>Smartphone (Mobile phone)</b>	122 (41.9%)	49 (50.5%)	169 (58.1%)	48 (49.5%)	291 (76.9%)	97 (25.7%)
<b>Media Player (e.g., iPod, mp3 player)</b>	38 (41.3%)	46 (53.5%)	54 (58.7%)	40 (46.5%)	92 (24.3%)	86 (22.8%)
<b>Personal Computer (e.g., Mac, PC)</b>	83 (46.4%)	39 (46.4%)	96 (53.6%)	45 (53.6%)	179 (47.3%)	84 (22.2%)
<b>Handheld Computer (e.g., PDA, Blackberry, Palmtop)</b>	39 (37.1%)	28 (42.4%)	66 (62.9%)	38 (57.6%)	105 (27.8%)	66 (17.5%)
<b>Laptop computer</b>	69 (39.9%)	45 (44.1%)	104 (60.1%)	57 (55.9%)	173 (45.8%)	102 (26.9%)
<b>Games Console (e.g., Xbox, PlayStation, Nintendo)</b>	23 (31.1%)	34 (53.1%)	51 (68.9%)	30 (46.9%)	74 (19.6%)	64 (17%)
<b>Portable Games Console</b>	17 (37.0%)	22 (40.0%)	29 (63.0%)	33 (60.0%)	46 (12.2%)	55 (14.6%)
<b>Digital Camera</b>	19 (30.2%)	31 (35.6%)	44 (69.8%)	56 (64.4%)	63 (16.7%)	87 (23%)
<b>Interactive White Board (IWB)</b>	35 (35.4%)	56 (39.2%)	64 (64.6%)	87 (60.8%)	99 (26.2%)	143 (37.8%)
<b>Data Projector (DataShows)</b>	36 (35.6%)	61 (50.0%)	65 (64.4%)	61 (50.0%)	101 (26.7%)	122 (32.3%)
<b>Touch Screen tablet e.g., iPad</b>	29 (38.7%)	53 (55.8%)	46 (61.3%)	42 (44.2%)	75 (19.8%)	95 (25.1%)
<b>Other(s) (please specify)</b>	14 (60.9%)	16 (51.6%)	9 (39.1%)	15 (48.4%)	23 (6.1%)	31 (8.2%)

Gaming devices such as Xbox, PlayStation or Nintendo are emerging as educational tools, with female teachers reporting a higher level of ownership of these devices (68.9%) compared to their male counterparts (31.1%). However, the rates of usage of these devices for teaching purposes were quite different with only 46.9% of female teachers reporting using them compared with 53.1% of the male teachers.

Teachers were asked about their usage of portable game consoles in their educational practice, which could include accessing games via mobile phones or tablet devices (Huizenga, Admiraal, Akkerman, & Dam, 2009; O'Rourke, Main, & Ellis, 2013; Rapeepisarn, Ponghankae, Wong, & Fung, 2008; Zaranis, Kalogiannakis, & Papadakis, 2013). Sixty-three percent of female teachers reported ownership of such a device and a usage rate of 60.0%. However, the percentages of male teachers were much lower, with 37.0% of them owning such a device and 40.0% reporting using them in their teaching practice.

With regard to the use of digital cameras as part of teaching practice, a significantly higher percentage of female teachers (69.8%) reported owning such a camera compared to a much lower percentage of male teachers (30.2%). Usage of digital cameras between both genders reflected this also with 64.4% of female teachers utilizing digital cameras in classroom teaching compared to 35.6% of their male counterparts.

IWBs have also become increasingly popular in modern classroom settings. Female teachers report a higher level of access to IWBs (64.6%) compared to male teachers (35.4%) and their usage of IWBs also shows a big difference with 60.8% of female teachers making use of this teaching resource compared with 39.2% of male teachers.

Data Projectors are commonly called Data Show in Jordanian schools (Gajria, 2007). While 64% of female teachers' report access to DataShow technology, a smaller percentage (35.6%) of male teachers report similar access. However, the usage of DataShow technology in the classroom for both genders is the same, at 50.0%. With regard to the use of touch screen tablets for educational purposes, 61.3% of female teachers report owning such a device compared to 38.7% of male teachers. In terms of classroom usage, however, a higher percentage of male teachers (55.8%) report using such a device for teaching compared to 44.2% of female teachers.

Teachers also described many other video devices that they own or use in their classroom practice. Examples of devices not already mentioned may include digital watches (e.g., Apple Watch or bracelets) with online connectivity. A relatively high percentage of male teachers (60.9%) reported owning such a device compared with only 39.1% of female teachers. In terms of using these devices in class, usage was distributed more evenly with 51.6% of male teachers reporting using such tools compared with 48.4% of the female teachers.

In summary, it was found that female teachers' ownership of, access to and use of VT was higher than that of male teachers. Significant differences exist with the use of digital cameras and IWBs, with female teachers accessing and using these more frequently than their male counterparts. The research also shows that PC ownership and usage for educational purposes among both male and female teachers were quite high.

### 6.3 Teaching grades

Grade 11 and 12 teachers were surveyed about the kinds of devices that they both owned and used in their classroom settings to view videos in their teaching practice with the results summarised in Table 4. The results show that those teaching both Grades 11 and 12 used video devices more than other groups of teachers. The highest percentage of video devices owned and used by the teachers in the classroom for teaching are IWB (Own: 76.2%, Use: 59.5%), media players (e.g., iPod, MP3 player) (Own: 73.3%, Use: 73.5%) and handheld computer (Own: 72.9%, Use: 58.3%).

In terms of teachers who used smartphones, results show that those teaching both Grades 11 and 12 owned more smartphone devices (64.7%) and were more likely use Smartphones in class (79.4%) compared to those teaching Grade 11 only (25.2% and 12.4%, respectively) and Grade 12 only (10.1% and 8.2%, respectively).

With regards to media players such as iPods or MP3 players, 17.4% of Grade 11-only teachers reported owning such a device, with 20.7% using one for teaching. Grade 12-only teachers reported ownership at 9.3% and actual usage of the device at 6.0%. For teachers who taught both Grade 11 and 12, the percentages were distributed more evenly, with 73.3% reporting owning a media player and 73.5% utilizing one in their teaching.

In the case of personal computers (PCs), Grade 11-only teachers recorded an ownership level of 25.2% and a similar classroom usage level of 23.6%. Grade 12-only teachers reported a PC ownership level of 16.8% as well as an educational usage rate of 15.3%. Teachers of both Grade 11 and 12 reported a PC ownership level of 58.1% and a slightly higher educational usage rate of 61.1%.

In relation to the ownership and usage of handheld computers such as PDAs, Blackberries and Palmtops, teachers of Grade 11-only reported an ownership level of 18.8% but a higher educational usage level of 33.3%. Of the Grade 12-only teachers, the percentage were relatively low with ownership reported at 8.3% and for educational usage purposes at the same level of 8.3%. Teachers who taught both Grade 11 and 12 reported a handheld computer ownership level of 72.9% but only 58.3% used these devices for their classroom teaching.

**Table 4:** Types of devices teachers in Grade 11, 12, and both used and owned to view instructional videos

Video Devices	Teaching Grades							
	Grade 11		Grade 12		Both 11 & 12		Total N = 378	
	Own N (%)	Use N (%)	Own N (%)	Use N (%)	Own N (%)	Use N (%)	Own N (%)	Use N (%)
<b>Smartphone (Mobile phone)</b>	65 (25.2%)	12 (12.4%)	26 (10.1%)	8 (8.2%)	167 (64.7%)	77 (79.4%)	258 (68.3%)	97 (25.7%)
<b>Media Player (e.g., iPod, mp3 player)</b>	15 (17.4%)	17 (20.7%)	8 (9.3%)	5 (6.0%)	63 (73.3%)	61 (73.5%)	86 (22.8%)	83 (21.9%)
<b>Personal Computer (e.g., Mac, PC)</b>	39 (25.2%)	17 (23.6%)	26 (16.8%)	11 (15.3%)	90 (58.1%)	44 (61.1%)	155 (41.0%)	72 (19.0%)
<b>Handheld Computer (e.g., PDA, Blackberry, Palmtop)</b>	18 (18.8%)	20 (33.3%)	8 (8.3%)	5 (8.3%)	70 (72.9%)	35 (58.3%)	96 (25.4%)	60 (15.9%)
<b>Laptop computer</b>	36 (24.2%)	22 (24.4%)	14 (9.4%)	8 (8.9%)	99 (66.4%)	60 (66.7%)	149 (39.4%)	90 (23.8%)

<b>Games Console (e.g., Xbox, PlayStation, Nintendo)</b>	18 (25.4%)	28 (43.8%)	5 (7.0%)	8 (12.5%)	48 (67.6%)	28 (43.8%)	71 (18.8%)	64 (16.9%)
<b>Portable Games Console</b>	12 (26.1%)	28 (50.9%)	5 (10.9%)	2 (3.6%)	29 (63.0%)	25 (45.5%)	46 (12.2%)	55 (14.6%)
<b>Digital Camera</b>	15 (23.8%)	28 (34.6%)	8 (12.7%)	5 (6.2%)	40 (63.5%)	48 (59.3%)	63 (16.7%)	81 (21.4%)
<b>Interactive White Board (IWB)</b>	9 (10.7%)	36 (31.0%)	11 (13.1%)	11 (9.5%)	64 (76.2%)	69 (59.5%)	84 (22.2%)	116 (30.7%)
<b>Data Projector (DataShows)</b>	19 (20.0%)	27 (26.0%)	11 (11.6%)	11 (10.6%)	65 (68.4%)	66 (63.5%)	95 (25.1%)	104 (27.5%)
<b>Touch Screen tablet e.g., iPad</b>	13 (18.8%)	22 (25.6%)	8 (11.6%)	14 (16.3%)	48 (69.6%)	50 (58.1%)	69 (18.3%)	86 (22.8%)
<b>Other(s) (please specify)</b>	6 (26.1%)	3 (9.7%)	3 (13.0%)	9 (29.0%)	14 (60.9%)	19 (61.3%)	23 (6.1%)	31 (8.2%)

Grade 11-only teachers had similar levels of ownership of laptops (24.2%) and educational usage (24.4%) whilst Grade 12-only teachers reported ownership of 9.4% and usage of 8.9%. A greater difference existed for teachers of both Grade 11 and 12 classes. They revealed that 66.4% owned a PC and 66.7% used one as part of their educational practice.

Analysis was also performed on Gaming devices such as Xbox, PlayStation or Nintendo in their teaching practice. In the Grade 11-only cohort, 25.4% revealed that they owned such a gaming device, but a larger percentage (43.8%) reported using one in their classes. For the Grade 12-only cohort, 7.0% reported owning one of these devices with 12.5% reporting that they had used one in their classroom. For teachers who have both Grade 11 and 12 classes, a larger percentage (67.6%) reported owning a gaming device and 43.8% of the teachers had used one as part of their teaching practice.

Teachers were also surveyed about using portable game consoles in their teaching practice. These could include devices that allowed access to gaming via mobile phones or tablet devices (Carr, 2012; Hill, 2011; Huizenga et al., 2009). It appears that 26.1% of Grade 11-only teachers reported owning a gaming device while a larger 50.9% of this cohort had used such a device for teaching. Of the Grade 12-only cohort, 10.9% reported owning a gaming device with only 3.6% having used one for their teaching practice. Of the teachers who taught both Grade 11 and 12 classes, 63.0% reported owning a gaming console with 45.5% of the participants having used one in their teaching practice.

With regards to digital cameras, 23.8% of Grade 11-only teachers owned a digital camera, although 34.6% had used one for teaching purposes. Furthermore, 12.7% of Grade 12-only teachers owned a camera but only 6.2% had utilized one in the classroom. Of the teachers who taught both Grades 11 and 12, the numbers were higher. For example, 63.5% owned a digital camera whereas 59.3% of them had used one in their classroom.

In addition, Grade 11-only teachers reported owning (10.7%) and using (31.0%) IWBs, while 13.1% of Grade 12 teachers reported owning their own IWB devices and 9.5% reported using them in the classroom. Of teachers who taught both Grade 11 and 12, 76.2% reported having owned an IWB for personal purposes but only 59.5% reported that they had used one for their teaching practice.

Of the Grade 11-only teachers surveyed, 20.0% reported owning a DataShow while 26.0% indicated using one for their teaching practice. For the Grade 12-only teaching cohort, 11.6% reported owning a DataShow with 10.6% having used it for teaching. Of the Grade 11 and 12 teaching cohort, percentages were much higher with 68.4% reporting ownership of DataShow and 63.5% using the device in their classroom (see Table 4 above).

With regards to touch screen tablets, 18.8% of Grade 11-only teachers reported owning such a device with 25.6% having used one for teaching. For the Grade 12-only teaching cohort, 11.6% owned a tablet and 16.3% had used one in the classroom for teaching. Of the Grade 11 and 12 teaching cohort, 69.9% owned a tablet device with 58.1% declaring that they used one for teaching.

The researcher also surveyed teachers with regards to other video devices (e.g., digital watch or bracelets). Of the Grade 11-only teachers, 26.1% reported that they owned a similar device while 9.7% reported using one for teaching. Of the Grade 12-only cohort, 13.0% owned other video devices while 29.0% reported using one for

teaching. Of the teachers who taught both Grade 11 and 12, 60.9% owned other video devices, similar with those (61.3%) who used one in class.

In summary, teachers who taught both Grade 11 and 12 students reported an overall higher level of video device ownership for personal purposes and usage of the devices in their teaching practice compared to those who taught Grade 11 and Grade 12 students separately. Interestingly, for most the devices considered, the ownership rate is higher than the usage rate.

#### 6.4 School type

Results of this study in relation to public and private school are summarised in Table 5. In Jordan, the educational system comprises both public and private schools (Taani, 1997). Public schools receive funding from the government and other international funding agencies (e.g., Global Education Initiative, UNICEF, USAID, and UNESCO). Private schools, on the other hand, may be Islamic Schools, International schools, or other religious schools; specifically, Christian schools (e.g., Alkhawaldeh & Menchaca, 2014; Hodges, 2015). The differences in funding arrangement may be important when interpreting the results of this study in relation to the differences between public and private schools.

In terms of Smartphone ownership and usage by teachers employed in schools in and around Jordan's capital city Amman, it was found that 64.3% of public school teachers owned a Smartphone compared to only 35.7% of private school teachers. In respect to Smartphone usage, 77.3% of public school teachers reported using their Smartphones for their teaching practice compared with 22.7% of private school teachers who used for the same purpose (Phan, Jardina, Hoyle, & Chaparro, 2016). With regard to media players such as iPods or MP3, public school teachers reported higher ownership (59.8%) and usage (60.5%) overall compared with private school teachers who reported ownership of 40.2% and 39.5% usage in their teaching.

**Table 5:** Types of video technology devices owned and used in private and public schools

Video Devices	School Type					
	Public		Private		Total N = 378	
	Own N (%)	Use N (%)	Own N (%)	Use N (%)	Own N (%)	Use N (%)
Smartphone (Mobile phone)	187 (64.3%)	75 (77.3%)	104 (35.7%)	22 (22.7%)	291 (76.9%)	97 (25.7%)
Media Player (e.g., iPod, mp3 player)	55 (59.8%)	52 (60.5%)	37 (40.2%)	34 (39.5%)	92 (24.3%)	86 (22.8%)
Personal Computer (e.g., Mac, PC)	104 (58.1%)	56 (66.7%)	75 (41.9%)	28 (33.3%)	179 (47.4)	84 (22.2%)
Handheld Computer (e.g., PDA, Blackberry, Palmtop)	65 (61.9%)	40 (60.6%)	40 (38.1%)	26 (39.4%)	105 (27.7)	66 (17.5%)
Laptop computer	99 (57.2%)	63 (61.8%)	74 (42.8%)	39 (38.2%)	173 (45.8%)	102 (26.9%)
Games Console (e.g., Xbox, PlayStation, Nintendo)	45 (60.8%)	36 (56.3%)	29 (39.2%)	28 (43.8%)	74 (19.6%)	64 (16.9%)
Portable Games Console	29 (63.0%)	34 (61.8%)	17 (37.0%)	21 (38.2%)	46 (12.2%)	55 (14.6%)
Digital Camera	34 (54.0%)	49 (56.3%)	29 (46.0%)	38 (43.7%)	63 (16.7%)	87 (23.0%)
Interactive White Board (IWB)	53 (53.5%)	85 (59.4%)	46 (46.5%)	58 (40.6%)	99 (26.2%)	143 (37.9%)
Data Projector (DataShows)	64 (63.4%)	75 (61.5%)	37 (36.6%)	47 (38.5%)	101 (26.7%)	122 (32.3%)
Touch Screen tablet e.g., iPad	44 (58.7%)	57 (60.0%)	31 (41.3%)	38 (40.0%)	75 (19.8%)	95 (25.1%)
Other(s) (please specify)	20 (87.0%)	18 (58.1%)	3 (13.0%)	13 (41.9%)	23 (6.1%)	31 (8.2%)

Teachers were surveyed about Personal computers (PC or Mac) and again, the data show that public school teachers reported higher ownership and usage of PCs. For example, 58.1% of public school teachers reported

owning a PC and 66.7% used one in their teaching practice. Among the private school teachers, 41.9% reported ownership of a PC and 33.3% reported using one as part of their teaching practice. Teachers were also asked about their ownership and usage of handheld computer devices such as PDAs, Blackberries and Palmtops. The results show that 62% of public school teachers owned such a device compared to 38% of private school teachers. In terms of using handheld computer devices for their teaching practice, a similar number of public school teachers (61.9%) reported this type of usage compared with 38.1% of private school teachers. In terms of laptop computer ownership and usage, data collected revealed that both public and private school teachers had similar levels of laptop ownership (57.2%) while usage of this device for teaching practice was much higher for public school teachers (61.8%) compared to private school teachers who owned (42.8%) and used (38.2%) laptop devices.

Computer and online games are beginning to emerge as important tools in the educational sphere, for example for teaching English vocabulary (Muhanna, 2012). With regards to teachers' ownership of game consoles, 60.8% of public school teachers reported owning such a device compared with 39.2% of private school teachers. In terms of usage of game consoles for educational purposes, 56.3% of public school teachers were in this category compared with 43.8% of teachers from the private sector. Teachers were also quizzed about portable game consoles with the data showing that 63.0% of public school teachers own one of these devices while a similar percentage have used 61.8% them for teaching. Among private school teachers, the levels are lower with 37.0% reporting owning portable game consoles and a similar percentage (38.2%) using one among those in public schools.

Teachers were asked about ownership and use of digital cameras, and about 54.0% of public school teachers reported owning a digital camera compared with the lower number of private school teachers (46.0%). In terms of using these cameras for educational purposes, the levels were quite similar with 56.3% of teachers from the public sector doing so compared with only 43.7% from the private sector. In terms of ownership and usage of IWBs, a greater number of public school teachers reported owning the device (53.5%) compared to teachers in private school sector (46.5%). Similarly, a greater percentage of public school teachers (59.4%) used IWBs in their teaching practice in comparison to those in private schools (40.6%).

With regard to DataShows, levels of ownership (63.4%) and usage (61.5%) were very similar for most public school teachers. On the other hand, a lesser number of teachers (36.6%) in the private school sector owned DataShows while the number of teachers (38.5%) who use this tool for teaching purposes was similar to those in the public school sector.

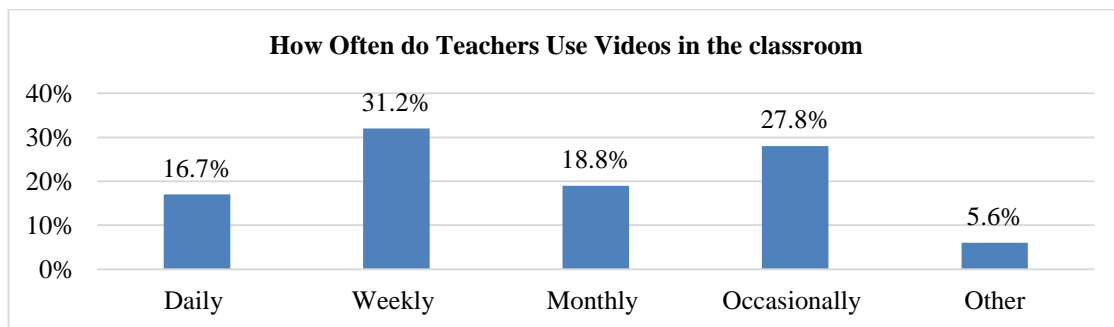
In respect to the ownership and usage of Touchscreen tablets, the following information emerged: 58.7% of public school teachers owned such a device compared with only 41.3% of private school teachers. In terms of usage for educational purposes, a majority of the public school teachers (60.0%) used tablets for teaching-related purposes compared to those in private school sector (40.0%). The final question surveyed teachers on their use of other video devices, with data showing that teachers in public schools were greater (87.0%) owners of other digital devices compared with only 13.0% of those who owned similar devices in the private school sector. In answer to the question of whether they used such devices for educational purposes, a similar pattern emerges, with 58.1% of public teachers doing so, compared to only 41.9% of participating teachers from private schools.

### 6.5 Frequency of video use

The frequency of teachers' use of video as a teaching tool were explored by factoring (a) the usage of videos in the classroom based on daily, weekly, monthly and occasional periods; (b) times of school day the video is used; (c) percentage of class time allocated to video usage; and (d) number of video titles watched. Results are summarised in Figure 2.

In terms of the usage of video as a teaching tool, most teachers used video weekly (31.2%) then daily (16.7%), monthly (18.8%), and others used it occasionally (27.8%) and at 'Other' periods (5.6%). It is possible that using videos weekly was strategic since that would keep the students more engaged and less bored compared to daily use (which might be exhausting and less exciting due to over-utilisation). This is consistent with some studies which have reported on the negative effect of cognitive overload associated with teaching practice, where the likelihood of teachers giving students too much learning information (e.g., via VT) may tend to result in them being unable to process the surge of learning information (eg. Paolo et al., 2017). On the other hand, using videos in the classroom less frequently (eg. monthly) might limit the coverage of the school curriculum because of the less time and excitement both students and teachers invest in the videos. Students may thus be less committed to this kind of learning and are less likely to recall the content due to the time gap between viewings.

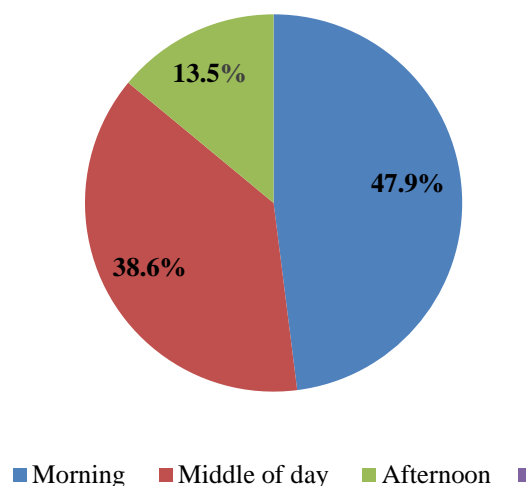




**Figure 2:** Frequency of video use

Approximately half the teachers (47.9%) used videos during the morning classes, which is more than those screening them around midday (38.6%). Only a few of the teachers (13.5%) used video for afternoon sessions, partly because students might be less engaged at this time of day (see Figure 3 below). The higher frequency of morning usage of videos for teaching is expected since students' concentration levels during the morning are better than later in the day (Allison, 2015). This is shown by the consistency of video usage for different times of the day: morning (47.9%), midday (38.6%) and afternoon (13.5%). Therefore, the earlier the usage of video in the classroom, the better results for both students and teachers.

**Times of the School Day**



**Figure 3:** Times of the school day for screening videos

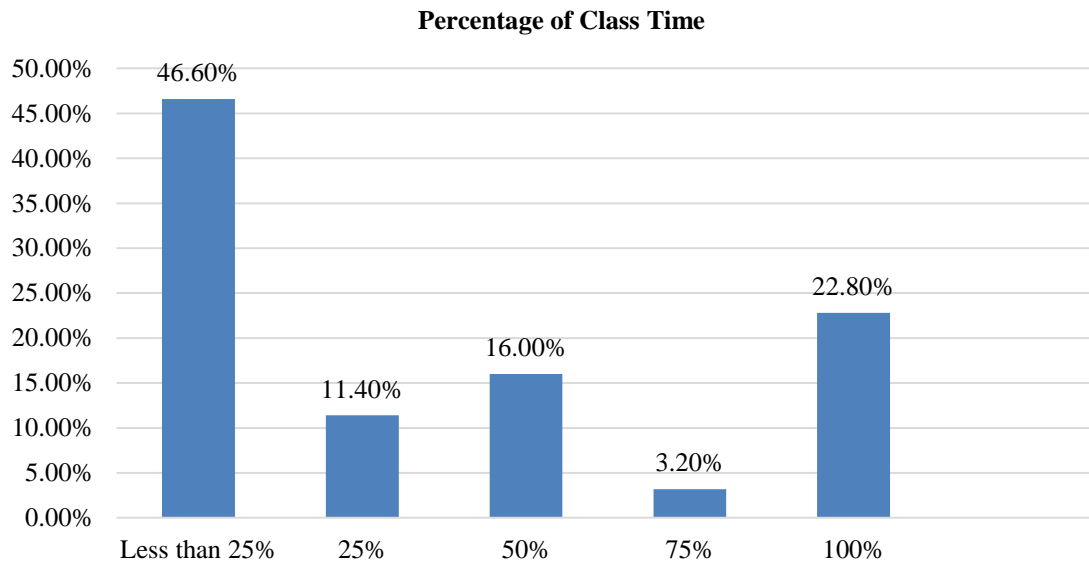
The researcher also assessed the percentage of class time allocated to the use of video as a teaching tool and results indicate that about 46.6% of the teachers commit less than 25% of class time to using video (see Figure 4). This is not surprising given that video usage during classroom hours might not be common in Jordan, as only a dozen of these teachers (N=12, 3.2%) teach with video for 75% of class time. Those who indicated using about 25% and 50% of their time are clearly just 11.4% and 16.1% teachers respectively, while teachers who watched video for 100% of the classroom time is 22.8%. These percentages are not significantly close to those who allocate less than 25% of their time to teaching with video. This result may suggest that using video is not yet common. Nevertheless, it also shows that these teachers prefer assigning short periods of class time to viewing videos rather than devoting more time to video-based tutorials. Perhaps this is because viewing videos for a shorter period engages the students better than bingeing on it for too long, and thereby affecting students' concentration levels negatively (Keddie, 2014; Selvarajan, 2018). The accounts of the teachers during the qualitative interviews confirm how the teachers used VT in their classrooms, as shown below:

"I have used video equipment once a month in the past three months" (T2-MUP2\*).

"We use it [video] in Math at the start as an introduction to the lesson. I feel that the students get engaged with the content better this way" (T1-MRP1\*).

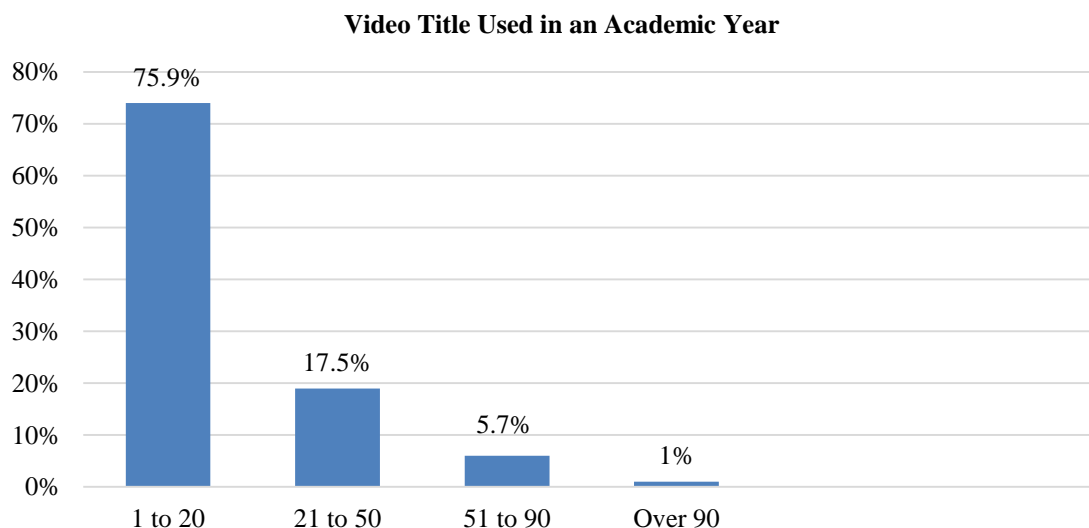
“I like to let them watch a video before anything is explained from the text, maybe 10-15-minute segments. Then I explain from the books and ask for questions. This way they grasp things quickly, understand better and we save time” (T3-MRP1\*).

“I divided up the content into six segments to watch it over six lessons” (T3-MUP2\*).



**Figure 4:** Percentage of time allocated to watching educational videos with students in the classroom

In order to understand the frequency of teachers' use of video in the classroom, the number of video titles watched or played by the teachers in the classroom was considered. Overall, 75.9% of teachers indicate watching 1 to 20 video titles with their students for learning purposes compared to a fraction of 17.5% who watch 21 to 50 video titles. It also reported that 5.7% and 1% who watch video title 51 to 90 and over 90 videos respectively (see Figure 5). This result still shows that even though teachers are tapping into the world of ICT to improve their teaching, only a small percentage of time is dedicated to using video in Amman city. This might explain why they allocate less than 25% of their class time watching videos, and this percentage gives an idea of the number of video titles watched by the teachers. If the percentage of time increased, this might translate to more video titles being used for classroom teaching.



**Figure 5:** Video titles used in an academic year

## 6.6 Cross-tabulation of the frequency of teachers' video usage

Finally, a cross-tabulation of the frequency of teachers' video usage was calculated to evaluate whether there are statistical associations with time-of-day video is screened in class, proportion of class time video is played and the

number of video titles screened in an academic year. Cross-tabulations were analysed using a Chi-square goodness of fit test, and the results are summarised in Table 6 below.

Overall, the results show that there is a statistically significant relationship between the number of videos used in an academic year and the frequency of the video usage (based on daily, weekly, monthly, and occasional periodic usages),  $\chi^2 (df = 12) = 103.56, p < 0.01$ . There was no significant relationship between the frequency of video usage and the times of the day when the videos are often used with a p-value of .27, and the percentage of class time allocated to teaching with video, which showed a p-value of 0.28. Significance was only determined for values less than .05, hence both times of the day that videos are used, and the percentage of class time allocated to video usage do not significantly correlate with the frequency to which video is used in the classroom. On the other hand, the frequency of video usage was found to have a statistically significant correlation with the number of video titles used in an academic year.

**Table 6:** Cross-tabulation results for the frequency of teachers' use of videos

	Daily	Weekly	Monthly	Occasionally	Total	df	$\chi^2$	P value
<b>Times of school day</b>						6	7.59	.27
Morning	12	29	26	36	103			
Middle of the Day	21	25	14	23	83			
Afternoon	5	10	6	8	29			
<b>Percentage of class time</b>						16	18.47	.28
Less than 25%	27	61	37	45	176			
25%	8	15	5	11	43			
50%	12	12	14	20	61			
75%	0	3	3	6	12			
100%	16	27	12	23	86			
<b>Number of Video Titles</b>						12	103.56	.01
1 to 20	22	54	60	91	239			
21 to 50	14	35	3	6	58			
51 to 90	12	6	0	0	18			
Over 90	0	3	0	0	3			

## 7 Discussion

### 7.1 Type of video technology devices used

The results summarised in Table 3 through Table 5 suggest that teachers used various VT devices to enhance their teaching experience in Amman city. One interesting finding from the interviews was that the teachers used their own personal devices to enhance their teaching practice due to the limited technologies at their schools. T1-MUP1\*, for example, in his interview mentioned that this lack of VT in Jordanian secondary schools was prevalent in “boys’ schools”, resulting in him “bring[ing] [his] own equipment into the rooms, like a smartphone or laptops.” Interestingly, female teachers used even more of their own personal devices than their male counterparts, and this might mean that they were more knowledgeable with technology than male teachers. The devices mostly used by the female teachers for teaching, based on the quantitative results, were smartphones, personal computers, and laptops.

“I have a cable handy if I need to attach my phone to the Interactive Whiteboards (IWBs) in class... [and] usually use my own laptop to screen videos in the classroom” (T1-FUP1\*\*)

“I use my own laptop, smartphone, lights, microphone, and portable camera and tripod in class...I have a cable to connect my smartphone with the projector and screen videos this way” (T2-MUP2\*)

“Sometimes I use my own laptop” (T1-MUP1\*\*).

Results from the quantitative analysis also corroborate findings in the qualitative interviews, with these teachers identifying these three mobile devices as the most relevant for their VT in teaching. Smartphones, personal computers and laptops were the most frequently used VT devices in these schools regardless of the teachers’ gender, school types and teaching grades. These three devices emerged as the most effective ‘mobile devices’ for

teaching and improving students' learning performances in a recent meta-analysis (Sung, Chang, & Liu, 2016). T2-MUP2\* noted that even though he uses his smartphone, laptop and computer in the classroom for teaching, "this is expensive though." These teachers used other electronic teaching devices, such as portable games console, digital cameras and IWBs, less often.

There are other reasons why the teachers might have found it easier to use their smart phones, laptops and personal computers than other devices. One reason is Internet access (Brown, 2016, 2018; Burston, 2013; Hockly, 2013). These three devices can easily be used to access the Internet compared to other devices. With smart phones, for example, teachers can easily connect their IWB to their phone using a USB cable. If teachers need to make educational recordings, they will probably use their camera phone (e.g., Brown, 2016, 2018; Burston, 2013; Ferry, 2009; Gromik, 2009; Kim et al., 2013; Lu, 2008).

Another potential reason is the convenience of these devices. Smart phones, laptops and tablets are mobile devices that can be used by teachers at any given place, thus making it easy to use them for teaching and learning (Brown, 2016, 2018; Burston, 2013; Chuang, 2009; Hockly, 2013; Moura & Carvalho, 2008). This might explain why the teachers frequently used these devices in their classrooms. Perhaps, as an incentive, teachers should be provided with a teaching tool kit that contains a smart phone, laptop, and personal computer, since they are frequently used in teaching. Such an incentive should also come with a paid internet subscription to make it easier for teachers to access the Internet when developing their content and designing pedagogical methods that are VT (Brabazon, 2002; Levy, 2000; Schofield & Davidson, 2017; Warlick, 2009).

Teachers in public schools are more likely to use VT in the classroom, and most used their own personal smartphone (64%) and computer (58%) devices in the process. This may suggest that the MoE should put more effort on how to integrate VT in public schools by allocating appropriate funding to the schools, supplying video devices or teaching tool kits (with laptops, smartphones, and personal computers), and providing training sessions for teachers. Supplying teachers with necessary tool kits should also come with a paid internet subscription to make it easier for them to access the Internet when developing their content and designing pedagogical methods that are VT.

## 7.2 Frequency of use and time-of-day

It was found that most of these teachers use VT on a weekly basis, or occasionally, rather than daily. This appears sensible since selecting a video takes time and creating one is quite a laborious task. Besides, most teachers may be preoccupied developing their teaching and may not have sufficient time to prepare videos for daily screening. Technological literacy might reduce the amount of time spent in integrating technology into learning (Jenson & Droumeva, 2017). This finding corroborates with the work of Gonen et al. (2016) who argue that technological competencies can aid in maximising the time spent in updating and developing technology-based content and pedagogical tools for teaching.

Another important finding from this study concerns the times of the school day when teachers use VT in their classroom. It appears that these teachers tend to use video resources most often in the mornings, with a frequency of 48% compared to afternoon (14%) and midday (39%). This outcome is not surprising, especially, since recent studies have shown that people learn better at different times of the day, particularly in the morning (e.g., Pope, 2016). However, while this is the case, such outcomes are also influenced by factors such as the subject being learned and the teacher's role. For example, Pope (2016) found that having a morning Math or English class instead of an afternoon class on either subject increased a student's grade point average (GPA). Hence, in order to increase the efficiency of the school system towards learning, educators should consider the time of the day that most affects teachers' and students' productivity.

These teachers dedicated less than 25% of class time to technology-based video content and pedagogy. This might be indicative of the level of technological literacy among teachers, some of whom are not adequately trained to use video-based tools in their classroom. However, it also seems that using educational videos for a short period engages students better than bingeing on them for too long, and thereby negatively affecting their concentration levels. Teachers should create or use short videos with engaging and active learning features in order that these have a productive influence on students' learning experience (Brame, 2016).

Most of these teachers (75%) used less than 20 videos in a given semester, suggesting that it may not necessarily override the need for traditional teaching methods (Dimitrios et al., 2013; Hendriks, 2016). This is consistent with some studies that have argued that learning how to teach with digital technologies was much more complex than teaching with traditional technologies, and subsequently required new ways to describe, develop and measure the "complex, multifaceted and situated nature of knowledge" (Mishra & Koehler, 2006, p. 1017). Although these

teachers frequently used video for classroom teaching, the comparatively low number of titles suggests that “good videos were hard to find” (Allison, 2015, p. 126).

### 7.3 TAM theoretical framework

The results of this study is considered through the context of the TAM theoretical framework. The most popular VT devices used in secondary schools in Jordan were revealed to be laptops, personal computers and smartphones whereas the most popular frequency of video use in classroom was found to be quite infrequent (weekly or occasionally). The identified popular devices and frequency of use are based on the statistics of a reasonable sample. The results may therefore be considered as being representative of the total population. The popularity of the already popular devices can potentially be amplified by using them in the right frequency. In accordance with the TAM framework in the context of this study, if the right devices were used to the right extent, then the perceived ease of use and perceived usefulness would be positively present in both teacher and students. Perhaps it may be appropriate to consider the statistically-derived popular devices (laptops, personal computers and smartphones) being used at an appropriate amount (perhaps weekly as statistically suggested), then this would lead to the perceived ease of use and perceived usefulness would be positively present in both teacher and students. The flow-on effect would then be a shift in attitude towards use (AU) and behavioural intention (BI), which will eventually lead to actual use (acceptance of technology). Since the laptops, personal computers and smartphones are already popular devices, using them in the right frequency will only add to their acceptance or popularity.

To further add to the level of acceptance and use of VT, perhaps the weekly usage (most popular frequency of use as identified above) may be paired with the most effective time of day for learning (mornings). Screening videos or using VT at this time of the day, as discussed previously, may have the added benefit of better knowledge transfer to students (they are more focused in the morning). When students feel that they have learnt more content, their perceived ease of use and usefulness will change their attitude friendly towards the VT in question, which will in turn leads to the intention of use and acceptance of the VT as an integral part of their learning.

### 8 Limitations and recommendations

Robustness and validity of this study may be compromised by various factors and limitations. Specifically, the cross-sectional nature of this study may amplify the limitations of self-reporting. Repeated surveys in a longitudinal study design could potentially enhance the results or bring the current results to question. Another potential limitation is that this study was conducted in the capital city of Jordan and so the results may not represent the views of secondary school teachers across the entire country. Although the sample size for the interviews was reasonable (N=24), it may still not be representative of all teachers in Jordan. The teachers in this sample have greater access to VT than other regions because Amman is the capital and technological hub of Jordan. Therefore, further studies could explore the extent to which VT is used for teaching in the entire country with data that is representative of the entire nation.

The requirement that Grades 12 teachers finish their curriculum before the students' *Tawjihi* national examinations limited their participation in the study and thus lessened the impact of their perspective on the data. Perhaps a further study that focuses on this particular category of teachers would be helpful in creating a better understanding on how VT can help ease some pressure off Grade 12 teachers.

The IMM approach used in conducting this study was necessary for time management, but it limited the analysis of the qualitative data that emerged from the interview phase. Generation of relevant themes from the wealth of data contained in the transcripts was constrained by the desire to make connections with the quantitative survey data. Further studies, or subsequent analysis of the present data, could adopt a sequential explanatory mixed methods approach, where data from each component are discussed in length to complement each other.

### 9 Implications of the study

Pedagogical implications for how VT can support teaching practice in schools can be inferred from the results of this study. Most of the teachers who were interviewed reported teaching with VT was ‘convenient’ and helped them to ‘save time’. Quantitative analysis supported a similar theme, with results of the frequency of video usage and devices used for VT in teaching suggesting that most of the teachers often used their own devices to enhance their pedagogical practice. Given the effectiveness of VT for teaching, it might be helpful to consider how such technology can help in improving pedagogical practice. The gap in technological literacy can be bridged through adequate training for teachers, including creating a unit on Education and Technology that could assist students who are not be technologically savvy on how to integrate technology into their teaching practice. Such training programs can help teachers create their content pedagogical knowledge through using the right technologies to develop their instructional videos. Having such training could enhance students' performance, and increase



engagement with innovative technologies, as the teachers adopt appropriate video-pedagogical activities that clarify complex concepts and ideas in the curriculum.

## 10 Conclusions

This study aimed to answer the following research questions:

1. What kinds of devices are frequently used to view instructional videos in secondary school teachers in Amman city, Jordan?; and
2. How frequently do secondary school teachers in Amman city (Jordan) use video as a tool for teaching?

It was found that most of these teachers, particularly female, those who teach both Grade 11 and 12 and those in public schools, used three of their personal mobile devices: smartphones, laptops, and desktop computers. In relation to the frequency of use, and it was found that the teachers mostly used VT in the morning classes for teaching and rarely used videos on a daily basis.

Cross-tabulation of the results (Chi-squared test) showed that there is a statistically significant relationship between the number of videos used in an academic year and the frequency of the video usage.

This paper may potentially have profound impact on teaching practice as it is a baseline study that could help researchers build on the current results. The present study could improve the effective use of VT in the Jordanian education sector by enhancing the understanding of how and the extent of VT utilization in current teaching practices.

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## Asynchronous Distance Learning and Blended Learning in terms of Learner Autonomy, Motivation and Academic Success

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### ABSTRACT

This study aims to compare asynchronous distance learning and blended learning in a context in which English is taught as a foreign language; the focal points of the comparison are learner autonomy, motivation and academic success. In this context, asynchronous distance learning refers to an English learning process provided through online videos and course materials; the learners and the instructor are separate both in terms of place and time. Blended learning, on the other hand, refers to an English learning process which combines face-to-face and asynchronous distance learning environments. 145 freshmen studying at a state university in Turkey participated in the study. An experimental and a control group were formed on a voluntary basis. The control group consisted of 114 students and they were taught English only via asynchronous distance learning. However, the experimental group – comprised of 31 students – were included in a face-to-face learning process in addition to being a part of an asynchronous distance learning. For the academic success levels of the students, two grammar tests were used. Additionally, a questionnaire was used in order to reveal participants' motivation and autonomy scores. The quantitative findings of the current study revealed that the blended learning students had higher learner autonomy, motivation and academic success levels than the asynchronous distance learning students.

**Keywords:** Distance learning, blended learning, learner autonomy, motivation, academic success, English as a Foreign Language (EFL)

### 1. INTRODUCTION

Teaching English as a foreign language (TEFL) has maintained its significance for years. The way foreign languages are taught has evolved greatly when compared with the past. New developments are constantly applied to foreign language teaching to reach desired pedagogical goals. Using technology is one of the means for realizing an effective language teaching process. The benefits of technology for foreign language teaching cannot be ignored and its role has gained more and more importance as the technology has improved. Computers, CD-ROMs, hard disks, and printers are some of the fundamental instruments that are used for educational purposes today. Computers are (and have often been) at the centre of the forms of technology used in language teaching (Fox, 1999, p. 355).

Distance education (DE), which is implemented through technology, emerged as a result of the need for providing access to teaching for those who were unable to receive face-to-face instruction (Beldarrain, 2006). It has been defined by numerous researchers during its history. Perraton (1988) defines it as “the separation of teacher and learner in space and/or time” (cited in Sherry, 1995). Moore (1990) defines DE as all of the preparations done to provide instruction through technology to the people who are included in planned learning in a place or time different from that of the instructor(s) (cited in Moore et al., 2011). The definition of Simonson (2009) has been accepted widely; he defines DE as “institution-based, formal education where the learning group is separated, and where interaction telecommunications systems are used to connect learners, resources and instructors” (Simonson and Seepersaud, 2018; p. 1.).

Distance education can be applied in two ways: synchronous or asynchronous. In a synchronous distance education environment, there is the separation of learners and teacher only in terms of place, not time; technological tools are used for the instruction and communication. In asynchronous distance education, however, teacher and learners are separate both in terms of place and time (Beldarrain, 2006; Carswell & Venkatesh, 2002; Dede, 1996; İşman, 2011; King, Young, Drivere-Richmond & Schrader, 2001; Schlosser & Simonson, 2006; Moller, 1998).

Additionally, if the term distance education is used, there should be an institutional plan and organization in terms of learning and teaching because the term education is used to define a relationship between learner and teacher (Moore and Kearsley, 2012, p. 2). On the other hand, if the issue is to put emphasis on what happens from the point of learners who interact with a teacher at a distance, the term distance learning (DL) is used (Moore and Kearsley, 2012, p. 7). In the current context, the term ‘asynchronous distance learning’ is used as its main points (autonomy, motivation and academic success) are evaluated in terms of the learners.

Blended learning (BL) is another way of using technology for foreign language instruction. As cited in Procter (2003), it is defined by Smith (2001) as “a method of educating at a distance that uses technology (high-tech, such as television and the Internet or low-tech, such as voice mail or conference calls) combined with traditional (or, stand-up) education or training”. According to Smith’s definition, the basic difference between DL and BL seems to be the existence of traditional/face-to-face education in the BL process. As stated above, DL and BL are applied in different ways. In the current context, asynchronous distance learning (ADL) refers to an asynchronous way of distance learning in which the place and time of receiving English education depend totally on learners’ choice, and BL is used for combining face-to-face instruction and asynchronous distance learning. Technology is used both in and outside the classroom for supporting face-to-face instruction in a BL environment of the current context.

This study aims to compare asynchronous distance learning and blended learning for English education; the focal points compared in the current study are learner autonomy, motivation and academic success.

### 1.1. Background of the Study

The current study was conducted at a state university in Turkey and at that University, English classes were started via ADL in the 2014-2015 academic year for the freshman students; but the students of Medicine, Dentistry, Law faculties and vocational English courses were taught in a face-to-face manner in a traditional classroom environment without an ADL process. The Engineering, Veterinary, and Education Faculties (excluding the Foreign Language Teaching Department), as well as the Vocational Schools of Higher Education, were included in the ADL process; they followed English subjects out of the classroom with an asynchronous system that included all of the lecturing videos, presentations and exercises. The exams, however, were implemented in a classroom environment. The University’s Distance Education Centre is responsible for running all ADL processes, but all of the lecturing videos and study materials are prepared by the instructors of the School of Foreign Languages. Before the academic year starts, the instructors are given duties such as recording videos for English subjects, and preparing lecturing presentations and additional study materials. After all of the preparations have been completed, they are uploaded to the online Distance Education System of the University. At the beginning of the term, the instructors have a face-to-face meeting with the students and inform them about the ADL process that will take place. They also give their contact details to the students in case they’re needed. After that, the students are in charge of their own learning process. They are expected to watch lecturing videos and do the exercises placed on the web page. Generally, there is not much interaction between the instructor and students during the academic term. The students log in to the system in order to watch the lecturing videos and download the study materials. To watch the lecturing videos and study the materials, the students log in to the related page without a username or password. As a result, it is not possible for the instructors to check students’ attendance. Additionally, as can be understood from the ADL process mentioned above, the instructor-involvement is not at the desired or adequate level for the current context.

On the other hand, whereas the system is based online, the students can download the videos and study materials and use them in an off-line manner. The freshmen of these faculties must take both a mid-term and a final exam to pass the course. Their final exam score has to be at least 60 and the mean of the two exams (40% of the mid-term and 60% of the final) has to be 60 or over to be able to pass the course. The students are taught English via ADL, but they have the exams on paper and the assessment is done by the responsible instructor(s) of each faculty.

### 1.2. Significance of the Study

This study aims to compare asynchronous distance learning and blended learning in terms of EFL and the main points of the comparison are learner autonomy, motivation and academic success in teaching English. The first focal point of the study is learner autonomy. Both ADL and BL are comprised (either partly or completely) of aspects of learning without a traditional teacher model. As a consequence, the learners need to direct their own learning; how this autonomy is directed by the related learning groups is the first step of comparison. Additionally, the role of learners’ motivation with regard to foreign language learning cannot be ignored, because motivation is seen as the main determinant of foreign language achievement (Dörnyei, 1994). The third point of the comparison this study aims to compare relates to ADL and BL in terms of academic success. Naturally, the reason of applying

new methods of language teaching is generally to increase learners' achievement. The learners' academic success may be seen as a yardstick for the evaluation of the teaching programme.

At the University in question, ADL has been implemented as an alternative way of teaching English to the freshman students due to problems concerning face-to-face instruction (such as overcrowded classrooms, mandatory attendance of English classes, and instructors' trying to catch up on the curriculum in overcrowded classrooms). When new methods are applied, the educators need to know to what extent the method used is effective for foreign language learning and teaching. Before implementing ADL for teaching English at the related university, Revolutionary History and Kemalism and Turkish Philology classes were taught through ADL for the freshmen. But, after one year of implementation, the authorities returned to face-to-face instruction as ADL was thought to be ineffective for those classes. This study is significant due to its scientific basis, which allowed us to assess the effectiveness of ADL for teaching English by comparing ADL with an alternative, i.e. BL. It is also significant in how it includes all these aspects in a single study, it being the first study to compare ADL and BL in terms of learner autonomy, motivation and academic success in teaching English.

On the other hand, English is a compulsory course for the freshmen included in the current study (which they must take in addition to their majors); as such, they are sometimes not willing enough to have English classes and their unwillingness also affects their autonomy, which in turn refers to how they direct their own learning process in ADL (in the current context). Unfortunately, there is not a system which provides instructors with the opportunity to check students' participation in the ADL process. As can be understood from the 'Background of the Study', the instructor-involvement, interaction between instructor and students, and interaction among the students themselves were at the minimum level during the implemented ADL process. When the models of ADL in the literature are investigated, it is seen that even though the instructor and the learner are separate in terms of both place and time, the interaction may be provided through e-mails, forums, web pages or different kinds of technologies (Carswell and Venkatesh, 2002).

So, in a general sense, the results of the current study may be relatable to the involvement of the instructors in an asynchronous distance learning process and may also be enlightening in terms of using ADL and BL in teaching English both around the world and in a narrower sense, i.e. in Turkey and at the University where the current study was conducted. Additionally, the current study is the first one which compares ADL and BL in terms of three aspects (learner autonomy, motivation and academic success) in a single study in teaching English.

## 2. LITERATURE REVIEW

Different results were revealed by different research studies conducted in terms of learner autonomy, motivation and academic success for distance and blended learning environments; however, there were no studies which compared (A)DL and BL in terms of their related aspects when teaching English. Additionally, in previous research studies, the virtual or blended learning environments were generally compared with the face to face learning environments, or blended or distance learning environments were taken into consideration on their own. So, the studies which may be related to distance learning and blended in terms of the focal points of the current study (either related to English or other majors) were considered in this regard.

Wong et al. (2020) compared BL with conventional learning in terms of learner autonomy, motivation and academic success in teaching English through short stories. 116 secondary school students participated and they were divided into two groups. The groups were compared in terms of the three aforementioned aspects by using the t-test. The results revealed that there was no significant difference between the two groups in terms of academic success; the BL group, however, was better in terms of learner autonomy and motivation.

A different study conducted by Qureshi, Morton and Antosz (2002) compared distance education students and on-campus students in terms of motivation. 174 students (DE = 79, On-campus = 95) were included in the study. A questionnaire was implemented for collecting data. The results of the quantitative analysis showed that DE students were less motivated than on-campus students.

Altunay (2013) investigated whether the EFL learners of the Turkish Open Education System had autonomous behaviours when learning English. The participants were 103 Anadolu University Open Education Faculty students who had the opportunity to take non-obligatory synchronous courses. An online questionnaire was used to collect data from the participants. The aim was to identify the activities which were performed or not performed by the distance EFL learners. The activities were seen as the indicator of learner autonomy. As they were not among the obligatory activities, the choice of their completion depended on learners. The results of the quantitative analysis of questionnaires showed that most of the participants did not have autonomous behaviours. They did not prefer receiving English education at a distance although they were taught by means of distance education.

Gebara (2010) compared the effectiveness of ADAPT (Active Discovery and Participation through Technology) and asynchronous distance learning in terms of academic success. ADAPT is a blended instructional model which combines computer-mediated instruction with the important features of face-to-face instruction (Tuckman, 2002). 103 undergraduate students participated in the study. 60 of them were placed in the blended learning group and 43 students were in a distance learning group. The decision to choose the distance learning group or the blended learning group was left to the participants. This made it possible for the participants to select a group without the interference of the researcher or the instructor. The research was done in relation to a 'Learning and Motivation' course. The course content, materials and required assignments were the same for both groups, as were the instructional and assessment learning activities. They were also presented entirely online. In both learning environments, the content was presented, practised and assessed in an online environment. The students in the blended learning group completed the curriculum in a campus-based computer laboratory including essential face-to-face instruction elements, such as having an instructor and a textbook, while the students in the distance learning group were instructed in an asynchronous way. The data related to the participants' profiles and scores were gathered from the records of the university and course and analysed to compare both groups. As a result, it was seen that there was not a significant difference between the blended learning group and distance learning group in terms of grades.

Bitlis (2011) conducted a study to explore the relationship between a blended learning environment and learner autonomy. 36 students from the tertiary level preparatory classes of a private university in Turkey were included in the study. The participants were given courses related to the four main language skills (i.e. reading, writing, speaking, and listening), grammar, and vocabulary; there was also an online system integrated into the traditional face-to-face instruction in accordance with the instructed course book. The online system included audio files, practice sheets and exercises related to the above language skills. The content provided in face-to-face instruction was supported with online discussions and exercises. The students were asked to bring their personal computers to the classroom, and they were allowed one hour to complete their online assignments in the classroom with the guidance of the instructors. These materials provided within the online system could be also used outside of the classroom. In order to collect data, a questionnaire, interviews, researcher's classroom observations, and learner logs by which the students could record their reflections and experiences about their learning process were used. According to the data collected, it was seen that nearly all of the students could direct their own learning in terms of determining objectives, selecting materials in accordance with their learning goals, and deciding on what they would learn next; on the other hand, very few of the students needed guidance. The results also revealed that all of the students who participated in the study could evaluate their own learning process and plan their own learning.

### **3. METHODOLOGY**

#### **3.1. Setting**

The current research was conducted at the Civil Engineering, Agricultural Engineering and Veterinary Faculties of a state university in Turkey.

#### **3.2. Participants**

A total of 145 students were the participants of the main study. All of the participants were freshmen of Civil Engineering, Agricultural Engineering, or Veterinary Studies and were taught English as a core class. There was not a big difference between those faculties' university entrance exam scores and all of those faculties accepted students with the same score type. 114 of the 145 participants were in an ADL group who received English education through a totally asynchronous distance learning system. The other 31 were in a BL group which included both ADL processes and face-to-face instruction. The students of the BL group were chosen randomly and on a voluntary basis; they volunteered to take the time to have face-to-face English classes. The same curriculum was taught to both groups over 15 weeks.

#### **3.3. Instruments**

##### **3.3.1. A package with a CD, course map and hard copies of worksheets**

As explained previously, the ADL process is carried out by means of an online system at the university in question. For this study, some changes were made to the ADL process. Before the data collection process, a CD including the videos of a 15-week grammar course was prepared by the researcher; this is because the English curriculum for most of the freshman students at the university is based on grammar and the videos uploaded to the Distance Education System for the freshmen are also grammar-based. The subjects were at a beginner's level because an exemption exam was implemented before the academic year started. As a result, the students who were unsuccessful in that exam had to take English as a mandatory course and the successful ones became exempt from English. All of the participants were provided with a package including the CD of videos for 15 weeks, a course map showing the contents of the videos for each week, and a file of worksheets with an answer key. The reasons



for preparing the packages are as follows: as stated, an Internet connection is needed to watch the videos on the Distance Education Centre's online page. During the academic year, there may be some limitations for the students who wish to watch the videos – such as not having the opportunity to use the Internet – so the students were provided with the CD to ensure equality of opportunity with regard to following the determined subjects. All of the videos on the CD were recorded (with Camtasia) by one of the researchers to avoid the 'teacher factor' effect, just as the videos placed on the Distance Education Centre's system had been recorded by different instructors. The students were also able to download the videos to their smart phones. The subjects were taught in Turkish on the CDs because of the level of the students.

The course map was a paper showing each week's subject and related video; this enabled the participants to follow the videos, subjects and exercises. The exercises were the same as the ones placed on the University's online Distance Education System. They were printed out and copied for all 145 of the participants by the researcher. At the beginning of the term, a package containing a CD, course map and 15 weeks' worth of exercises (with an answer key) was delivered to all of the participants.

For the data collection, a questionnaire and two grammar tests were used as the instruments.

### 3.3.2. Questionnaire

A questionnaire was used to collect data for revealing the levels of ADL and BL students in terms of motivation and learner autonomy. The questionnaire included three parts. The questions stated in the first part aimed to reveal participants' profiles; in the second part there were 19 items about learners' motivation; and in the third part, there were 14 items related to learners' autonomy. The motivation items stated in the second part were adapted from Güneş (2011). The 14-item learner autonomy part was adapted from Bitlis (2011) after the permission process. Except for the actual questions, there were 33 items in the questionnaire in total. The reason for not choosing a very long questionnaire was related to implementing the questionnaire on the students' final exam day; this was because it was the only occasion on which all of the students were present (as they were taught through ADL).

Before implementing the questionnaire, a pilot study had been realized with 142 participants who would not be included in the main study. The reliability analyses for the second and third parts were realized. Cronbach's alpha value for the part concerning motivation was calculated to be 0,883; this means the instrument was highly reliable. Hotelling T2 was used in order to clarify the statistical difference between the items' means. The p value was calculated as .000 which was lower than the significance level (.05); this revealed a statistical significance between items' means with regard to motivation. Cronbach's alpha value for the learner autonomy segment of the questionnaire was calculated to be 0,850; again, this means the instrument was highly reliable. According to Hotelling T2, the calculated p value for this part was .000 which refers to a statistical significance between items' means. After the reliability analyses, explanatory factor analysis was also implemented. In order to clarify whether the data was appropriate for factor analysis or not, the Kaiser-Meyer-Olkin (KMO) Test was implemented. The KMO Test value was 0,836 and the calculated p value was .000. These results revealed the appropriateness of the data set for the factor analysis. As the final step of the factor analysis, a Rotated Component Matrix was implemented. The rotation aimed to obtain interpretable and meaningful factors. Before the factor analysis, the questionnaire consisted of 34 items. As a result of the Rotated Component Matrix, one of the items was omitted as it was deemed unrelated. So, the questionnaire implemented contained 33 items (as well as the initial questions). Moreover, the items in the learner autonomy and motivation parts created factors within themselves; so, the analysis was done in terms of two factors (learner autonomy and motivation). After creating the final form, the questionnaire was implemented for the main study described here.

### 3.3.3. Tests

The students carried out two different tests related to grammar in the form of mid-term and final exams. Both of the tests (prepared by the researcher) included 10 multiple choice questions, 5 questions on sentence order, 5 questions on correcting mistakes and 5 cloze test questions. Three experts checked the tests in terms of validity, grammar and punctuation before they were implemented.

### 3.4. Procedure

Before the academic year started, required permissions were obtained from the Civil Engineering, Agricultural Engineering and Veterinary Faculties. The freshmen of those faculties were divided into two groups: a control group and an experimental group. The control group received the course map, a CD of videos, and a file of related exercises (with an accompanying answer key) and took on the responsibility of following the subjects. The students of this group were provided with the contact details of the instructor, such as their phone number and email address (in case they were needed).



The experimental group was included in the BL process; in this context BL refers to including students into the face to face instruction and ADL processes together. This group received the same materials in addition to being exposed one weekly hour-long face-to-face instruction. In these class hours, the subjects were taught by the instructor and the students had the opportunity to ask questions about the videos, interact with their peers and instructor, and practise their language skills. In the middle of the academic year, after 8 weeks of subjects had been taught, both groups had a mid-term exam and at the end of the academic term, they had a final test including questions related to all 15 weeks of course material. The questionnaire was completed by the participants on the day of the final exam, otherwise it would have been difficult to reach all of the students given the ADL process.

#### 4. DATA ANALYSIS

For the analysis, data obtained from the questionnaires and tests were analysed in a quantitative way by means of SPSS. Before answering the research question — which, to remind ourselves, was ‘Is there a statistically significant difference between asynchronous distance learning and blended learning in terms of learner autonomy, motivation and academic success in teaching English?’ — a Kolmogorov Smirnov Test was implemented to check the normality of the data. As a result, parametric tests were implemented as skewness and kurtosis values were between  $\pm 1$ . Mertler and Vannatta (2005) state that data can be considered normally distributed if the skewness and kurtosis values are between  $\pm 1$ , because the values do not show an extreme deviation in this situation (Mertler and Vannatta, 2005).

##### 4.1. Is there a significant difference between ADL students and BL students in terms of learner autonomy, motivation and academic success in teaching English?

In order to compare the ADL students and BL students with respect to learner autonomy and motivation, the results obtained through the quantitative analysis of questionnaires were used. Additionally, the groups were compared in their academic success by using their scores obtained through the implementation of the two aforementioned tests. In terms of a statistical analysis, an Independent Sample T-test was implemented to see if the two groups differed significantly in learner autonomy, motivation, and academic success. The overall results are stated in Table 1.

Table 1. *The Results of the Independent Sample T-test: ADL or BL*

	ADL			BL			t	P
	Count	Mean	Standard Deviation	Count	Mean	Standard Deviation		
<b>Learner Autonomy</b>	114	22.89	8.50	31	30.45	7.38	-4.510	0.001
<b>Motivation</b>	114	70.78	11.40	31	75.68	11.40	-2.121	0.036
<b>Academic Success</b>	114	41.84	13.88	31	63.42	14.46	-7.600	0.001

According to the results depicted in Table 1, a significant difference was found in terms of all the variables: learner autonomy, motivation and academic success ( $p < 0.05$ ), which means that the BL group performed better than the ADL group in relation to the mentioned variables. The ADL and BL groups were first compared in terms of learner autonomy. The results of the Independent Sample T-test revealed that the average of the BL students' autonomy scores was higher ( $=30.45$ ), than that of the ADL students ( $=22.89$ ).

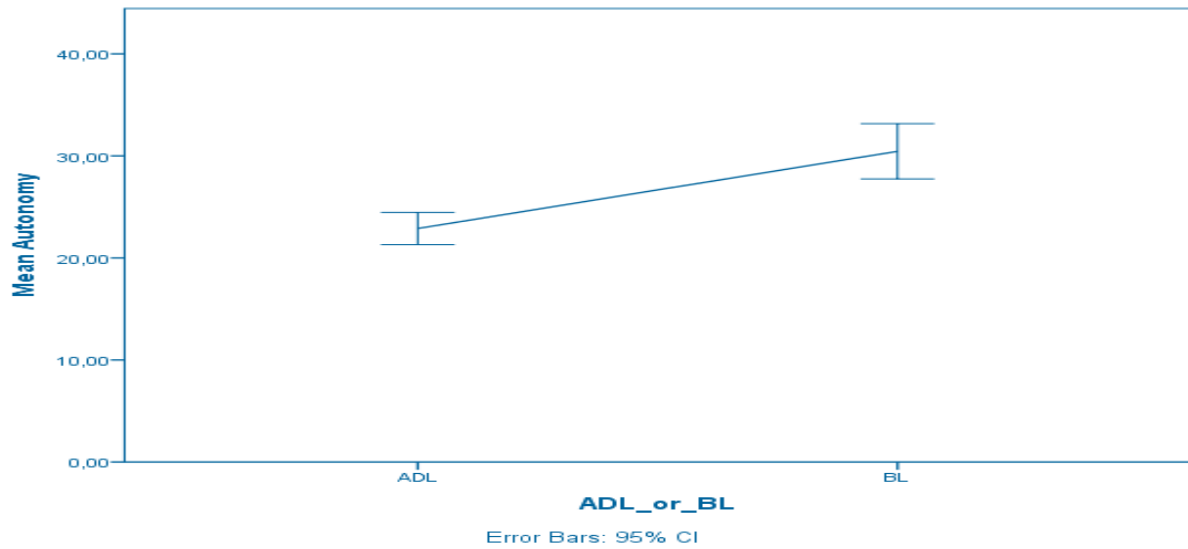


Figure 1. ADL and BL groups in terms of learner autonomy

This means that the BL group participants were more autonomous than the ADL students (as demonstrated in *Figure 1*). The significance value was .001 ( $p < 0.05$ ); therefore, the result is statistically significant.

Similarly, the mean motivation score of the students in the BL group was higher ( $=75.68$ ) than that of the students in the ADL group ( $=70.78$ ). This result was also statistically significant in that the p value was found to be .036, meaning that the students in the BL group were more motivated than the students of ADL group (see *Figure 2*).

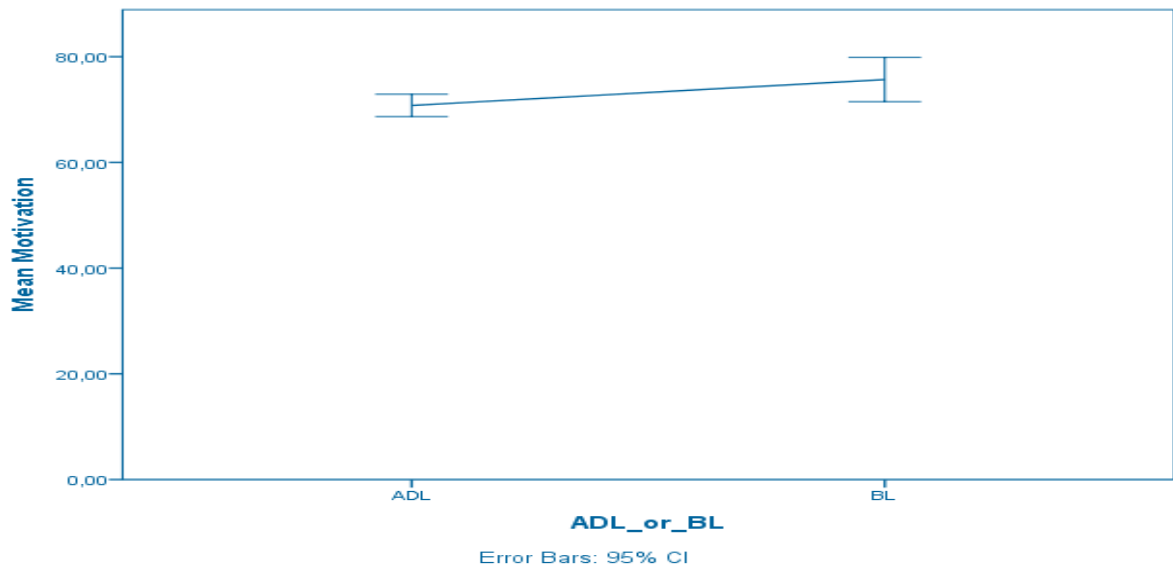


Figure 2. ADL and BL groups in terms of motivation

In the final stage of the comparison, the groups were examined in terms of academic success. In the comparison, a single mean score which was obtained by adding 40% of Test 1 and 60% of Test 2 was used (see *Figure 3*).

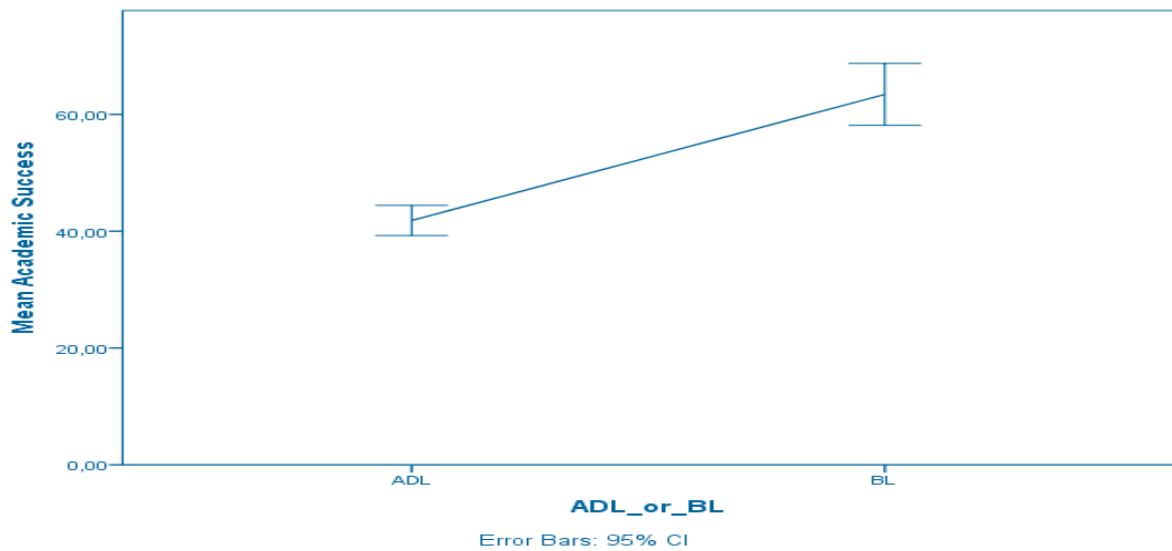


Figure 3. ADL and BL groups in terms of academic success

As seen in *Figure 3*, the BL students' academic success was higher than the ADL students' academic success. Additionally, *Figure 4* presents the mean scores of Test 1 and Test 2 for both groups. While it was 41.84 out of 100 points for the ADL students, the mean score of the BL students was 63,42 out of 100. It was seen that the mean score of the BL group was over 60, in other words the passing grade for those students (*Figure 4*).



Figure 4. Mean scores of ADL and BL groups for academic success

To sum up the comparison of ADL and BL groups in terms of learner autonomy, motivation and academic success, *Figure 5* is presented below. According to the bar chart below, the students in the BL group had higher scores than the ADL students in learner autonomy, motivation, and academic success variables.

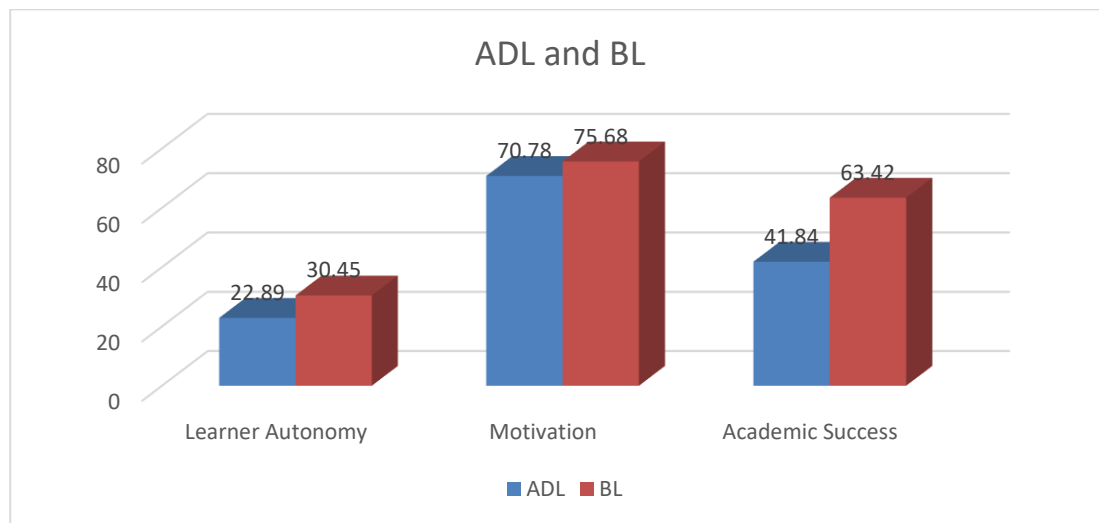


Figure 5. Comparison of ADL and BL groups in terms of learner autonomy, motivation and academic success.

## 5. CONCLUSION AND DISCUSSION

The present study aimed to reveal whether there is a significant difference between the ADL students and the BL students in terms of learner autonomy, motivation, and academic success. Considering the questionnaire, there were 14 items for revealing participants' autonomy levels with a five-point Likert-scale (i.e., never, sometimes, no idea, often, and always). When 'always' is marked for all the given items, the maximum autonomy score is 70; when 'often' is chosen for all of the items, the autonomy score found is 56 (which also refers to participants presenting autonomous behaviours). When the ADL students were considered, only 28.1% were included in an asynchronous distance learning process in a frequent way. This means that only a small rate of the ADL students showed expected autonomous behaviours. The mean autonomy score for the ADL students was found to be 22.89 out of 70. On the other hand, the results of the current study revealed that 71% of the BL students fulfilled their responsibilities for supporting their classroom learning with ADL in a frequent manner. The mean autonomy score for BL students was 30.45. This shows that they followed the school subjects and directed their own learning out of the classroom as well. As for the comparison of ADL and BL groups' autonomy scores, it was seen that the ADL group's autonomy mean was 22.89, whereas the mean autonomy score was found to be 30.45 for the BL students. As stated previously, the learner autonomy items in the questionnaire were about how the students led their own English learning. The mean autonomy scores for both groups reported that the BL group had a higher rate than the ADL group. This shows that the BL students were more interested in following lectures on their own, on evaluating their learning process and understanding its strengths and weaknesses. Differently from the ADL students, the BL students had the opportunity to attend face-to-face classes, and the face-to-face part of their learning process became helpful to keep their connection with English. As a result, they felt more willing to follow the lectures out of the classroom and ask questions about the subjects they did not understand during their studies. The results of the current study in terms of learner autonomy revealed similar results with Bitlis (2011) and Wong (2020). Blended learning environments had positive effects on students' autonomy in both of those studies. Altunay's (2013) findings also supported the results of the current study related to the autonomy of ADL students. Altunay (2013) found that most of distance learning students who participated in the study were not autonomous in terms of directing their own learning at a distance. When Altunay's study is investigated deeply, it is seen that it was implemented to the students for whom English was a compulsory class like for the participants of the current study. As indicated previously, the participants of the current study were not the students of an English-related faculty. This might affect their autonomy level in a negative way. Additionally, in the current study, the instructor-involvement was not at a desired level; it is likely the students did not feel the benefit of the existence of an instructor who would potentially play an important role for guiding learners in the ADL process.

Additionally, when the ADL and BL students were compared in terms of their motivation – which, in the current context, refers to attitudinal behaviours and opinions – it was seen that the mean score of the ADL students' motivation was 70.78. The mean was 75.68 out of 95 for the BL students. Even though the results revealed that the BL students were more motivated than the ADL students, both of the groups could be considered motivated to learn English as a foreign language. The BL students were included in both face-to-face instruction and ADL processes; they had the opportunity to be exposed to English both in and out of the classroom. This might have had a positive effect on their motivation for learning English. The study of Qureshi et al. (2002) reached a similar

result in terms of motivation. They found that students educated at a distance are less motivated than on-campus students. Wong et al. (2020) revealed that BL processes have better results than conventional learning in terms of motivation. On the other hand, Cavanaugh et al. (2004) revealed that there was no significant difference between on-campus students and DL students in terms of motivation. As can be understood from the definition of Thronbury (2006), motivation is accepted as an important aspect of the learning process, declaring that it is “what drives learners to achieve a goal and is a key factor in determining success or failure in language learning.” (p. 137). The importance of motivation should also be considered in virtual learning environments where the students need to control their educational process on their own. Both the current study and some other studies (Quershi et al., 2002; Wong et al., 2020) revealed that BL environments affect students’ motivation in a positive way. By means of the BL environments, the connection between students and their respective class is kept both in and out of the classroom.

As for the academic success comparison of the ADL and BL students, two tests were implemented in the form of mid-term and final exams. 40% of the Test 1 score (mid-term exam) and 60% of the Test 2 score (final exam) were added to give a mean score; 60 was considered as the criterion or benchmark for success. The results of the quantitative analysis obtained through SPSS showed that 48.4% of the BL students were successful, while this rate was just 15.8% for the ADL students. The mean score in terms of Test 1 and Test 2 was calculated at 41.84 out of 100 for the ADL students, whereas it was 63.42 for the BL students. The results revealed that the BL students performed better than the ADL students. In terms of the groups’ learning processes, it should be stated that the ADL students were not included in face-to-face instruction and when their answers to autonomy items in the questionnaire were checked, it was discovered that most of the ADL students had not watched the videos regularly. Indeed, some of them had not even watched them. It was seen that the average of the BL group was over 60 which was the passing grade for the students. As stated before, 51.6% of the BL students were deemed ‘unsuccessful’; this refers to 16 of the 31 students in the BL group. However, it should not be ignored that all of the students who had a mean score of two tests below 60 were declared unsuccessful even if they had a mean score of 59, and the ones who were deemed successful had a mean score of over 60, no matter how much higher it was than the determined criteria (60). When the successful students in the BL group were examined, it was calculated that some of them even had a mean score of 80. The results revealed that the BL students who were included both in the ADL process and face-to-face instruction were more successful than those ADL students who were included only in the ADL process. The current study has presented some common points with some other studies, such as Al-Qahtani and Higgins (2013) and Doderio et al. (2003). Al-Qahtani and Higgins (2013) found that BL students were better than e-learning students in terms of academic success. As a result of 45 empirical studies, Slomanson (2014) reached a similar result in terms of student outcome; it was concluded that BL was better than purely online instruction. Doderio et al. (2003) conducted a similar study which compared a virtual learning environment with blended learning environment in pass level. In the study, blended learning students performed better academically. On the other hand, the related result of the current study is not consistent with the result of Gebara’s study (2010). Gebara (2010) found that BL students and ADL students were not different in terms of academic success.

As seen, most of the research studies revealed better results for BL students when compared with those undertaking (A)DL. In a BL environment, the students may look to the advantages of virtual and face to face learning environments together; they receive the guidance and feedback of their instructor(s) which might affect their autonomy, motivation and achievement in a positive way.

## 6. PEDAGOGICAL IMPLICATIONS

The results of the quantitative analysis indicated that the BL students’ autonomy, motivation and academic success levels were higher than those of the ADL students. At the beginning of the research study, the students who were from similar English studying backgrounds and had similar university entrance exam scores were separated into the ADL and BL groups. Both groups had the same curriculum over the same time span and their success was assessed by means of the same exams in the same environment. The BL students’ having better results in terms of all of the related aspects has drawn the attention towards the BL process. The differences between ADL and BL processes were face-to-face instruction and the interaction which takes place in a BL environment. This reveals the importance of face-to-face instruction and communication in technology-enhanced language education. It can be inferred from the results of the current study that in a distance learning process, especially in asynchronous distance learning, the students can be affected negatively in their autonomy, motivation, and academic success as a result of the absence of a face-to-face environment or instructor-involvement in such a context. In the current context, the ADL students were given too many responsibilities in order to manage their learning process of English, and they were not included in a face-to-face learning/teaching environment. The results showed that the ADL students were unable to steer their language learning process on their own and without a face-to-face learning environment or instructor guidance. They could not succeed at learning English. Therefore, the students who are taught foreign language at a distance should not be left alone with all of the foreign language learning



responsibilities as their motivation and willingness to follow the content of the English courses out of the classroom in an asynchronous distance learning environment may be affected negatively because of the absence of face-to-face contact or instructor-involvement in their learning processes.

Indeed, BL students' having better results in terms of learner autonomy, motivation and academic success draws attention to the necessity of involvement or continuous guidance of an instructor, either in a classroom or a virtual environment. This may be what makes BL a more effective way of teaching. When the literature related to asynchronous distance learning is analysed, it is seen that there is much more instructor-involvement in an ADL process; this may be through any kind of technology (Wong et al., 2020). A much higher level of instructor-involvement may bring more interaction between the lecturer and students.

The research studies conducted around the world reveal that distance education processes (synchronous or asynchronous) may be as effective as face-to-face instruction (Moore & Thompson, 1990); so, it is important to be aware of the features and qualifications of an effective distance education process. In terms of the current context, while implementing ADL, there seems to be some deficiencies which may affect the results. The minimum level of instructor-involvement in the ADL process may result in: leaving students alone with all of the responsibilities of the learning process without adequate guidance; only assessing academic success with two exams or one implemented at the end of the term (with a minimum level of interaction during the term); and not being able to check whether the students watch the videos and do the exercises of the related videos on a weekly basis. All these deficiencies resulting from the ADL process might leave it behind the BL process in its general performance and efficiency.

The effect of motivation on academic success and learner autonomy may be considered to have better results in terms of these aspects (Abdurrahman and Garba, 2014; Hashemian and Soureshjani, 2011; Spratt, Humphreys and Chan, 2002). Keller's instructional model, known as ARCS (Attention, Relevance, Confidence, and Satisfaction), may be helpful to keep learners' motivation for active learning (Keller, 2000; Song and Keller, 1999). Considering this model, additional components may be added to the ADL process; indeed, the positive effect of this model has been revealed in terms of teaching at a distance (Malik, 2014). To keep students' attention alive, more instructor-involvement and more interaction both between instructor and students and amongst students themselves should be provided; this may be achieved through discussion posts, e-mails, and frequent announcements done by the instructor. As stated previously, English is a compulsory class for both groups of this study. The content of mostly grammar-based videos and materials existing in the ADL process may be enriched related to the major of the students for a higher level of both attention and relevance. In the current context, the academic success was assessed by means of mid-term and final exams for both groups; in order to show the students that their efforts work and they can accomplish the objectives, they may be actively included in the learning process by different assignments or activities, and process-based assessment tools may be used. Attending the ADL process in a more motivated manner may take students' autonomy and academic success a step further.

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## DAD: Some Historical-Epistemological Considerations on its Judicious Use

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### ABSTRACT

This paper deals with the pros and cons in relation to the teaching strategy imposed specifically in Italy by the COVID-19 pandemic, which has involved and continues to involve significant changes in the setting in which students and teachers interact. The approach is multidisciplinary, in that the perspective advanced is both historical and epistemological in nature. Particular attention is paid to the possibility of erecting an argumentative framework within the operational educational context as it takes place in the temporal and spatial dimensions of the school. Suggestions are provided regarding the set of “tools” useful for the constructive and creative management of didactic-pedagogical modalities inherent to *DAD* (acronym for the Italian “Didattica A Distanza”, i.e., distance/remote teaching and learning), including combining the quantitative facets with the necessary qualitative facets, which are expressed in the category of the “bello” (beautiful), thus introducing the aesthetic value. Therefore, the concept of “benessere” (well-being) and that of “malessere” (malaise) are associated with the concept of “bellesere” (beautiful-being).

**KEYWORDS:** *DAD* (“Didattica A Distanza”), distance/remote teaching and learning, COVID-19, education, teacher training

[Hereinafter, the translations from the original texts are made by the authors of this paper.]

### INTRODUCTION

This contribution should be seen as a cultural journey into the territory, still partly unexplored, of *DAD* (acronym for the Italian “Didattica A Distanza”, i.e., distance/remote teaching/learning) and the effects (some positive, some negative) that this pedagogic strategy has in various educational contexts. A journey that involves a series of short stops at various “stations”.

The first station (“A bit of history... or rather, there is not much new under the sun”) concerns a mainly historical reading, provocatively underlining how, most of the time, things tend to repeat themselves in human affairs. Already in the second half of the 17th century, in fact, there was talk of “small living animals, invisible to the naked eye” that spread contagious diseases (Nuland, 2004). And, later on, Ignác Semmelweis - around the middle of the 19th century - discovered how the simple act of washing one’s hands carefully reduced the number of deaths from postpartum infections that struck young mothers in the hospitals of Vienna. From that far-off time, we come to our days, specifically to Italy, when *DAD* (a strategy to defend ourselves from the aggression of that small living animal we have called COVID-19) involves a physical distancing that we hope will not turn into social and emotional distancing. The theme of discrimination on a social basis that the use of new technologies inevitably implies concludes this section.

The second station (“Distance vs. face-to-face teaching/learning”) deals with the relationship between the form and content of distance teaching/learning in comparison with the form and content of place-based education. In both cases, the aspects that most distinguish the two strategies are highlighted, with a view, in any case, to critical-propositional readings that pave the way for new and more articulated ways of defining the student-teacher relationship. This includes cases in which learners might experience difficulties of various kinds and origins, in terms of both learning and behavior. The following is a summary of the main models that characterize the sense and value of teaching in general (according to Galimberti, 2020), whether through distance or face-to-face teaching, while emphasizing the need for teachers, of no matter what degree or grade, to be able to arouse interest and curiosity. In this regard, we recall the suggestion made by Guido Petter (Petter, 1994) that each teacher should always carry a “valigetta delle sorprese” (bag of surprises). Before leaving this station, we propose the approaches suggested by Karl Popper (Popper, 2002) and Lev Vygotskij (Vygotskij, 1981). This last reference to Vygotskij introduces the topic presented and discussed in the third station.

In the third station (“The role of play”), we note, in fact, how difficult it is to “play” in the absence of physicality. For this aspect, the hypothesis is put forward of thinking of the school as if it were a toy, and as such it should respond to three precise characteristics: form, function, and story. The disciplinary connection has been developed in this regard by interacting with the perspectives proposed by the Schools of Design (in particular of the Politecnico di Milano: see Fois, 2017). A special note concerns “ties and strings” that often gag the saying and doing of teachers, who - like it or not - must adhere to well-defined programs that do not always respond adequately to the needs of the variegated world of school. This is especially true now, at a time when the encounter between different cultures and value systems clearly requires new and different strategies of “listening” and action. Scholastic programs and the imposed pace of learning favor quantitative traits to the detriment of the “quality” of the educational system.

The fourth station (“Quality vs. quantity”) proposes a good balance between the quantitative dimension (at the end of the year, the teacher managed to flip through all the pages of the chapters and books in the program) and the qualitative dimension (degree and level of assimilation by the students of the materials transmitted). We then recall the Mozart’s theme identifiable in the opening of *The Marriage of Figaro* (1786), in which Figaro implements “quantitative” strategies (he counts and measures to establish whether the bed will fit in the bedroom assigned to the couple by the Count), while Susanna adopts a qualitative approach (the “beauty” of her hat). From this comes the consideration that music and fairy tales (music itself has a “fairy-tale” quality, with its evocative dimension that favors the abandoning of thought) are to be considered as instruments and “tools” to be kept at hand whenever we feel committed to planning, managing and governing any educational project.

In the fifth and final station (“Conclusions”) we bring things together and summarize the sense of the reasoning we have put forth and developed with regard to *DAD*, with connections and implications. The suggestion is that of committing oneself individually to “discovering” what can be recognized as beautiful, good, useful and interesting in the didactic strategies that necessarily see in distance teaching/learning the main “operational tool” in this era in which the pandemic dominates and prevails. The invitation is to reflect: *DAD*, opportunity or constraint? To posterity the arduous decision.

#### **A BIT OF HISTORY... OR RATHER, THERE IS NOT MUCH NEW UNDER THE SUN**

The Jesuit Athanasius Kirker (1602-1680) had hypothesized, back in 1658, that “small living animals, invisible to the naked eye” spread contagious diseases (Nuland, 2004, p. 41). But this was ignored by physicians in later centuries. Long before Kirker, in 1546, Girolamo Fracastoro of Verona (1478-1553) had written a book entitled *De contagione et contagiosis morbis*, formulating the same hypothesis as Kirker. Two prophets, we could say, were ignored by the entire medical class of the 18th and 19th centuries.

It is worth extending the reflection about the disregarded “prophecies” of Kircher and Fracastoro to our own time, in which the COVID-19 pandemic has imposed and continues to impose on us behavioral changes of considerable importance (see, e.g., Di Martino, 2020; Engelbrecht, Borba, Llinares & Kaiser, 2020; Bakker, Cai & Zenger, 2021; Erduran, 2021). “Contagion” was spoken of then as it is today. So - as always, after all - the past sheds light on the present.

The current spread of the virus and its variants determines psychic, economic and social “diseases”. The perspective suggested by Giovanni Battista Morgagni (1682-1771) in his *De sedibus et causis morborum per anatomen indagatis* (1761), even if in a metaphorical way, is interesting. In this regard, Nuland (2004, p. 45) notes: “If you want to understand the disease, you must identify its location, the place where it originates. Symptoms are, as Morgagni splendidly proclaims, «the screams of the organs that suffer» and must be identified by going back to the specific places where they are produced. ‘*Ubi est morbus?*’ (‘Where is the disease?’) was the question that had to be answered in any case.”

And precisely in this sense we believe that there is nothing new under the sun: then as now this is still the question to which we should try to give an answer.

Ignác Semmelweis (1818-1865) suffered the same fate as Kircher and Fracastoro (see Nuland, 2004). We are in Vienna, and in the obstetrical clinics dozens and dozens of women die immediately after giving birth. Cause: puerperal fever. These are women of the common people. The well-to-do give birth in the safety of their own homes. Semmelweis discovered in 1847 that mortality could be dramatically reduced by careful hand disinfection. But he had a hard time convincing his chief and colleagues, who thought he was being extravagant. Imagine if simply disinfecting hands could solve the dramatic situation. After all, the issue was crystal clear: doctors were assisting women in labor after performing autopsies on women who had died of puerperal fever.

And the infection was still being transmitted. However, official medical “knowledge” (represented by the chief physician) could not acknowledge that a young 29-year-old doctor, who was also a Hungarian in Vienna, had understood that more careful hand disinfection could prevent the death of numerous women. Expelled from the hospital, Semmelweis returned to Hungary, where he died insane. Now a posthumous homage is paid to him: a type of surgical gloves is called precisely “Semmelweis”.

Why this historical evocation? Simple: still today “small living animals, invisible to the naked eye” are causing considerable damage and, still today, washing hands as often as possible constitutes part of individual self-defense procedures.

Now let us get to the point: *DAD* (acronym for the Italian “Didattica A Distanza”, i.e., distance/remote teaching/learning) is among the measures adopted in Italy to contain and limit the spread of the COVID-19 virus (see, e.g., Addimando, Leder & Zudini, 2021). And the technology that makes this possible today simply enhances a form of “social and emotional distancing” which is already historically rooted in the educational strategies. *DAD*, then, does nothing more than “modernize”, and update, the procedures that have characterized and continue to characterize educational styles that, in principle, do not have as their purpose the improvement of the quality of life of pupils and students but the provision of a knowledge set definable in terms of erudition rather than culture. There is a lack of time and space to develop adequate procedures for actively listening to the needs and existential conditions that define the being in the world of each learner. After all, the oral exam is one of the most widespread of educational practices. On closer inspection, however, it is more a police concept than an educational one.

Moreover, we must also keep in mind, for example, that not all students and their families have the appropriate technology (computers) at their disposal and that not all areas have the necessary internet coverage. It is said that those who do not have a PC will be provided with one by the school. Good. But it is also necessary to know how to use it. This is an underhand form of active discrimination.

#### **DISTANCE VS. FACE-TO-FACE TEACHING/LEARNING**

As mentioned above, *DAD* (“Didattica A Distanza”) is one of the measures designed in Italy to circumscribe and limit the spread of the COVID-19 virus. In this regard, the keyword is “distanza” (distance).

Something communicatively relevant, with *DAD*, runs the risk of “breaking”: it is not about the “relationship” in the strict sense of the word; what is missing is rather physicality (see, e.g., Addimando, Leder & Zudini, 2021).

If we share the idea that non-verbal and paraverbal communication plays a more important role than verbal communication (that is, that the “how” is more important than the “what”), it is clear that in *DAD* the communicative process aimed at achieving specific objectives takes on new and different connotations.

Live and in presence, the teacher is in a position to decode and interpret the weak signals transmitted mainly through the non-verbal communication channel. The mediation of technology makes this substantial form of “listening” impossible. But there you have it: that is how it is and we have to imagine a constructive management of the evident and highlighted criticalities, also considering other characteristics of distance teaching/learning that cannot be ignored: the setting changes (for example, the teacher cannot pass between the desks); novel phenomena of “distraction” and interference occur (the grandmother, sitting next to the child, who out of reach of the camera suggests and comments); the direct eye-contact is absent (and this, it should be noted, can be experienced by the shy person in positive terms); roles are exchanged with greater ease: it is the pupils and the students who at times become “masters” of the teacher (“Teacher, you have to turn on the camera, otherwise we won’t see you”). Settings and didactic-pedagogical strategies in general also change in relation to the dynamic and educational characteristics imposed by *DAD*. Which, we should remember, was not and is not an impromptu choice, bizarre, imagined by some enemy of the welfare of the actors who animate the school stage (pupils, students, and teachers). Rather it was imposed by the spread of a virus that has caused and is causing thousands and thousands of deaths. Limiting crowding and opportunities for interpersonal contact has proven to be one of the most important defensive measures. Here then, perhaps, *DAD* could be characterized as an effective strategy in the constructive management of all the critical issues related to learning and behavioral disorders in general. The point-to-point relationship could be particularly suitable, provided that it does not become permanently stabilized, excluding the indispensable forms of socialization.

It is necessary, also in this case, to call on the creative-imaginative abilities of each teacher. Guido Petter’s proposal (Petter, 1994) then acquires a metaphorical value of substance: it is necessary, however, to determine conditions of participation that see curiosity as the basic characteristic. The teacher, writes Petter, should come to



the classroom with a “valigetta delle sorprese” (bag of surprises) in order to surprise and arouse the curiosity of the students of all levels, whether they are children or young adults. And this can also be done from a distance. In this context of *DAD*, a consideration by Umberto Galimberti (Galimberti, 2020) is of particular interest: the meaning and value of didactics depend on the educational intentions of those who practice it. According to Galimberti, different didactic models derive from this:

- “Modello disciplinare” (Disciplinary model)

At the center of the relationship are the needs of the disciplinary knowledge set to be taught with consequent pre-eminence of the program over the expectations and motivations of the students.

- “Modello curriculare” (Curricular model)

The determination of the contents to be transmitted and the relative modalities are implemented within a general, non-directive framework, inasmuch as at the center of the process are the differentiated possibilities and potentialities of the students.

- “Modello attivistico” (Activist model)

The participation and active intervention of students is emphasized and valued, based on the hypothesis that each one (child, teenager or adult) truly learns only when he or she “does” things and “touches” topics. These topics become interesting precisely because everyone can “deal with” them personally, recognizing their value in relation to improving the quality of their lives (their “being in the world”).

- “Modello relazionale” (Relational model)

Interpersonal relationships are preferred over the content to be transmitted, in the belief that affective relationships and a favorable educational context facilitate intellectual acquisition and learning, which is easier when it has been possible to circumscribe and eliminate difficulties and conflicts at the emotional level.

It is reasonable that each teacher, in his or her own educational practice, has in mind each of the models described and that he or she is inspired, from time to time, by one rather than the other, in consideration of the needs that the context advances and proposes.

The question we can therefore ask ourselves is the following: does *DAD* allow for such a procedure, given that what is missing is physicality?

Let us keep in mind Karl Popper’s provocation (Popper, 2002): school exists (and makes sense) because people do not know and they “make mistakes”. If people knew, school would be useless.

Why then “punish” the error? Let us value it instead, identifying it as a basis for development and growth. Let us try to understand what exactly has not been understood and why, so that we can re-explain it with a “slant” more suited to the interlocutor, perhaps through play. In this regard, of particular interest are the observations of Lev Vygotskij (Vygotskij, 1981). Vygotskij’s argument about the theme of children’s play is clearly integrated in the general psychological theory that characterizes Cultural-historical psychology, of which he is considered the founder (see Mecacci, 2019). There are two interesting concepts pertinent to the subject of this contribution: the notion of “zone of proximal development” (that is, the place and time where it is possible to verify what the child can do more and better when he or she is helped by the adult, whether teacher or parent) and that of “stimulus-means” (a stimulus created “artificially” by the human being - child or adult - to ensure that the goals he or she aims to achieve are reached). An example, in this regard, is the knot on the handkerchief, to help remember something that must be done.

The respect for a set of rules (better if shared) is also proposed as an element of teaching which is both active and oriented to form citizens who will be free and capable of thinking because and although they have learned to respect the basic rules of civil coexistence (see Pedrabissi, 2010).

## THE ROLE OF PLAY

But how do we “play” in the absence of essential physicality? Moreover, the variable “time” assumes special importance (in general, we don’t have time to do all the things we would like to do). “Time passes”, we are inclined to say, forgetting that “it is we who pass”, and not time itself.

Let us imagine then for just a moment that the school is designed and built as a toy should be designed and built. Luca Fois (Fois, 2017) highlights the three characteristics that a toy should possess: form, function, and story. From our point of view, it would be good to think of the school as if it were a toy (metaphors sometimes serve to clarify concepts otherwise difficult to understand).

As far as form is concerned, the “toy-school” should be harmonious, balanced, intriguing, simple, essential, recognizable, beautiful.

As far as function is concerned, it should stimulate creativity, produce interest, be fun, create relationships, be accessible, last in time, facilitate interactivity, serve as food for thought and distribute nuclei of (secular) ethics. As for the story, it should tell a story, express the culture of respect, highlight the “roots” (respecting differences), it should excite, so that it is constituted as a kind of ferry and is a bridge between reality and imagination (back and forth).

Let us try to discuss this a bit together, being aware that, in any case, we are dealing with a constraint that cannot be overcome at the moment: the program that teachers must adhere to. And here the quantitative aspect seems to prevail over the necessary qualitative aspect.

### QUALITY VS. QUANTITY

This is one of the interesting points on which it is worth reflecting: the “quantitative” is expressed with numbers and, in this regard, mathematics is its main expression. So, our challenge is: how do we turn “quantity” into a “quality” that can meet the expectations and motivations of the pupils and the students?

Again, “let us go back to the ancient, it will be a novelty”, recalling Verdi (1871) (see Conati, 2000, p. 205). In the opening of *The Marriage of Figaro* by Mozart (1786), Figaro does the math, taking measurements (a quantitative approach) to try to figure out if the bed will fit in the room that the Count has assigned to him and Susanna (the Count’s goal being very clear to Susanna, but not to Figaro, her future husband). Figaro measures: “Five... ten... twenty... thirty... thirty-six... forty-three.” Susanna replies: “Now I am happy; it seems to have been made for me... just look at my hat.” And Figaro convinces himself: “It seems to have been made for you.”

Here is the point: we must ensure that a widespread feeling of pleasure and contentment spreads throughout the classrooms. Is this possible with *DAD*? Difficult but possible. It would be enough to consider, following Enzo Spaltro (Spaltro, 2007), that, in addition to the concepts of “benessere” (well-being) and of “malessere” (malaise), there is also the dimension of “bellesere” (beautiful-being). The aesthetic category of the “bello” (beautiful) - including emotional beauty - takes on particular importance. The lesson should be perceived as, precisely, “beautiful”, not only but also from an aesthetic point of view.

Returning to the past, Mozart describes, in the opening of *The Marriage of Figaro*, the dialectic between quantitative (Figaro taking measurements) and qualitative (Susanna with her little hat).

By the way, music is a powerful tool in relation to communication strategies of all levels, firstly intrapersonal (the teacher, before entering the classroom, talks to himself or herself). The notes on the staff, the tempos (“allegro”, “vivace”, “con fuoco” ...), the scores and the sheet music have to do with mathematics; they are “numbers” that are transformed into the “magic frame” of empathic, emotional and exciting listening, a premise for effective and lasting learning. The musical instruments (strings, brass, woodwinds) are “poor” and simple: a tube with holes, a piece of wood with metal keys, and so on. But, perhaps precisely because they are poor and simple instruments - so to speak, because an oboe costs thousands of euros -, they produce the magic of sound. A “medium”, therefore, that can be kept in mind even in the absence of “physicality”.

Music, with its dimensions of creativity, performance and sound, possesses, in fact, a cathartic and expressive value and is, in this sense, particularly suitable to externalize experiences that are difficult to express through verbal language (see Galimberti, 2020). In this regard, from the point of view of a “historical” reading of the phenomena we are discussing, it is sufficient to recall what Aristotle said about music: it should be practiced not for a single type of benefit that can derive from it, but for multiple uses, for education (specifically, ethical melodies and modes of the same nature), to procure catharsis, for recreation, relaxation of the soul and respite from fatigue (*Politica*, VIII, 7). Again, there is not much new under the sun, and Aristotle’s observations are still relevant today.

The transmission of any disciplinary knowledge can therefore make use of music, which, from time to time, is identified as the most suitable in consideration of the context, the objectives and the “characteristics” of those who will be required to enjoy the “lesson”. Notes, in a certain sense, can take us by the hand and accompany us along the path of active and productive listening.

Similar effects can be obtained with fairy tales (see Franz, 1996): in this case, the words are transformed into imagined landscapes, where the fantastic world, evoked and induced, becomes a fertile terrain for the “seeds” of

knowledge that we have the task of transmitting (see, for example, with regard to mathematics, Caprin, Leder, Rocco & Zudini, 2019).

Music and fairy tales, then, can be considered tools of a communication aimed at the achievement of precise didactic-educational-pedagogical objectives, especially when teaching/learning is done at a distance.

## CONCLUSIONS

*DAD*, with all its limitations - starting with the technical-organizational ones: all the subjects involved (students and their families, the teachers themselves) must have available the appropriate technology (computers), with adequate network coverage, and above all must be able to use this technology appropriately, correctly and safely -, can nevertheless be seized as a constructive and creative opportunity for cultural growth that will manifest its “value” when we succeed in making “presence” the characteristic feature of every communicative path.

Let us then put ourselves in the perspective of “discovering” what distance teaching/learning can offer on a daily basis that is good, beautiful, interesting and useful (so, opportunity rather than constraint? Stimulating challenge?). This paper is intended as a contribution to help readers find useful ideas to improve the quality of their lives as educators, and, more generally, as citizens.

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## Fine Arts Education with Distance Education in Pandemic Period

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### ABSTRACT

The study had a descriptive survey model. The purpose of the study was to determine the problems faced in art education by academicians in fine arts education under the conditions of Covid-19 pandemic, and to help take measures for the solution of these problems. The population of the study consisted of higher education institutions/branches that provide fine arts education. The sampling was the academicians of the Fine Arts Education Department, Faculty of Fine Arts, and Painting/Sculpture and Conservatory Departments. After the pandemic was detected in Turkey in mid-March 2020, an attempt was made to contact the sampling between April and June 2020. The study was conducted with 196 academicians who had different academic titles.

An online survey was used as the data collection tool in this study. The survey included 37 questions in 6 problem fields on demographic data, distance education backgrounds, and problems that could be experienced in distance education and art education, was applied to those who wanted to participate voluntarily in the study from academicians. Frequency and percentage distributions were used in statistical analysis of the data in the present study. The participants stated that they experienced problems mostly due to the contents/achievements of the courses, student-related problems, and measurement and evaluation-related problems during the distance education process. However, they also stated that they experienced fewer problems that stemmed from internet and computer, distance education program, and teacher-related problems.

### INTRODUCTION

#### 1.1. Definition, Emergence, Causes, and Spread of Covid-19

Covid-19 is known as a disease caused by the novel type of coronavirus which affects the respiratory tract in people severely with high infection levels especially in older ages and individuals with various chronic diseases (WHO, 2020).

COVID-19, which began in Wuhan, Hubei Province of China in December 2019, infecting more than 5.5 million people all around the world in a short period, affected the entire world in the first quarter of 2020, and still continues to affect all areas of life deeply. The newly-witnessed and fast-spreading Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), or 2019 Coronavirus Disease (COVID-19), has several difficulties in treating the disease because of the lack of adequate data in today's conditions regarding its effects in other areas as an important public health problem. Patients often admit with dry cough, shortness of breath, fever, and bilateral lung infiltration findings as clinical symptoms in this syndrome. It has been reported that all of the cases were associated with Wuhan's Seafood Sales Market, which trades in a variety of live animals, including fish and poultry, bats, marmots and snakes (Lu, Stratton & Tang, 2020: 401).

Coronavirus is a word of Latin origin derived from the word corona, which means the "crown". Coronaviruses are single-helix RNA viruses in enveloped form with high mutation and recombination rates (Chan, Yuan, Kok, To, Chu, Yang, et al., 2020: 514). There are viral sharp peplomers and rod extensions formed by proteins on the surface of the virus. Since these extensions mean crown in Latin, the virus was called "Coronavirus". It was first detected in chickens in 1930s (Alpago & Alpago, 2020). Coronavirus, which causes Covid-19 infection, is in the same family of viruses as SARS CoV and MERS CoV. Coronaviruses cannot resist the external environment, are affected by the humidity, temperature and the structure of the surface they contaminate, and can remain active on

inanimate environments for several hours (R.T. Ministry of Health, 2020).

The World Health Organization (WHO) reported the zoonotic infection that caused Covid-19, which is considered a pandemic on March 11, 2020 because of the spread and severity of the COVID-19 cases in 113 countries (according to the latest data) other than in China, where the first outbreak began (WHO, 2020).

### **1.2. Pandemic Concept, Definition, Methods of Fighting in Pandemic (Quarantine, Social Distancing, etc.)**

Pandemic is a term, which can be defined as an intercontinental epidemic (Til, 2020).

The characteristics of pandemics can be listed as follows in general;

- Wide and rapid spread in geographical terms,
- Spreading independently from seasonal conditions,
- Mutation,
- Fatal impacts,
- Lack or low social immunity,
- Causing changes in the lives of individuals (Özkoçak, Koç & Gültekin, 2020).

The “role of preventing and controlling infections” is critical in this process, where mask, visor, hand hygiene, social distancing, and surface disinfection are important in controlling COVID-19 (WHO, 2020). WHO and many scientists are trying to reduce the spread of COVID-19 by taking different measures according to the conditions of each country with the recommendations and guidance of the WHO. In this respect, many activities have been temporarily terminated or limited all over the world, especially in terms of social isolation, such as closing schools and switching to distance education. International and national flights were cancelled to avoid travel. Also, curfews only for certain days or completely were declared in some settlements aimed to control movement and social life, and quarantine was declared in some residential areas. Covid-19 was called both a pandemic and a crisis because it affected all sectors negatively, and many businesses were closed temporarily, food businesses only worked between certain hours in takeaway form, and some employees made to work remotely/from home. All these efforts were measures to avoid the collapse of the healthcare systems of countries by decreasing and controlling the spread of the pandemic.

In the scope of individual measures recommended in the fight against Covid-19, there are washing hands frequently with soap for at least twenty seconds, using hand disinfectants that contain alcohol, not contacting people who show symptoms, not being in areas where people are collectively present, not exceeding social distance of 1.5 meters in such places, keeping the immune system strong, and avoiding psychologically negative emotions (Aslan, 2020).

### **1.3. Educational/Psychological/Sociological/Economic Problems experienced in the pandemic**

On the one hand, these measures protected the health of citizens, and on the other hand, reshaped the way people lived in their daily lives, unemployment increased or working hours decreased and triggered stagnation in the world economy.

When the pandemic process prolonged, the losses in cultural and artistic activities also increased well above the estimated figures. As of March, when the pandemic process began, events were only cancelled or postponed, considering that the process would be short-term. However, when the seriousness of the epidemic process was understood, preparations were started to move these events to virtual platform rather than to cancel or postpone. Because instead of the damage caused by the cancellation of these events, the idea of making a profit, although at lower rates, started by moving to the virtual environment. Virtual organizations initially started with exhibitions, concerts, congresses and meetings (Kahraman, 2020: 96).

By nature, human is a social being. With their limitations, pandemics affect human life negatively not only in terms of basic requirements, but also in educational, economic, social, artistic, cultural, sports and touristic terms, undermining the usual progress of life. This situation causes that individuals suffer both health and economic damages (Özkoçak et al., 2020).

Covid-19 pandemic has some negative effects on human psychology, such as anxiety disorder (Savitsky et al., 2020). It is supported by studies that anxiety and depression developing with uncertainties regarding the process and with the intensified flow of information will increase greatly; and then, increased stress will cause negative physiological disorders. For example, it is understood that loneliness, which will increase under these conditions, and the resulting feelings of psychological pain and suffering, will have negative effects on education (de Oliveira Araújo et al., 2020). Also, the level of anxiety for the health of older individuals increases in direct



proportion to age (Bergman et al., 2020).

#### 1.4. Definition and Concept of Distance Education

Covid-19 pandemic affected more than 1.5 billion students all around the world because of the closure of schools at all levels (UNESCO, 2020). Distance education is a method in which education, communication, and in-class interaction activities are performed with situation-specific teaching plans and different platforms where teachers and students are not together for various reasons (Yurdakul, 2015: 275). In this context, distance education is an interdisciplinary method of eliminating drawbacks between students, teachers and teaching materials with a beneficial approach by using existing technological resources (Bozkurt, 2017).

When distance education method is considered, various concepts and definitions regarding this method appear before us. For example, the e-Learning concept, which is another definition of distance education, means education through the Internet and computer. Another definition of distance education with mobile devices is m-Learning. Also, the training model where face-to-face and distance education methods are used together is called Mixed/ Blended Education. Distance education can be done synchronously and asynchronously (Balaban, 2012: 17). Students and teachers are in the teaching environment in real time and at the same time in the synchronous distance education process, and students and teachers are not in the teaching process at the same time, and students can determine their own course planning and timing in the asynchronous system (Yu & Mukhamadieva, 2020; Basilaia & Kvavadze, 2020). Examples of synchronous systems are live lessons; and video recordings are the examples of asynchronous system.

As it is the case in any educational method, it is also possible to mention several advantages and disadvantages of distance education.

Advantages of distance education:

- Student can choose the time and place of studying.
- Students can access teaching resources and materials on the internet.
- Education process is flexible.
- It helps to reduce transportation and travel costs.
- It allows education to be delivered to wider masses.

Disadvantages of distance education:

- The ability to enrich the processing of information emotionally is limited.
- The need for personal computer and internet access arises,
- The problem of identifying the user arises for the authentication of the information,
- Self-discipline is necessary for distance education, •Developing distance education courses can be highly complex (Yu & Mukhamadieva, 2020).

#### 1.6. Distance Education Applications during the Pandemic Period

Although pandemic period has many negative consequences in healthcare, economy, and social terms, there are also some negative outcomes in educational terms. United Nations (2020) reported that at least 91% students were affected by school break worldwide. Distance education is becoming the only solution all over the world because of the epidemic. Parallel to the measures taken for health, states decided to return to distance education in the framework of opportunities in their disposal to ensure the continuity in education and to avoid students from falling into gap in this respect (Telli-Yamamoto & Altun, 2020: 26).

Rotational and flexible working, video conferencing, distance working, and social distancing protocols are applied to decrease the infection levels of the disease (Ebrahim et al., 2020).

Synchronous and asynchronous education applications are carried out with various digital platforms mostly by using devices such as computers, tablets and smartphones in the scope of distance education in many areas in the world in pandemic period. Among the platforms used for these purposes, there are applications such as Zoom, Classtime, Google Classroom, Google Hangouts, Learningapps, Moodle, Skype, YouTube, Apple, FreeConferenceCall, Join.Me, Meeting Burner, Flipgrid, social media applications, mobile learning technologies, and web servers (Shevtsova & Kozubai, 2020; Chick et al., 2020; Lynch, 2020; Williamson, Eynon & Potter, 2020; Keswani et al., 2020; Terenko & Ogienko, 2020).

#### 1.7. Art Education Applications with Distance Education during the Pandemic Period

Art is a means of expression. The things that are meant to be explained and expressed are conveyed with

movements, substances, sounds and sings so that a statue ceases to be a pile of stones, a melody to be random sounds, a painting to be a mass of paint, and a poem to be a pile of random lyrics, and makes sense in the unique world of art (Yilmaz, 2007: 17).

As a result of the closure of schools during the pandemic period, music educators adapted their lessons for distance education, and had to apply video conferencing tools such as Zoom for synchronous training, and online learning management systems such as Google Classroom and Blackboard for asynchronous training. For example, a synchronous virtual choir classroom was created with Zoom (Galvan & Clauhs, 2020).

Patients started to be served with virtual classrooms created through Zoom in the field of music therapy, which is another interdisciplinary approach of art associated with health (Negrete, 2020).

An online learning plan that was prepared in an interesting way according to course contents and student levels, and was enhanced with examples was prepared in the scope of art and design course; and it was ensured that students would provide feedbacks to each other by sharing their works in groups created with social networks such as Facebook (Dilmaç, 2020).

Simultaneous interaction was established with students via video/voice lessons and Online Campus system in a distance education application that was carried out in the scope of basic design course, and opportunities such as presentation/video uploading etc. were given to students over this platform (Kahraman, 2020).

One of the most important facts that should be cared for in art education in pandemic process is to ensure equality of opportunity in education. Although it is considered positive that many educational and artistic institutions opened various online platforms and resources free-of-charge for a limited time period, the presence of individuals who do not have adequate technological and artistic equipment is still a deficiency (Daubney & Fautley, 2020). When students cannot access the internet or do not have electronic devices, teachers can send physical copies of basic materials of their lessons directly to the residences of students, or students can use the smartphone of a family member to record their performances, or save the video into a portable memory device and send it via mail (Liu, 2020).

It is possible to argue that pandemic has direct effects on art itself as well as on the reflection of art education. When considered with this point of view, it can be argued that the periods in which plague epidemics, cholera, and smallpox occurred throughout history served art in striking ways (Demirbağ, 2018: 33).

### **1.8. Purpose**

The purpose of this study was to compile the data that would help to detect the problems faced by academicians in Department of Fine Arts Education in Faculty of Education, Faculty of Fine Arts, and Conservatory under covid-19 pandemic conditions, and to help to take measures for the solution.

### **1.9. Importance**

We are going through difficult times as the whole world because of COVID-19 pandemic. Many people, especially scientists, healthcare employees and managers from all levels continue to work to ensure that humanity can overcome this difficulty as soon as possible with minimal harm. In this context, significant changes, which are considered temporary for the time being, occurred in education system. Education processes at all levels (e.g. courses, and determining academic achievement, etc.) are conducted with distance education in our country. When it is considered that distance education will continue partially or completely for some time, it is hoped that determining its advantages and disadvantages according to the opinions of academicians in the field of conservatory and fine arts, especially at higher education level, which requires skills, training, will contribute to solve this problem in education.

## **2. METHOD**

The ethical approval of the study was obtained with the decision of Trakya University, Social and Humanities Research Ethics Committee on 2.12.2020 with the number 2020.08.16; and the research and publication ethics were taken into consideration.

The study had a descriptive and singular scanning model. The universe of the study consisted of higher education institutions/branches providing fine arts education. The sampling was determined with Snowball Method as Trakya University, Faculty of Education, Department of Fine Arts Education, Faculty of Fine Arts, Departments of Painting/Sculpture, and conservatory academicians. The sampling was contacted after the pandemic was seen in Turkey in mid-March 2020, in the period from April to June 2020. The study was conducted with 196

academicians from different titles.

An E-Survey that consisted of 12 questions including demographic data such as age, gender, academic title, education level, professional service duration, 5 questions regarding the data on distance education backgrounds, and 37 questions regarding the data on 6 problem areas about the problems that can be experienced in art education with distance education was used as the data collecting tool in this study. Descriptive statistics, frequency and percentage distributions were used in statistical analysis of the data in this study.

### 3. FINDINGS

In the present study, a total of 48.0% of the participants were 40-55 years old, gender distribution was 50%-50%, 66.8% were married, 58.2% were academicians at conservatory & education faculty, music education, 41.8% at Faculty of Education/Art Education & Faculty of Fine Arts/Art Sculpture Departments, 32.7% were Lecturers Dr./Lecturers, 73.5% were academicians with professional seniority of 10 years or more (Table 1).

**Table 1.** Frequency distribution of sampling

		f	%
1) Age?	• a) Smaller than 39	77	39,3
	• b) 40-55	94	48,0
	• c) 56 and above	25	12,8
2) Gender?	• a) Female	97	49,5
	• b) Male	97	49,5
	No response	2	1,0
3) Marital status?	• a) Single	65	33,2
	• b) Married	131	66,8
4) Your School/Faculty/Department?	• a) Conservatory	65	33,2
	• b) Education Faculty/Art education	41	20,9
	• c) Education Faculty/Music education	49	25,0
	• d) Fine Arts Faculty/Art & Sculpture	41	20,9
5) Your academic title?	• a) Research Assistant Dr. / Research Assistant	15	7,7
	• b) Academician Dr. / Academician	64	32,7
	• c) Dr. Academician	49	25,0
	• d) Assoc. Prof. Dr./ Assoc. Prof.	42	21,4
	• e) Prof. Dr. / Prof.	26	13,3
7) Years in profession?	• a) Less than 5 years	21	10,7
	• b) 5-9 years	31	15,8
	• c) 10-19 years	77	39,3
	• d) 20 years and more	67	34,2
Total		196	100,0

In the present study, 61.7% of the participants attended theoretical courses at 10 and more hours a week, 62.7% attended 10 and more hours of applied courses (skills training) a week, 71.4% attended 2 and more theoretical courses within the semester, 78.6% took 2 and more practical courses (skills training) within the semester, and 39.8% had students for whom they provided postgraduate consultancy in fine arts (Table 2).

**Table 2.** Frequency distribution of sampling

		f	%
8) Number of your theoretical weekly courses in this period?	• a) None	15	7,7
	• b) 1-9	58	29,6
	• c) 10-19	69	35,2
	• d) 20 and more	52	26,5
	No response	2	1,0
9) Number of your weekly practical courses (skills education)? (except for social service and internships)	• a) None	16	8,2
	• b) 1-9	56	28,6
	• c) 10-19	91	46,4
	• d) 20 and more	32	16,3
	No response	1	0,5
10) Number of your theoretical courses in this period? (except for counselling)	• a) None	23	11,7
	• b) 1	28	14,3

	• c) 2-3	70	35,7
	• d) 4 and more	70	35,7
	No response	5	2,6
11) Number of your practical courses in this period (skills education)? (except for social service and internships)	• a) None	21	10,7
	• b) 1	20	10,2
	• c) 2-3	87	44,4
	• d) 4 and more	67	34,2
	No response	1	0,5
12) Do you have students for whom you provide postgraduate thesis counselling in fine arts field?	• a) No	118	60,2
	• b) Yes	78	39,8
Total		196	100,0

A total of 16.8% of the participants provided course at proficiency level in doctorate/art, 4.8% at post-graduate level, and 96.4% at undergraduate level (Table 3).

**Table 3.** Frequency distribution of sampling

	f	%
6a) Undergraduate	189	96,4
6b) Postgraduate	82	41,8
6c) Doctorate/Proficiency in Art	33	16,8
N=	196	100,0

A total of 86.2% of the participants said that they did not receive “any customized training on areas, such as education-training, material preparation, measurement and evaluation to be used in distance education”, 5.6% said that they received training as courses in postgraduate stage, and 8.2% as courses/seminars in in-service training. A total of 74.5% of the respondents said that they did not receive “training on the use of computer programs used in distance education”, 85.2% said that they taught distance education lessons from home, 13.8% as postgraduate course, 8.2% said that they did not have a quiet, independent room where they could provide distance education courses at their homes, and 7.1% said that they did not have adequate internet connection to provide distance education courses at home (Table 4).

**Table 4.** Frequency distribution of sampling

		f	%
1) Did you receive any customized training on areas, such as education, material preparation, measurement and evaluation to be used in distance education? (except for the courses you took when you were student in faculty of education)	• a) Yes, in-service training (course/seminar)	16	8,2
	• b) Yes, specific course in postgraduate	11	5,6
	• c) No	169	86,2
2) Did you receive any training on the use of computer programs used in distance education?	• a) No	146	74,5
	• b) Yes	50	25,5
3) Where did you perform your distance education courses?	• a) At home	167	85,2
	• b) At school	29	14,8
4) Do you have a quiet and independent room where you can provide distance education courses in your home?	• a) Yok	27	13,8
	• b) Yes	169	86,2
5) Do you have adequate internet connection to provide distance education courses at home?	• a) No	14	7,1
	• b) Yes	182	92,9
Total		196	100,0

It was noteworthy that 62.8% of the participants stated that they used the distance education (UZEM) of their institutions in virtual classroom education, 55.1% used Zoom programs, and 55.6% said that they used programs, such as WhatsApp and Telegram, 17.3% used Skype, Duo, Hangout, and Viber, which were communication programs not distance education programs (Table 5).

**Table 5.** Programs you made use of in virtual classroom education during distance education process

	f	%
6a) Distance education of the institution (UZEM)	123	62.8
6f) WhatsApp. Telegram	109	55.6
6b) Zoom	108	55.1
6g) Skype. Duo. Hangout. Viber	34	17.3

6c) Microsoft Teams	17	8.7
6d) Google Meet	10	5.1
6e) Google Classroom	8	4.1
6h) SMS. Email	4	2.0
N=	196	100.0

In terms of internet and computer problems faced during distance education process, 53.6% of the participants said they had “Internet disconnection/freezing” problems, 49.0% “Poor sound quality”, and 45.9% “Poor image quality”. Only 3.6% thought that there were no problems (Table 6).

**Table 6.** What are the internet and computer problems you experience during distance education process?

	f	%
7d) Disconnection/Freezing of the internet connection	105	53.6
7b) Low sound quality	96	49.0
7a) Low image quality	90	45.9
7c) Weak internet connection	77	39.3
7e) Asynchronous internet connection	77	39.3
7f) Slow computer	54	27.6
7g) No problem	7	3.6
N=	196	100.0

Regarding the problems caused by computer distance education programs faced in distance education process, 46.4% of the participants said, “Proper physical environment may sometimes not exist, and 35.7% said, “The capabilities of the program are very limited”. The rate of those who said there were no problems was only 4.1% (Table 7).

**Table 7.** What are the problems stemming from computer distance education program you experienced in distance education?

	F	%
8e) Sometimes non-complying physical environments.	91	46,4
8a) The capabilities of the program are highly limited.	70	35,7
8f) The capability of the program for preparing course materials is weak.	50	25,5
8c) Program is not practical.	46	23,5
8b) My authorities on the program are very limited.	24	12,2
8g) No problems.	8	4,1
N=	196	100,0

Regarding the problems resulting from the contents/achievements of the course faced in distance education process, 74.0% of the participants said “Sometimes it involves a one-to-one master/apprentice relations”, 69.9% said “It requires me to give an instant individual feedback”, 68.9% said “It is a course to be learned by doing”, and 63.8% said “It is a skill-based course”. The rate of those who said that there were no problems was only 2.6% (Table 8).

**Table 8.** What are the problems caused by contents/achievements of course you faced during distance education process?

	f	%
9c) Sometimes it involves a one-to-one master/apprentice relations.	145	74.0
9f) It requires me to give an instant individual feedback.	137	69.9
9b) It is a course to be learned by doing.	135	68.9
9a) It is a skill-based course.	125	63.8
9e) It requires that the action of student be corrected physically.	97	49.5
9d) It requires that teacher is repeated/imitated.	96	49.0



9h) No problems.	5	2.6
N=	196	100.0

Regarding the student-related problems faced during the distance education process, 69.9% of the participants said “Lack of motivation”, 65.8% said, “Lack of active participation in the course”, 58.7% “Indifference”, and 50.5% said “Arbitrary participation in synchronized/live courses”. The rate of those who said there were no problems was 1.0% (Table 9).

**Table 9.** What are the student-related problems you experience during the distance education process?

	f	%
10b) Lack of motivation.	137	69,9
10d) Lack of active participation in the course.	129	65,8
10a) Indifference.	115	58,7
10f) Arbitrary participation in synchronized/live courses.	99	50,5
10e) Not prepared participants by students.	92	46,9
10c) Not reading sources.	78	39,8
10g) Lack of following the course with care.	58	29,6
10j) No problems.	2	1,0
N=	196	100,0

Regarding the teacher-related problems faced during distance education process, 39.8% of the respondents stated “Technical insufficiency about the programs”, 38.8% “Inability to motivate”, and 38.8% “Preparing for many lessons at different levels/varieties”. The rate of those who said that there were no problems was only 1.5% (Table 10).

**Table 10.** What are the teacher-related problems you experience during the distance education process?

	f	%
11d) Technical insufficiency about the programs.	78	39,8
11a) Inability to motivate	76	38,8
11g) Preparing for many lessons at different levels/varieties	76	38,8
11b) Not being able to provide feedback to student.	51	26,0
11c) Irregularity of course hours.	48	24,5
11f) Lack of desire.	42	21,4
11e) Lack of skills in managing the virtual course.	21	10,7
11i) No problems.	3	1,5
N=	196	100,0

Regarding the measurement and evaluation problems faced in distance education process, 71.9% of the participants said they had “Insufficient assessment with only homework”, 64.8% said “Not measuring skill-based acquisitions”, and 54.6% said “Difficulties in avoiding copy/paste in assignments”. The rate of those who said that there were no problems was only 0.5% (Table 11).

**Table 11.** What are the problems you experience in distance education because of measurement and evaluation?

	f	%
12a) Insufficient assessment with only homework.	141	71,9
12b) Not measuring skill-based acquisitions	127	64,8
12c) Difficulties in avoiding copy/paste in assignments	107	54,6
12f) Lack of objective evaluation.	85	43,4
12d) Not seeing cognitive acquisitions at all.	64	32,7
12e) Student logic of “if there is no measurement, the course does	64	32,7

not have importance”

12h) No problems.	1	0,5
N=	196	100,0

#### 4. CONCLUSION, DISCUSSION, AND RECOMMENDATIONS

##### 4.1. Conclusion

Problems faced by participants during distance education process at high levels;

- Related to contents/achievements of course
- Related to students
- Related to measurement and evaluation

Problems faced by participants during distance education process at relatively low levels;

- Related to internet and computer
- Related to computer distance education program
- Related to teachers

##### 4.2. Discussion

According to the findings of the present study, it was concluded that the many of the participants experienced some technical problems because of the fact that they did not receive in-service trainings regarding distance education and technology use; and they could not teach their courses in an accurate way in terms of contents and acquisitions in this context. In Akyürek’s research (2020), parallel to the results of this study, faculty members who had problems because of the difficulties in using technology in distance music education stated that they could not teach online courses in an accurate way.

The use of the distance education system (UZEM) of the institution by participants as well as applications such as Zoom, WhatsApp, Telegram, Skype, Duo, Hangout, and Viber was one of the significant results of the study. Akyürek (2020), reported that instructors preferred Adobe Connect, Bandicam, and Skype programs in distance music education. However, in the study conducted by Murdaugh, Hausknecht and Herbst (2020), it was reported that, similar to the results of this study, many participants used Zoom, Apple FaceTime, and Skype; and were satisfied with the features of these platforms at moderate levels; however, participants using Messenger expressed higher satisfaction levels because of acoustic features.

In the present study, it was found in the scope of the limitations and drawbacks of distance art education that faculty members experienced technological infrastructure problems such as internet disconnection/freezing and low image/sound quality. These results are parallel to those reported by Akyürek (2020), in his study in which he reported the presence of internet connection-induced synchronous problems and disruptions in online communication. Similarly, Özer and Üstün (2020), found that distance education was not as efficient as face-to-face education especially in practical courses, and the reasons for this were connections and technical problems experienced during courses. Also, Karahan (2016), reached the conclusion that the most important problems in distance education were related to technological infrastructure, the internet, and speed of digital resources. However, Koutsoupidou (2014), argued that high internet speed was necessary to ensure synchronous nature in distance music education.

It was understood in the study that many participants conducted distance education from their homes, and did not have appropriate working environments/conditions. Thornton (2020), discussed such difficulties experienced by music educators in working environments in his study, in which he highlighted that education would change in the direction of distance education after pandemic.

Among the results of the present study, there are conclusions that distance art education necessitates one-to-one master-apprentice relation, student cannot be given instant individual feedback, art education involves courses to be learned by doing, there is a lack of motivation in students, and students are not interested in courses. In his study, Akyürek (2020), discussed problems, such as the inability of faculty members to give instant feedback in distance music education in pandemic period, and the lack of motivation and interest in courses. Similarly, He (2020), reported that music education is done face-to-face or even one-on-one, and by demonstrating and making; however, this effect could not be achieved in online teaching. Regarding the lack of motivation of students, Koutsoupidou (2014), reported that some students had difficulty in communicating in distance education because of their personality traits. Likewise, Primov-Fever, Roziner and Amir (2020), reported negative effects of stress and lack of feedback on students during pandemic.

In distance education process, in the framework of the results of exam evaluations, it was found that the evaluation of skill-based courses was insufficient in art education. Chandasiri (2020), highlighted that subjects on fine arts could not be taught online; and that, parallel to this study, measurement and evaluation could not be done in an accurate way; and therefore, it would be more appropriate to bring a rating system based on activities the student did.

#### 4.3. Recommendations

- Studies can be conducted to determine the difficulties experienced in fine arts education with distance education from a student point of view.
- Similar studies can be conducted in other fine art fields aside from art, sculpture, and music fields, which made up the sampling of this study.
- In-service trainings can be organized for instructors for distance education and technology use.
- It can be said that art education institutions must provide the necessary infrastructure for distance education.
- Applications to support student motivation can be included in distance education.

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## EXTENDED ABSTRACT

### Introduction

Pandemic was declared by the World Health Organization (WHO) on January 30, 2020 due to “urgent public health problem at international level” and COVID-19 cases in 216 countries, its spread and severity of the virus (WHO, 2020). Pandemic can be defined as an intercontinental epidemic (Til, 2020).

Each country is trying to reduce the spread of COVID-19 by taking precautions to protect citizens. In this respect, schools were closed, and distance education was initiated all over the world because of social isolation. The Covid-19 pandemic affected more than 1.5 billion students all around the world with the closure of schools at all levels (Unesco, 2020). Distance education involves education, communication and in-class interaction activities with situation-specific teaching plans and different platforms where teachers and students are not together for various reasons (Yurdakul, 2015: 275).

When the distance education method is considered, various concepts and definitions related to this method may appear before us. Another definition of distance education with mobile devices is m-Learning. Also, the training model in which both face-to-face and distance education methods are used together is called Blended Education. Distance Education can be performed Synchronously or Asynchronously (Balaban, 2012: 17). In synchronous

distance education, students and teachers are in the teaching medium in real-time and at the same time, and in the asynchronous system, the students and teachers are not in the teaching process at the same time, the students can determine their own course planning and timing (Yu & Mukhamadieva, 2020; Basilaia & Kvavadze, 2020). The examples of synchronous systems include live lessons; and video recordings can be given as examples of asynchronous systems.

It seems possible to mention advantages and disadvantages of distance education, as it is the case in any educational method.

Advantages of distance education:

- The student can choose the time and place of the study.
- The student can access teaching resources and materials on the Internet.
- Training process is flexible.
- This helps to reduce transportation and travel costs.
- Distance education allows education to be delivered to wider audience.

Disadvantages of distance education:

- The ability of processing information is limited to enhance the course in emotional terms.
- The need for a personal computer and internet access emerges,
- The problem emerges for identifying the user in confirming the information,
- Self-discipline is needed for distance education,
- Developing distance education courses might be complex at high levels (Yu & Mukhamadieva, 2020).

The pandemic period had many negative consequences in health, economy and social terms, and also brought negative outcomes in educational terms. United Nations (2020) stated that minimum 91% students were affected by school breaks worldwide. Distance education is becoming the only remedy worldwide because of the pandemic (Telli-Yamamoto & Altun, 2020: 26).

Synchronous and non-synchronous education practices are performed with various digital platforms using devices, such as computers, tablets and smartphones in the scope of distance education during the pandemic period in many areas of the world. Among the platforms used, there are Zoom, Classtime, Google Classroom, Google Hangouts, Learningapps, Moodle, Skype, YouTube, Apple, FreeConferenceCall, Join.Me, Meeting Burner, Flipgrid, other social media apps, mobile learning technologies and web servers (Shevtsova & Kozubai 2020; Chick et al, 2020; Lynch, 2020; Williamson, Eynon & Potter, 2020; Keswani et al., 2020; Terenko & Ogienko, 2020)

Music educators also adapted their courses to distance education, and had to use video conferencing tools, such as Zoom for synchronous training, and online learning management systems, such as Google Classroom and Blackboard for synchronous training as a result of the closure of schools in the pandemic period. For example, a synchronous and virtual choir class was established with Zoom (Galvan & Clauhs, 2020).

#### **Purpose**

The purpose of the study was to determine the problems faced in art education by academicians in fine arts education under the conditions of Covid-19 pandemic, and to help take measures for the solution of these problems.

#### **Importance**

We are experiencing difficult times due to the COVID-19 pandemic as a whole world. Many people, such as scientists, healthcare employees, and managers at all levels, continue to work to ensure that humanity can overcome this difficulty as soon as possible with minimal damage. Educational processes are performed with distance education in our country at all levels. It is expected that determining the advantages and disadvantages of distance education partly or as a whole according to the opinions of academicians in conservatory and fine arts field, especially at higher education level, which requires skill training, will contribute to the solution of this problem in education.

#### **Method**

The universe of the study consisted of higher education institutions/branches that provide fine arts education. The sampling was the academicians of the Fine Arts Education Department, Faculty of Fine Arts, and Painting/Sculpture and Conservatory Departments. After the pandemic was detected in Turkey in mid-March 2020, an attempt was made to contact the sampling between April and June 2020. The study was conducted with 196 academicians who had different titles.

An E\_Survey was used as the data collection tool in this study. The survey included 37 questions in 6 problem fields on demographic data, distance education backgrounds, and problems that could be experienced in distance education and art education, was applied to those who wanted to participate voluntarily in the study from academicians. Frequency and percentage distributions were used in statistical analysis of the data in the present study.



### **Conclusion and Discussion**

The participants stated that they experienced problems mostly due to the contents/achievements of the courses, student-related problems, and measurement and evaluation-related problems during the distance education process. However, they also stated that they experienced fewer problems that stemmed from internet and computer, computer distance education program, and teacher-related problems.

According to the findings of the study, it was understood that many of the participants experienced some technical problems because they did not receive in-service training for distance education and technology use; and in this context, they could not teach courses in an accurate way in terms of contents and achievements. In the study that was conducted by Akyürek (2020), it was reported that faculty members who had problems because of the difficulties of using technology in distance music education; and therefore, they could not teach online courses in an accurate way, which is a parallel result with the present study.

## Technology Addiction in Physical Education and Sports Teacher Candidates

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### ABSTRACT

In this research, the level of technology addiction in physical education and sports teacher candidates and whether this level differs according to some demographic variables is aimed. The research was carried out using the screening model. 213 female and 279 male of total 492 people studying in teaching programs of physical education and sport from 4 different states universities in Turkey participated to the research. The data in the research were collected by “Technology Addiction Scale” and “Personal Information Form”. Data were analyzed using independent groups t-test, one-way variance and Pearson correlation analysis. According to the research findings, while technology addiction scores of teacher candidates differ significantly according to gender and grade level ( $p < .05$ ), it did not differ significantly according to the academic achievement perception and weekly sports frequency variable ( $p > .05$ ). Besides, no significant relationship was found between technology addiction and sports years. As a result, technology addiction levels of teacher candidates were found to be moderate.

**Keywords:** Technology Addiction, Physical Education and Sports Teacher Candidate, University

### INTRODUCTION

The fact that technology constantly renews itself and adapts to the conditions of the day has manifested itself in the field of education as well as in many other fields. Also, technology has constantly renewed and developed itself by adapting to the conditions of the day (Hergüner, Yaman, Çağlak-Sarı, Yaman, & Dönmez, 2021). As a matter of fact, these innovations and developments have brought about many changes (Hergüner, Son, Son-Hergüner, & Dönmez, 2020). That is, these changes both increase the knowledge level of people and gain the ability to use technology (Öktem & Çiftçi, 2020). In addition to these, the positive effects of technology (Yaman, 2008), which provides unlimited contributions to modern education, on human life, are not ignored (Çuhadar, Demirel, Yusuf, & Serdar, 2020). Technology that has become an important requirement of our age; It was expressed as “practical applications used in organizing the information that has been proven to be true in achieving the determined goals, meeting the needs and making life easier” (İşman, 2008, p. 3). Technology, which has become a necessity rather than arbitrary applications, especially with the increase of internet use (Karaman & Kurtoğlu, 2009), has entered every phase of human life today (Anlı & Taş, 2018) and enabled people to communicate with social networks (Ahmed, Siddiqua, Alam, & Griffiths, 2021). The fact that technology is so intertwined with human life and integrates daily life according to changing world conditions (Chayko, 2008; Çakır & Oğuz 2017; Davey et al., 2018) has revealed the concept of technology addiction, which is among the biggest problems of our age (Demirci, Orhan, Demirdas, Akpınar, & Sert, 2014; Pugh, 2017; Wang, Zhao, Wang, Xie, Wang, & Lei, 2017). Addiction is conceptualized as “any substance or action negatively affecting the psychological and physiological health or social life of the individual, continuing to use it even though it continues to negatively affect the life of the individual, and the harmful substance or action constantly creates pleasure that cannot be prevented” (Bianchi & Philips, 2005, pp. 39-51). Technology addiction is defined as a type of behavioral addiction that involves human-machine interaction and does not involve chemical dependence (Arısoy, 2009, p.58). These behavioral addictions, as in alcohol-substance addictions, show the characteristics of cognitive engagement, mood variability, tolerance, withdrawal, interpersonal conflict, and relapse (Griffiths, 1996). The expression of technology addiction (Ektiricioğlu, Arslantaş, & Yüksel, 2020), which is a multi-faceted (social, psychological, behavioral, and spiritual) concept, encompasses many fields. Among these areas, internet addiction, social media addiction (Leung & Lee, 2012), game addiction (Leung, 2004), mobile phone addiction (Bianchi & Phillips, 2005), online gaming, instant messaging, social network and websites addictions (Aydın, 2007) come to the fore in the literature as the main areas. Besides, these addictions are different from each other, and it is not overlooked that they sometimes share many similar elements (Sigerson, Li, Cheung, & Cheng, 2017).

In our age, technology has become increasingly important in the field of physical education and has become an important tool used by teachers and teacher candidates in every phase of their lives. Every time, educators search for technological tools to improve students' learning (Carstens, Mallon, Bataneh, & Al-Bataneh, 2021). In fact, it is expected from the use of teaching tools (Silverman, 1997) to use hardware and software for lessons (FitzPatrick,

2004), and to use technology in teaching concepts and motor skills (Antoniou, Derri, Kioumourtzoglou, & Mouroutsos, 2003). As with other pre-service teachers, it has become inevitable that physical education and sports education candidates, who will be the future teachers, will use technology intensively in accessing teaching materials, homework, and exams at the university. When used correctly, technology that makes life easier becomes an addiction as a result of intensive use. Based on this information, in this research; the level of technology addiction in teacher candidates and whether this level differs according to some demographic variables is aimed.

## METHOD

### Research Model

In this research, a "screening model" was used. The screening model is "research approaches that aim to describe a past or present situation as it exists" (Karasar, 2018, p. 109).

### Research Group

4 different state university physical education in the sports science faculty and sports teacher in Turkey from degree programs saved the age of 18 to 30 ( $\bar{X}=20.66$ ) ranging from, 213 females and 279 males of total 492 physical education and sports teachers' participation as a volunteer. While collecting research data, a convenience sampling method was preferred. The convenience sampling is "the shortest way to obtain data in a fast and inexpensive way" (Karagöz, 2017, p. 66).

Table 1. Distribution of teacher candidates by gender

Gender	n	%
Female	209	43,3
Male	274	56,7

According to Table 1, 43.3% (n = 209) of teacher candidates are female, it was determined that 56.7% of them were male (n = 274).

### Data Collection Tools

"Technology Addiction Scale" and "Personal Information Form" were used in the research. Explanatory information about measurement tools is presented below.

### Technology Addiction Scale

Within the scope of the research, "Technology Addiction Scale" developed by Aydın (2017) on university students was used. The scale consists of 24 items and has a 5-point likert type answer key. The responses to the scale items are calculated as "never" (1 point), "rarely" (2 points), "medium frequency" (3 points), "very often" (4 points), "always" (5 points). As a result of the reliability analysis by Aydın (2017), the Cronbach Alpha ( $\alpha$ ) coefficient of the measurement tool was calculated as  $\alpha = .92$ . As a result of the present research, the Cronbach Alpha ( $\alpha$ ) coefficient of the technology addiction scale was calculated as  $\alpha = .93$ .

### Personal Information Form

A personal information form was used to determine teacher candidates' age, gender, class level, academic achievement perception, sports year, weekly sports frequency in the research.

### Data Collection

The data in the research were collected from the determined universities between 02.12.2019 and 30.12.2019. While collecting the data, the faculty members working in the Faculty of Sport Sciences of the relevant universities were assisted in collecting data. General explanations about the research were made to prospective teachers both in scale forms and while collecting data, and they were informed that the collected data would be used for a scientific purpose. Following the written and verbal instructions, data were collected from teacher candidates who wanted to participate voluntarily.

### Data Analysis

The collected data were checked, numerically coded, and transferred to the SPSS program. Before the statistical analysis to be applied, a normality test was performed on the data. After the statistical analysis, it was determined that the data were suitable for normal distribution. Descriptive statistics (percentage, frequency, mean, max, min, standard deviation), independent groups t-test, one-way variance, Pearson correlation analysis, and Post Hoc (LSD) test were used in analyzing the data.

## FINDINGS

Table 1. Descriptive statistical results of technology addiction scores of teacher candidates

	n	Min	Max	$\bar{X}$	ss
Technology Addiction	483	24,00	116,00	51,19	17,78

According to the descriptive statistics results in Table 1, it was determined that the technology addiction mean score of teacher candidates was  $51.19 \pm 17.78$ .

Table 2. The comparison results of technology addiction scores of teacher candidates by gender

	Gender	n	$\bar{X}$	ss	t	p
Technology Addiction	Male	274	54,18	18,35	4,38	,00
	Female	209	47,27	16,23		

According to the results of the independent groups t-test in Table 2, it was determined that the technology addiction scores of the teacher candidates differ significantly according to gender ( $t_{(481)}=4.38$ ;  $p=.00$ ).

Table 3. The relationship results between teacher candidates' technology addiction scores and sports years

	Sports year	
Technology	r	-,05
Addiction	p	,30

According to the Pearson correlation analysis results in Table 3, no significant relationship was found between the technology addiction scores of the teacher candidates and their sports years ( $r = .05$ ;  $p = .05$ ).

Table 4. Comparison results of technology addiction scores of teacher candidates according to their grade levels

	Grade Level	n	$\bar{X}$	ss	F	p	Difference
Technology Addiction	1. Grade	121	47,74	15,19	2,95	,03	3,2>1
	2. Grade	110	53,12	17,25			
	3. Grade	121	53,80	19,16			
	4. Grade	131	50,34	18,70			

According to the results of the one-way variance analysis in Table 4, it was determined that the technology addiction scores of the teacher candidates differ significantly according to the grade level ( $F_{(479)}=2.95$ ;  $p=.03$ ). According to the Post Hoc (LSD) results made to determine the source of the difference, it was determined that the average score of the 3rd grade and 2nd grade was significantly higher than the 1st grade.

Table 5. Comparison results of technology addiction scores of teacher candidates according to their perceptions of academic achievement

	Perception of Academic Achievement	n	$\bar{X}$	ss	F	p
Technology Addiction	Low	36	51,97	19,72	,14	,87
	Medium	333	51,35	17,25		
	High	114	50,47	18,80		

According to the results of one-way variance analysis in Table 5, it was determined that the technology addiction scores of teacher candidates did not differ significantly according to their perception of academic achievement ( $F_{(480)}=.14$ ;  $p=.87$ ).

Table 6. The comparison results of technology addiction scores of teacher candidates according to their weekly sports frequency

	Weekly Sports Frequency	n	$\bar{X}$	ss	F	p
Technology Addiction	1-3 times a week	187	52,80	17,95	1,96	,31
	4-6 times a week	165	50,01	18,01		

Every day of the week	73	48,96	16,55
I don't do sports	58	52,14	17,97

According to the results of one-way variance analysis in Table 6, it was determined that the technology addiction scores of teacher candidates did not differ significantly according to their weekly sports frequency ( $F_{(479)}=1.96$ ;  $p=.31$ ).

## DISCUSSION AND CONCLUSION

This research was conducted to determine the level of technology addiction in physical education and sports teacher candidates and whether this level differs according to some demographic variables. Considering that the concept of addiction in the literature has been examined with different studies such as internet, Facebook, and digital game addiction, these concepts are also included in this research.

In the research, it was determined that the technology addiction mean scores of teacher candidates were at a medium level. Technology has taken an important place in the social life and environment of the individual with the innovations it has brought to the present day, and has created an important occupation in human life by preventing the individual from his own daily work in his spare time. So much so that technology, which is used for learning environments when appropriate, has increasingly become an integral part of daily life. Considering that our age is the age of technology and communication and the use of technology in physical education is becoming widespread, this medium-level result can be explained as follows. Technological developments are increasingly adapting to the conditions of the day and people follow these developments closely. These developments can be followed much faster with computers and smart phones. Undoubtedly, one of the most closely following these developments is the university youth. It is obvious that the use of both computers and smart phones in university youth is widespread today. In the research of Yaman and Yaman (2014), university students also stated that they use the social networks they access with technological facilities for educational purposes. Moreover, as a significant part of daily life is spent on the internet, the way people communicate recently has changed (Hergüner, 2011). Considering these situations, this moderate addiction emerging in the research may be considered normal. As a matter of fact, the opinion that university students can use social networks for educational purposes has been revealed by the researches. Supporting this view, it has been reported in studies that the use of technology by students and teachers facilitates the educational process (Hergüner, 2016). In the research of Aydın (20174), the research finding that the technology addiction of university students is obtained at a moderate level has shown consistency with the current research result.

In the research, it was determined that the technology addiction scores of male pre-service teachers were significantly higher than female pre-service teachers. This situation can be interpreted as men tend to rely on technological tools and environments more than women in maintaining their social relationships and using technology. Today, the demand for social networking environments is increasing. Especially in recent years, increasing computer and smartphone games have enabled people to be in close contact with technology. Research has also revealed that boys are more willing to play these games than girls (Gökçearsan & Durakoğlu, 2014). For this reason, it has become inevitable to participate in such events through technology. As a matter of fact, researches have revealed that men have a more positive attitude towards computer environments than women (Ray, Sormunen, & Harris, 1999), as well as being more likely to be dependent on the internet, computer and online games than women (Bianchi & Phillips, 2005). In another research, it was concluded that men are more addicted to the internet than women (Karaman & Kurtoğlu, 2009). Besides, in the research of Yaman (2016), it was reported that men are addicted to Facebook compared to women. Contrary to these results, studies showing that women are more dependent on technological services (Smahel, Blinka, & Ledabyl, 2008) can add depth to this point of view. In addition, in a research, it was reported that women use more smart phones than men (Nayak, 2018).

In the research, no significant relationship was found between technology addiction and sports year. Even if no significant relationship was detected, it was found that the direction of the relationship was negative. As a result, the increase in the sports year brings out the fact that it will be an obstacle to preventing technology addiction. For many years, he started to think about the fact that being in sports can be enough to spare time for himself and can prevent addiction to a behavior. Researches reveal the fact that sports can prevent the developing technology intensity and the anxieties it will bring (Ramazanoğlu et al., 2005). Taştan (2020), in his research on university students, reported that the internet addiction score does not differ according to the status of having a sports license. Similarly, in another research conducted on university students, it was concluded that internet addiction did not differ according to sports license (Özgen, 2016).

In the research, it was determined that the technology addiction scores differ significantly according to the grade level. According to this, the technology addiction scores of the 3rd and 2nd grade students are significantly higher



than the 1st grade. It suggests that as the class level increases, academic career, more research and turning to technology in future planning are among the reasons that reveal this situation. In the study conducted by Çam (2012) on pre-service teachers, a significant difference was found in favor of 1st graders in Facebook addiction levels according to the grade variable. The difference between this result and the result of the research is thought to be due to the demographic structure of the selected sample. In a study different from the results of the research, Arıkan and Öztürk (2020) reported that the digital game addiction of students did not differ according to the grade level.

In the research, it was determined that technology addiction scores did not differ significantly according to academic achievement perception. Although there was no difference, it was revealed that people with high academic achievement perception had lower technology addiction scores. It suggests that these people may have been more cautious about technology by devoting more time to their lessons. Studies that state that those who do not put restrictions on meeting technological needs have problems in academic life (Gönül, 2002; cited by Akcan & Öge, 2020) support the findings obtained as a result of the present research.

In the research, it was determined that the technology addiction scores did not differ significantly according to the weekly sports frequency. Although there was no difference, it was found that the addiction scores of those who exercise every day of the week and 4-6 days a week are lower. The excessive amount of time an individual devotes to sports prevents him from being dependent on technology. Because the intensity of the time spent with sports provides social and mental relaxation. Yaraşır (2018) revealed in his research that participation in physical activity reduces internet addiction. Arıkan and Öztürk (2020) found that digital game addiction of university students does not differ according to their participation in physical activity. These results are consistent with the results of the research.

In the research; While technology addiction scores of teacher candidates differ significantly according to gender and grade level, they did not differ significantly according to the academic achievement perception and weekly sports frequency variable. In addition, no significant relationship was found between technology addiction and sports years. Finally, it was determined that the technology addiction levels of teacher candidates were at a medium level.

In subsequent research; researches in which sports science faculties located in different regions will be included, as well as comparing students from different departments and sports science faculties can be conducted. Thus, data convenience can be provided to researchers in terms of making comparisons. In addition, it is recommended to investigate the concepts of loneliness, personality, positive-negative mood and life satisfaction, which may be associated with technology addiction.

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## The Predictive of Social Networks-Based Learning in Physical Education and Sports Teachers: The Big Five Personality

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### ABSTRACT

**Aim:** In this research, it was aimed to investigate whether the big five personality traits are predictive of using social networks. **Method:** The research, which was designed with the correlational survey model, had a total of 203 ( $\bar{X}_{age}=21.36\pm2.88$ ), 101 females ( $\bar{X}_{age}=21.40\pm3.06$ ), 102 males ( $\bar{X}_{age}=21.32\pm2.70$ ) that was selected by easy sampling and aged between 18 and 39, who studied at Sakarya Applied Sciences and Bartın Universities, and sports sciences faculties. In the research, the data were collected by using the "Personal Information Form", "The Social Networks-Based Learning Perception Scale" and the "Five Factor Personality Inventory". Descriptive statistics, Pearson correlation and Regression analyzes were used in the analysis of the data. **Findings:** According to the research findings, positive and significant relationships were found between the big five personality traits of extraversion, openness to experience, agreeableness and conscientiousness and social networks-based learning in physical education and sports teacher candidates. It was also found that agreeableness significantly explained social networks-based learning. **Conclusion:** As a result; It has been revealed that only agreeableness from the big five personality traits is predictive in social networks-based learning.

**Keywords:** Physical education and sports teacher candidate, social networks-based learning, big five personalities.

### INTRODUCTION

Today, the use of social networking sites, a tool used to access information, has shifted the curiosity of scientists in this direction. So much so that the psychological structures arising from the use of social networking sites have found a place among the topics worth researching.

Social networking sites are a web-based system that allows people to develop a profile within the sociological structure they are in, communicate with others, and meet other people in the link list (Sundararaj & Rejeesh, 2021). Social networks, which have continued to develop in recent years (Tsai, Chang, Chang & Chang, 2017) and become an increasingly popular source of information for most people (Serenko, Turel, & Bohonis, 2021; Gvili, Kol & Levy, 2020), are widely used in today's conditions. It is used for learning purposes and it is seen that this situation is very important in terms of informal learning (Yokuş & Yelken, 2019). The learning potential of social networks is based on the strong diffusion of learning to global dimensions indirectly rather than the transfer of knowledge (Bandura, 1986). As a matter of fact, it reminds us that the importance of social networks, which is a popular platform, should not be ignored, as people from different cultures from all over the world communicate with each other and share their knowledge and emotions (Pornsakulvanich, 2017). Namely, it has been demonstrated by research that the use of these networks improves interactive and collaborative learning (Al-rahmi & Othman, 2013) and makes the learning process more fun and active (Eid & Al-Jabri, 2016).

People use social networks for education (Hamid, Waycott, Kurnia & Chang, 2015), learning and teaching (Gupta & Bashir, 2018), entertainment and spending time (Dogruer Menevi & Eyyam, 2011; Hunt, Atkin & Krishnan, 2012), motivation (Bulut & Doğan, 2017), providing social support (Ross, Orr, Sisic, Arseneault, Simmering & Orr, 2009), self-expression and seeking information (Aladwani, 2014), various purposes (Cheung, Chiu & Lee, 2011). In addition, some studies in the literature have suggested that the use of social technologies supports constructivist approaches to learning, and that they have the potential to socialize online learning environments more than traditional learning environments (McLoughlin & Lee, 2008; Schroeder, Minocha, & Schneider, 2010). As a matter of fact, the current Covid-19 epidemic has made online learning environments compulsory in the learning process (Hergüner and others, 2020; Hergüner and others, 2021).

Even though research on behaviors and individual differences towards using social networks has increased in recent years (Al-Dwaikat, Aldalaykeh & Rababa, 2020; Krämer & Winter, 2008), the role of personality traits in directing these behaviors has been a matter of curiosity. Personality, which is accepted as one of the most important topics in psychology research (Li Li, Hao, Guan & Zhu, 2014; Özer & Benet-Martinez, 2006), is defined as "consistent behavioral patterns and intrapersonal processes originating from the individual" (Burger, 2016), expressed and based on social networks. It has been a subject worth investigating because it can be an important predictor in understanding learning. Therefore, another subject examined in this research is the five-factor personality model, which is also known in the literature as the big five (McCrae & Costa, 1989; Goldberg, 1993; McCrae & Costa, 1997). It is a comprehensive and widely accepted personality model that has wide application in different fields and cultures due to its big five empirical validity (Oliveira, Cherubini & Oliver, 2013; McCrae & John, 1992). The model is widely used; extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience (McCrae & Costa, 1989). Extraversion is defined as active, energetic, enthusiastic (McCrae & John, 1992), being sociable and talkative (Barrick & Mount, 1991). Because extraverts are sociable, they not only engage in social activities in social networks (Liu, & Campbell, 2017), but are central in many social networks (Feiler & Kleinbaum, 2015). High scores in neuroticism include a tendency to experience negative effects such as anxiety, anger, and depression, emotional instability, and other cognitive and behavioral symptoms (McCrae & Costa, 1989). In many circumstances, conversation and social connection using social networks has been seen as a tool to alleviate neuroticism (Liu, & Campbell, 2017). Agreeableness refers to the tendencies to be friendly, sympathetic, humble and compassionate (Oliveira, Cherubini & Oliver, 2013). Agreeable individuals are more likely to express positive emotions to posts on social networks (Schwartz and others, 2013) and post pictures that express positive mood (Liu, Preotiuc-Pietro, Samani, Moghaddam & Ungar, 2016). Conscientiousness characterizes well-organized and goal-oriented people (Halko & Kientz, 2010). Individuals with high conscientiousness are organized, determined and successful by making a plan before starting work (Burger, 2016). Individuals with high conscientiousness are more cautious about managing their profiles in social networks (Amichai-Hamburger & Vinitzky, 2010). In addition, these people tend to express less appreciation on social media and participate less in group activities (Kosinski, Bachrach, Kohli, Stillwell & Graepel, 2014). Openness to experience is characterized by intelligence, imagination, curiosity, and productivity (Barrick & Mount, 1991; McCrae & John, 1992). People who have openness to experience tend to have large networks (Quercia, Lambiotte, Stillwell, Kosinski & Crowcroft, 2012) and to like more content on social media (Bachrach, Kosinski, Graepel, Kohli & Stillwell, 2012). As personality is expected to affect relationships between people (Eysenck, 1994), it is also expected to prevent the use of social networks. In this respect, it is aimed to investigate whether the big five personality traits are predictive in using social networks.

## METHOD

### Research Model

In this research, the "correlational survey model" was used which is one of the quantitative approaches. According to Karasar (2018, p. 114), this model is expressed as "*research models aiming to determine the existence and/or degree of covariance between two or more variables*".

### Population and Sample of the Research

The population of the research consists of teacher candidates studying in the Department of Physical Education and Sports Teaching at Sakarya Applied Sciences and Bartın Universities. The sample of the research has a total of 203 ( $\bar{X}_{age}=21.36\pm2.88$ ) Education and Sports Teacher candidate, 101 females ( $\bar{X}_{age}=21.40\pm3.06$ ), 102 males ( $\bar{X}_{age}=21.32\pm2.70$ ) that was selected by easy sampling and aged between 18 and 39.



Table 1. Descriptive statistics of teacher candidates

<b>Gender</b>	<b>n</b>	<b>%</b>
Female	101	49,8
Male	102	50,2
<b>University</b>	<b>n</b>	<b>%</b>
Sakarya Applied Sciences University	108	53,2
Bartın University	95	46,8
<b>Total</b>	<b>203</b>	<b>100,0</b>

According to Table 1, 49.8% of the participants were female (n=101); 50.2% (n=102) it consists of male. When the distribution by universities is examined, it is seen that 53.2% (n=108) of the sample is from Sakarya University of Applied Sciences; It was determined that 46.8% (n=95) were from Bartın University.

### Data Collection Tools

In the research, the data were collected by using the "Personal Information Form", "The Social Networks-Based Learning Perception Scale" and the "Five Factor Personality Inventory". The details of the psychometric properties of the measurement tools are explained below.

#### Personal Information Form

The "Personal Information Form" created by the researchers was used to determine the information such as gender, age and university of education of physical education and sports teachers.

#### Social Networks-Based Learning Perception Scale

"Social Networks-Based Learning Perception Scale" developed by Yokuş and Yanper Yelken (2019) was used to measure physical education and sports teachers' perceptions of learning based on social networks. The measurement tool is in a 7-point Likert type with 20 items. The lowest 20 and the highest 140 points are obtained from the measurement tool. As a result of the reliability analysis, the Cronbach Alpha internal consistency coefficient of the scale was found to be .90 (Yokuş & Yanper Yelken, 2019). In this research, the Cronbach Alpha internal consistency coefficient of the scale was determined as .96.

#### Five Factor Personality Inventory

The "Five Factor Personality Inventory" developed by John, Donahue and Kentle (1991) and adapted into Turkish by Evinç (2004) was used to determine the personality traits of physical education and sports teachers. The measurement tool is 44 items, 5-point Likert type. The measurement tool includes the big five personality traits of extraversion, neuroticism, openness to experience, agreeableness and conscientiousness. The Cronbach Alpha reliability coefficients of the measurement tool were found to be .74 for extraversion, .75 for neuroticism, .74 for openness to experience, .51 for agreeableness, and .66 for conscientiousness, respectively (Evinç, 2004). As a result of the current research, the Cronbach Alpha internal consistency coefficient of the measurement tool was; .81 for extraversion, .71 for neuroticism, .77 for openness to experience, .72 for agreeableness, and .72 for conscientiousness.

### Data Collection

Due to the coronavirus epidemic that continues to affect all over the world and in our country, education and training in universities continues online. For this reason, the online environment was used while collecting data. The research questions were prepared by transferring them to the Google Form, written instructions were given to the teacher candidates about why the research was conducted and its content at the beginning of the form, and a voluntary participation consent form was added. Data were collected online from candidate teachers who read the information about the research and agreed to participate in the research.

### Data Analysis

The collected data were coded and transferred to the SPSS program to be ready for analysis. Here, the calculations of the measurement tools were made and it was checked whether the data met the normality assumptions by looking at the skewness and kurtosis values. It was determined that the obtained values were in the range of  $-1 > \dots < +1$ . Tabachnick and Fidell (2013) stated that these values are suitable for normality conditions. Descriptive statistics, Pearson correlation and Regression analyzes were used in the analysis of the data.

## FINDINGS

Table 2. The correlation results between the personality traits scores of physical education and sports teacher candidates and their learning scores based on social networks

		Extraversion	Neuroticism	Openness to Experience	Agreeableness	Conscientiousness
Social Networks-Based Learning	r	,21	-,09	,20	,28	,15
	p	,00**	,21	,00**	,00**	,03*

According to the results of the Pearson correlation analysis in Table 2, positive low-level significant correlations were found between the scores of extraversion, openness to experience, agreeableness, and conscientiousness of the physical education and sports teacher candidates and their learning scores based on social networks ( $p < .05$ ).

Table 3. The effect of personality traits of physical education and sports teacher candidates on learning based on social networks

Variable	B	Std. Error	$\beta$	t	p
Stable	37,99	20,03	---	1,90	,06
Extraversion	3,04	2,86	,10	1,06	,29
Neuroticism	1,31	2,71	,04	,49	,63
Openness to Experience	3,25	3,22	,08	1,01	,31
Agreeableness	8,96	3,26	,22	2,75	,01
Conscientiousness	-,14	3,49	,00	-,04	,97
R= ,31 $R^2_{adj}=.07$					
$F_{(5,197)} = 4,12$ $p = ,00$					

According to the multiple linear regression analysis in Table 3, it is seen that the regression model is statistically significant. When the t-test results regarding the significance of the regression coefficients were analyzed, it was determined that agreeableness ( $\beta = .22$ ;  $t = 2.75$ ;  $p = .01$ ) had a significant effect on learning based on social networks.

## DISCUSSION and CONCLUSION

In this research, it was aimed to reveal whether there is a relationship between social network-based learning and personality traits such as extraversion, neuroticism, openness to experience, agreeableness and conscientiousness, which are big five personality traits. In this context, positive and significant relationships were found between extraversion, openness to experience, agreeableness and conscientiousness, and learning based on social networks. In addition, it was revealed that agreeableness significantly predicted learning based on social networks.

Social network, which means "individuals (more rarely, partnerships and roles) connected to each other by one or more social relations, thus forming a social bond" (Marshall, 1999), has changed the communication and media tools in the last two decade with the inclusion of concepts such as interaction, cooperation, social relations and information exchange (Cheung & Lee, 2010), it has started to be discussed within the framework of "a set of practices that increase group interaction, common areas reserved for cooperation and social relations and provide information exchange in a web-based environment" (Bartlett-Bragg, 2006, p.3). The difference in the learning styles of today's students, who grew up using digital media tools such as the Internet, computers and mobile phones (Prensky, 2001) has been brought to a level that has never been encountered in the past, and together with their personality traits (Moore, 2000; Rushton, Morgan, Richard, 2007) have had significant effects on learning. This radical change in learning environments not only affected the educational processes in different branches, but also had an impact on the learning of teacher candidates in relation to their different personality traits (Kelly & Johnson, 2005; Bassili, 2006). Significant differences were observed between the learning styles of people with extraverted-introverted, sensory-intuitive, thinking-feeling and judgmental-perceiving personality traits (Myers & Myers, 1997) with the rapid change in technology. Ajjan and Harsthone (2008) found that the tools that create social networks increase the learning level of students, improve the interaction of students with both the school and other

students, improve students' satisfaction with the lessons and improve their writing skills, and facilitate their adaptation to the lessons. Considering that teacher candidates are still students, some of the students are not willing to learn new things (Tunca, Alkın Şahin, Aydın, 2015), although some of the students are in need of new learning and constantly demand it in their life (Ergün & Cömert-Özata, 2016) is undeniable. Based on this information, it can be predicted that social networks provide learning opportunities for students who are not open to new learning, even if it is not formal, and will provide great convenience to students who need new learning.

In recent years, it is seen that candidate teachers have created social media groups specific to their branches through social media groups, and they have improved their professional knowledge in this way as well as increasing their personal development by collaborating. Greenhow (2007) revealed that these unions of candidate teachers for the same field, which require solidarity or cooperation, increase the interaction between teachers, students and others, and this situation gives them an advantage. Wilkins (2009) discussed this interpretation a little further and suggested that social learning is the learning form of the future and that instead of replacing formal learning systems in the future, formal systems will “socialize” by incorporating social elements. Kalra and Manani (2013) revealed that students with different personalities who organize and manage their time efficiently and use social networks at the same time do not harm their academic performance in the face of this situation, and even they are productive for their studies. Ross and others (2009) found that among all these personality types, those with extroverted personalities used Facebook more, and in this way, they preferred to have more “Facebook friends” and belong to more Facebook groups. Although there are studies (Kirschner & Karpinski, 2010; Junco, 2012; Andreassen, Torsheim & Pallesen, 2014) revealing a negative relationship between the level of use of social networks such as Facebook and academic achievement, integrating social networks into the learning process is a blended learning approach, it helps to increase the quality of learning outcomes by setting an example (Karaman, Ekici & Akgun, 2011). Based on the fact that learning can be improved by using effective learning strategies, the quality of learning can be increased through social networks as well as through social media. In particular, candidate teachers with extroverted personality traits (Akdeniz, 2013, p.154; Zarafshani, Cano, Sharafi, Rajabi & Sulaimani, 2011); active, full of energy and social, but also more sensitive to the people and events around him (Tatlilioğlu, 2014). These features can be evaluated as providing an advantage in their more active participation in the teaching process. Similar studies have also shown that extraversion is a strong predictor of social network use (Tan & Yang, 2012). People with a high rate of extraversion use social media more (Bowden-Green, Hinds & Joinson, 2020) and have more friends on social media (Amichai-Hamburger & Vinitzky, 2010) compared to people with a low rate of extraversion, as a result, people with a dominant extrovert personality trait tend to increase their social activities. It has been determined that they continue online as well (Çayırılı, 2017). From this point of view, as a result of the research, the positive relationship between extraversion and learning based on social networks can be explained as a normal situation. Correa, Hinsley, and Zuniga (2010)'s study, which determined the positive relationship between social media use and extraversion, supports this result.

Individuals with personality traits that are open to experience are generally characters who have different ways of thinking and can produce original products in science-art studies. With these characteristics, it can be said that individuals with this personality structure consist of individuals with high imagination, curiosity and high intelligence capacity (Erdheim, Wang & Zickar, 2006). Aslan and Yalçın (2013), on the other hand, found that openness to experience personality traits do not have predictive features on attitudes towards teaching due to intercultural differences. Bitlisli, Dinç, Çetinceli & Kaygısız (2013) emphasized the importance of using versatile teaching techniques by referring to the personality differences of the students in the training and information sharing studies for the new educator candidates with a dominant personality trait open to experience. The research conducted by Işık and Kaptangil (2018) also reveals that those with a dominant personality trait openness to experience are very social in daily life and are not overly dependent on social networks because they adopt to perform their duties through face-to-face interviews. At this point, it is seen that the candidate teachers with a dominant personality trait that is open to experience differ from the candidate teachers with other personality structures with a certain cross-section, and it is seen that they tend to get new experiences physically by going out of their habits. This information can be interpreted as individuals who are open to experience use social networks more controlled, thus putting them in an advantageous position in providing academic benefits.

Another personality trait on which the findings obtained within the scope of the research are concentrated is agreeableness, and this trait is evaluated within the genetic factors (Robinson, Emde, & Corley, 2001). Chamorro-Premuzic (2007) defined agreeableness as having a prosocial behavior tendency. Therefore, agreeableness represents the more humane aspect of humanity (Digman, 1990). Agreeableness (Viswesvaran & Ones, 2003) features related to pleasantness, sweetness; It is related to courtesy, flexibility, trust, good manners, cooperation, forgiveness, empathy and has been shown to be among the important predictors of attitude towards teaching. According to studies (Somer, 1998), it is also stated that agreeableness has a strong relationship with the moral values of individuals. This research reveals that the increase in physical education teacher candidates'

agreeableness levels also relatively increases their learning based on social networks. This result shows that the agreeable candidate teachers' characteristics such as cooperation, kindness, patience and empathy come to the fore in social networks with the effect of genetic factors. Agreeable individuals make the process in social networks more beneficial to them. At the same time (Friborg, Barlaug, Martinussen, Rosenvinge & Hjemdal, 2005), it is reported that those with agreeableness personality traits are reliable, cooperative, empathetic and warm, and they have a wider social network of supportive issues that will help individuals overcome psychosocial stressors when they encounter them.

Another personality trait discussed in the research is conscientiousness. Sasson (2003) reported that conscientiousness is “to have, to postpone laziness, to overcome indecision and weakness; taking the necessary action under all circumstances, even if it is unpleasant and requires effort” and people with high conscientiousness are more concentrated in the learning process. The researches made on self discipline; draws attention to its positive effect on perseverance (Vainio and Daukantaitė, 2016; Akbağ and Ümmet, 2017; Kannangara and others, 2018). At the same time, studies have shown that conscientiousness has significant positive effects on academic achievement (Tangney, Baumeister & Boone, 2004; Zhao & Kuo, 2015; Zimmerman & Kitsantas, 2014). In addition, Gong and others, (2009) found that conscientiousness has positive effects on learning. In this study, it was determined that conscientiousness had a positive effect on learning through social networks. The high level of perseverance and concentration of conscientious candidate teachers shows that they also use these skills effectively in social networks.

As a result; In the light of the findings of this study, positive and significant relationships were found between the big five personality traits of extraversion, openness to experience, agreeableness and conscientiousness, and learning based on social networks in physical education and sports teacher candidates. In addition, it was determined that agreeableness was predictive of learning based on social networks.

The social networks that people prefer, the frequency of using them and the way they interact are related to their personality traits. In this context, if the administrators of professional or amateur social networks for learning-teaching purposes plan and share their content by taking into account different personality traits, more people will be able to benefit from these contents. Based on this information, increasing the sharing of physical education and sports teacher candidates in social networks that will support their field, professional and general culture information can provide them with an opportunity for both professional and personal development. In addition, trainings for physical education and sports teacher candidates to use social networks efficiently may allow them to benefit more from these platforms.

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## A convergent parallel mixed-method research into the use of the cheat sheet in teacher education: State test anxiety, exam scores and opinions of prospective teachers

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### Abstract

The aim of the study is to investigate the use of cheat sheets in teacher education. The research analyzed state test anxiety levels of prospective teachers, the correlation between their cheat sheet evaluation scores and exam scores, and opinions of prospective teachers about the cheat sheet. Thus, the study was conducted as a convergent parallel mixed-method research in which both quantitative and qualitative methods were used simultaneously. The study group consisted of 24 prospective teachers. Data regarding state test anxiety levels of the prospective teachers were gathered just before the exam via State Test Anxiety Scale. The cheat sheet evaluation rubric designed by the researcher was used to evaluate the cheat sheets prepared by the prospective teachers. The prospective teachers' exam scores were obtained from their responses. The data about opinions of the prospective teachers were collected via Standardized Interview Form developed by the researcher. The findings of the study revealed that prospective teachers' overall state test anxiety was at "very little" level. There was a statistically significant and positive correlation between the prospective teachers' cheat sheet evaluation scores and their exam scores. Qualitative findings revealed that the prospective teachers started taking notes at the beginning of the semester to write on their cheat sheets; however, they started to write their cheat sheets the day before the exam. They wrote their cheat sheets in 3-5 hours, and spent 3-5 hours studying for the exam. The prospective teachers rarely used their cheat sheets during the exam; however, the cheat sheet helped them learn the material, and they wanted to use cheat sheets in other courses. The prospective teachers used different strategies while writing their cheat sheets. Based on the conclusions of the study, teacher educators are also recommended to let prospective teachers use cheat sheets during exams to reduce their anxiety, to increase their exam scores, and most importantly, to help them learn the material thoroughly.

**Keywords:** Evaluation methods, the cheat sheet, state test anxiety, exam scores, opinions, prospective teachers.

### INTRODUCTION

Assessment in teaching can be done in different ways. Formative assessment helps lecturers to evaluate students' academic development. It contributes them to adjust instructional methods to achieve the course objectives. Homework assignments, class discussions and quizzes are usually used for process assessment as formative assessment. However, summative assessment is more suitable for evaluating retention of materials and usually used at the end of a cycle with a mid-term exam or a final exam (Appiah-Kubi, 2016). Many exams are usually test-based, which encourages students to memorize the information to be tested. Moreover, test-based assessment hinders high-order learning, thinking critically and solving problems, which results in rote memorization (Wilson & Narasuman, 2020). Thus, students prefer surface learning in order to just pass the test rather than deep-level mastery of concepts or learning a subject thoroughly (Jensen, McDaniel, Woodard & Kummer, 2014). On the other hand, preparation of a cheat sheet may help students organize information for testing and promote to develop better study skills as well as deep learning. Test anxiety is another problem in assessment because the idea of taking tests may affect students' self-efficacy, motivation and effort (Harlen & Crick, 2003). Students may not reflect what they know exactly in a test due to test anxiety. In addition to improving performance, the cheat sheet may help reduce test anxiety (Erbe, 2007; Gharib & Phillips, 2012; Gharib, Phillips & Mathew, 2012).

A cheat sheet is defined as "a sheet containing information (such as test answers) used secretly for cheating" and "a written or graphic aid (such as a sheet of notes) that can be referred to for help in understanding or remembering something complex" in the dictionary of Merriam-Webster. A cheat sheet is also depicted as "a piece of paper, computer file, etc. that gives you useful information about a subject, or helps you remember or do something, sometimes used for cheating in a test or examination" in Cambridge Advanced Learner's Dictionary. Cheating is not allowed in assessment and evaluation process in education; however, registered cheat sheets may provide educational benefits. In the literature, there are some studies using the concepts of help sheet (Ludorf & Clark, 2014), support sheet (Danielian & Buswell, 2019), crib sheet (Cannonier & Smith, 2019; Rice, Vogelweid & Kitchel, 2017; Edwards & Loch, 2015), student-prepared testing aids (Larwin, 2012; Larwin, Gorman & Larwin, 2013) as well as cheat sheet (Appiah-Kubi, 2016; Song, Guo & Thuente, 2016; Song & Thuente, 2015; Pollari,

2015; de Raadt, 2012; Gharib & Phillips, 2012; Gharib, Phillips & Mathew, 2012; Grosz, 2008; Erbe, 2007; Cone, 2003; Wachsmann, 2002). The concept of cheat sheet was preferred in the current study, and it can simply be defined as “a sheet of notes produced while preparing for an examination” (de Raadt, 2012). The size of the cheat sheet is double-sided A4, and students are allowed to write in hand whatever information they believe is relevant.

In preparing cheat sheets, students should be careful because if the material is large, they cannot possibly write all the information. Therefore, they should organize their notes more efficiently. They should first distinguish between the information they know and the information they do not know exactly. Next, they should decide what to write on their sheet so that it will be an excellent incentive and method for students (Grosz, 2008; Erbe, 2007; Cone, 2003). Moreover, they should write as small as possible to include more information, and they should write large enough to be able to read during the exam. Preparing the cheat sheet as early as possible in the course gives students some outlook on how to study and/or how to divide material down into its simplest form (Grosz, 2008). Consequently, they actually study, learn, absorb and internalize the material while they go through all the preparation process.

Using cheat sheets in testing resembles real-life situations in that people solve problems with reference materials. It reduces students' anxiety in exams (Erbe, 2007; Cone, 2003), and students concentrate more on learning instead of details. Organizing and writing the information allow students to fill in the blanks in their knowledge (Erbe, 2007). Finally, it provides lecturers to construct better exams with questions serving to reach higher levels of learning outcomes (Cone, 2003). During his 47 years of teaching at both graduate and undergraduate levels, Grosz (2008) recommended the use of cheat sheets under right circumstances. First, students should be informed that the cheat sheet can/will be used during the exam as early as possible. Secondly, the exam should cover more material than other exams will cover, especially with lots of details to be tested on. He also conveyed that letting students use their cheat sheet in an examination will be a notable educational tool.

When the literature was reviewed, it was observed that there were significant studies about the use of cheat sheets. Nsor-Ambala (2020) investigated the use of closed-book, open-book and cheat-sheet exams in cost and management accounting course and concluded that exam type affected exam scores, and the highest scores were of those who used cheat sheets. Students were less anxious when they had cheat-sheet or open-book exams than closed-book exams. Finally, retention was the highest in cheat-sheet exams than open-book and closed-book exams. Paquin, Miller and Baron (2020) also explored the effects of different exam types and reached the conclusion that the use of cheat sheets reduced exam failure rate from 11.8% to 0%. Likewise, Gharib, Phillips and Mathew (2012) compared different exam types, examined students' preferences and anxiety levels in introductory psychology course. They found out that students got higher scores on open-book exam than on closed-book exams, they preferred open-book and cheat-sheet exams over closed-book exams, and they were less anxious when they took open-book exams compared to cheat-sheet exams.

Another study applied in principles of macroeconomics course explored the effects of cheat sheets on test performance, it analyzed students' performance with and without cheat sheets in an identical set of multiple-choice tests. When students had cheat sheets, they spent less time studying and performed better because the cheat sheet helped them be more optimistic and realistic about their test performance, in addition to leading them to study more efficiently. Moreover, the cheat sheet was effective for exam questions at apply level rather than remember level of Bloom's revised taxonomy. (Settlage & Wollscheid, 2019). Hamouda and Shaffer (2016) investigated whether there was any feature of cheat sheets that correlated with better exam scores in data structures and algorithms course. They concluded that students performed significantly better on questions at comprehension level of Bloom's original taxonomy (Bloom, 1956) if their cheat sheet contained the information on the topic. However, performance on questions at higher levels of the taxonomy did not show correlation with the content of the cheat sheet. In addition, the findings showed that medium- and high- achieving students did better on certain questions than others at application level if they had good coverage of the question's topic on their cheat sheets.

Danielian and Buswell (2019) analyzed the relationship between what is written on the cheat sheet and the students' performance on the mechanics of materials course and concluded that the most reflective feature of the cheat sheet leading to higher performance was the use of annotations on the cheat sheet; in other words, the absence of annotations led to lower performance. Another study in online mathematics course analyzing the quality of the cheat sheet revealed that the cheat sheets were neither well- made nor well used; and thus, they didn't affect student scores (Capaldi, 2019). Shaw and Almeida (2018) examined the relationship between quality of cheat sheets and exam scores in anatomy and physiology course and found correlations between the cheat sheet use and exam scores, and between the numbers of colors used on the cheat sheet and exam scores. However, they found no correlation between the number of sections used on the cheat sheet and exam scores. Song, Guo and Thuente (2016) compared the quality and the effect of graduate students' cheat sheets with undergraduate students' in



computer networking course. They found out that not only graduate but also undergraduate students who prepared better cheat sheets had higher scores in exams, the correlation between cheat sheet quality and exams scores were higher for undergraduate students than graduate students, undergraduate students were likely to write down more sample answers on their cheat sheets, too many sample answers didn't help them get higher grades in both groups, graduate students drew more graphs on their cheat sheets. In addition, graduate students expressed that the cheat sheets were helpful both as learning tools and aids during exams, that their attitude improved through the semester, and that spending excessive time preparing cheat sheets didn't help them do better on exams.

Cannonier and Smith (2019) investigated the use of cheat sheets in economics in a different way because they compared individually prepared cheat sheets with cooperatively prepared cheat sheets. They concluded that the use of cheat sheet can increase test performance. However, cooperative cheat sheets were not more effective than individual cheat sheets, and they were even worse than no cheat sheets. In their study with nursing students, Malecha and Budhrani-Shani (2018) found out that the frequency of looking at the cheat sheet during the exams was positively correlated with confidence, cheat sheets decreased anxiety, the time spent for writing the cheat sheet was also positively correlated with confidence, the use of cheat sheets was not correlated with overall exam scores, creating the cheat sheet helped students learn/memorize, and the cheat sheet was a security blanket during exams. Similarly, Burns (2014) investigated the use of cheat sheets in four separate exams in statistics course and revealed that there was a negative correlation between the number of times students used their cheat sheets and their exam performance. High-achieving students did not utilize their cheat sheets very much, and moderate- and low-achieving students increased their cheat sheet use throughout the semester.

In their two-year longitudinal study, Rice, Vogelweid and Kitchel (2017) analyzed the effects of the cheat sheet use on achievement and retention in virology course. They also examined opinions of the students. The students had six exams, the sixth one was retention, and the students were not allowed to use cheat sheets in all exams. Their scores with and without cheat sheets were compared. The results demonstrated that the cheat sheet use improved achievement but not retention. In addition, the cheat sheet use had positive effects such as decreasing anxiety, improving engagement and learning, and providing emotional comfort and support. On the other hand, the cheat sheet use caused dependency, and students neglected studying; thus, it decreased learning. The cheat sheet preparation process was stressful and took time away from productive studying, tests were harder when cheat sheets were allowed, and it gave a false sense of security. Appiah-Kubi (2016) analyzed the effect of cheat sheet on two separate exam scores in industrial and environmental safety course and found out that an effective cheat sheets helped students score above-average in both exams, and the number of effective cheat sheets prepared for the second exam was higher, which demonstrated that students experienced in preparing better cheat sheets in time. Song and Thuente (2015) explored the effect of cheat sheet quality on three separate grades of students who were taking computer science networking course. The study concluded that the cheat sheet quality varied significantly between high-achieving and low-achieving students, students' grades were related to their cheat sheet quality, and if students managed to improve the quality of their cheat sheets from the first exam to the next, their grades would improve for the subsequent exam. Similarly, in another study, more capable students in creating the cheat sheet got higher scores in physics (Hamed, 2008).

Vogelweid and Kitchel (2017) examined the performance of veterinary students on exams using cheat sheets in a two-year longitudinal study. The results displayed that utilizing cheat sheet enhanced exam performance, but it did not have an effect on retention. The students indicated that having the cheat sheet in the exam decreased their anxiety and provided assistance during both studying and testing. Erbe (2007) analyzed the use of cheat sheets in different courses such as statistics, research methods, methods of teaching mathematics, and computer use in education and revealed that it reduced anxiety in all exams. Edwards and Loch (2015), Ludorf and Clark (2014) and de Raadt (2012) examined the content and layout of cheat sheets in calculus, psychology and programming exams, respectively. Ludorf and Clark (2014) found out that the quality of cheat sheets predicted scores in the exam. Similarly, de Raadt (2012) found a positive relationship between the quality of cheat sheets and test performance. Pollari (2015) analyzed the use of cheat sheet in an EFL class and concluded that the presence and quality of cheat sheets correlated with test results. Therefore, students with a better cheat sheet scored slightly higher than others. Most of the students indicated that preparing cheat sheets reduced their test anxiety, improved their study habits, and they learned better.

Despite numerous research on the cheat sheet, only Skidmore and Aagaard (2004) examined the cheat sheet use in teacher education. Their study investigated the effect of cheat sheet on exam scores, but not the effects of cheat sheet on test anxiety and the opinions of prospective teachers. When the teacher education literature and the recent studies on the cheat sheet mentioned above were taken into consideration, it was noticed that the research on the cheat sheet was really limited in teacher education. The current study, presenting novice findings, will lead to eliminate the limitation of research on the cheat sheet use in teacher education literature. Consequently, the aim of



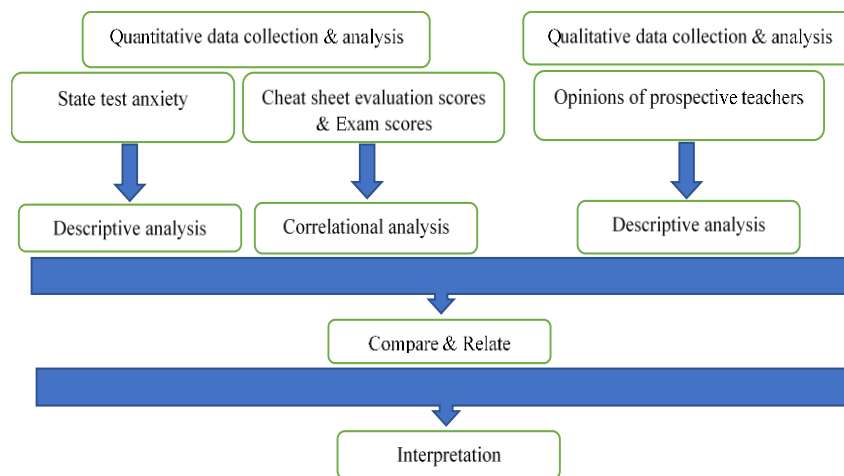
the study is to investigate the use of cheat sheets in teacher education. To reach this aim, the following research questions were posed:

1. What are state test anxiety levels of prospective teachers who used cheat sheets in the exam?
2. Is there a correlation between the cheat sheet evaluation scores of prospective teachers and their exam scores?
3. What are the opinions of prospective teachers about the cheat sheet?

## METHOD

### Research Design

The study was conducted as a convergent parallel mixed-method research. In the study, first of all, both quantitative (survey, cheat sheet evaluation scores and exam scores) and qualitative data (interviews) were gathered. Then they were analyzed separately. Next, the results from the analyses of both datasets were compared. Finally, the results were interpreted whether the results support or contradict each other (Creswell et al., 2003; Creswell & Plano Clark, 2007; Creswell, 2011). The convergent parallel mixed-methods design used in the study was given in Figure 1.



**Figure 1.** The convergent parallel mixed-method design used in the study

### Study Group

In the study, criterion sampling method, one of the purposive sampling methods, was used. Prospective teachers' use of cheat sheets was considered as the sampling criterion in curriculum development in education course. Curriculum development in education course covers mostly content knowledge, so the exam covers more information than other exams with lots of details to be tested, which is considered as one of the certain circumstances by Grosz (2008). The prospective teachers taking the course are expected to "think like a curriculum developer" rather than memorize the content of the course, which has also led to determine the sampling criterion. Therefore, 24 prospective teachers who were taking curriculum development in education course at a faculty of education at a state university in Turkey, and who prepared and used cheat sheets in the midterm exam of the mentioned course constituted the study group. Prospective teachers participated in the study voluntarily. Demographic features of the study group were given in Table 1.

### Instruments

#### State Test Anxiety Scale

State test anxiety levels of prospective teachers were examined using the data collected just before the exam via "State Test Anxiety Scale" developed by Şahin (2019). It was a four-point Likert scale graded as "not at all", "very little", "somewhat" and "to a great extent". The scale consisted of 22 items and 3 factors as cognitive, psychosocial and physiological. Confirmatory factor analysis displayed that fit indices ( $\chi^2/sd=1.72$ , CFI=.96, NNFI=.96, IFI=.96, RMSEA=.05, SRMR=.05) were at perfect levels (Şahin, 2019). The Cronbach's alpha was .93, .84 and .85 for cognitive anxiety, psychosocial anxiety, physiological anxiety, respectively. Cronbach's alpha was .94 for the overall state text anxiety scale (Şahin, 2019). In the current study, Cronbach's alpha was .89, .83 and .88 for cognitive anxiety, psychosocial anxiety, physiological anxiety, respectively, and .94 for the overall state text anxiety scale.

**Table 1.** Demographic features of the study group

Features		f
Gender	Female	19
	Male	5
Age	19	7
	20	10
	21	4
	22	3
Department	Preschool Teaching	9
	Primary School Mathematics Teaching	6
	Physical Education and Sports Teaching	3
	Social Sciences Teaching	2
	Guidance and Psychological Counseling	2
	English Language Teaching	1
	German Language Teaching	1
Midterm exam score	50-66	9
	67-83	11
	84-100	4
Cheat sheet evaluation score	6-13	1
	14-21	13
	22-29	10
Total		24

### ***The Cheat Sheet Evaluation Rubric***

A draft cheat sheet evaluation rubric was designed by the researcher to evaluate the cheat sheets prepared by prospective teachers after the literature review (Gharib, Phillips & Mathew, 2012; in Raadt, 2012; Ludorf & Clark, 2014; Song & Thunte, 2015; Song, Guo & Thunte, 2016; Appiah-Kubi, 2016; Hamouda & Shaffer, 2016; Capaldi, 2019; Danielian & Buswell, 2019). In order to ensure the content validity of the draft rubric, two experts were consulted. The draft was modified in line with the suggestions. The final evaluation rubric consisted of 10 criteria. While the highest score that could be obtained from the evaluation rubric was 29, the lowest score was 6.

### ***Exam Scores***

Prospective teachers' exam scores were obtained from their responses. Before the exam, a draft exam sheet was prepared by the researcher including questions of higher-order cognitive levels of Bloom's revised taxonomy (Anderson & Krathwohl, 2001). Two experts in the field were consulted to categorize the questions into Bloom's revised taxonomy, and to suggest on the questions. Their categorization was the same as the researcher's, but the structures of some questions in the draft exam sheet were modified in line with the suggestions. Finally, the exam sheet involved questions of understand (57%), analyze (14.5%) and evaluate (28.5%) levels of Bloom's revised taxonomy. Students had to explain ideas and concepts (understand), distinguish between different parts (analyze), and justify a stand or decision (evaluate) to answer the questions. Students could not get higher scores simply by copying the information in their sheets as Erbe (2007) suggested.

### ***Standardized Interview Form***

The data about the opinions of prospective teachers were collected via "Standardized Interview Form" developed by the researcher after the literature review (Song, Guo & Thunte, 2016; Gharib, Phillips & Mathew, 2012; Cone, 2003; Wachsman, 2002). The interview form included both closed- and open-ended questions. In order to ensure the content validity of the draft interview form, two experts were consulted, and the draft was modified in line with the suggestions. Since prospective teachers were in their hometowns due to Covid-19 pandemic, the data were collected online. The link of the interview form developed for the study was sent to the prospective teachers, and they were asked to express their opinions. The data were collected in the second half of the 2019-2020 spring semester.

### ***Procedure***

At the beginning of the semester, the prospective teachers were told that they would be allowed to prepare a cheat sheet for themselves in order to use during the exam, and they were given the following rules for its preparation and use (Cone, 2003):

1. They may write their cheat sheets on both sides of a regular sheet of paper (A4).
2. Everything on the sheet must be in their own handwriting. Because there is a relationship between handwriting and higher exam results.

3. They may prepare cheat sheets in groups, but everything on one's cheat sheet must be only his/her own handwriting.
4. They may put down anything they think will be useful: definitions, abbreviations, concept mapping, drawings, etc.
5. They will be asked to turn in their cheat sheets after the exam.

### Data Analysis

In order to analyze state test anxiety levels of prospective teachers, maximum, minimum, mean and standard deviation scores of three sub-scales and overall state Test Anxiety Scale were determined. Class width formula (class range/number of classes) recommended by Tekin (2002) and used in educational studies (Özer, 2019) was used in the evaluation of mean scores. Class width was calculated by the dividing the difference between the highest (4) and lowest score (1) by the number of classes (4). Class width levels used in the evaluation of the research findings were as follows:

- 1-1.75: "Not at all",
- 1.76-2.50: "Very little",
- 2.51-3.25: "Somewhat" and
- 3.26-4.00: "To a great extent".

Cheat sheets of all prospective teachers were evaluated by the researcher in terms of the criteria in the cheat sheet evaluation rubric and scored between 6 and 29. Then cheat sheets were scored by another expert in the field. The numbers of "agreements" and "disagreements" were determined, and interrater reliability was calculated via the reliability formula (reliability= the number of agreements/ the number of agreements+ the number of disagreements) proposed by Miles and Huberman (1994). Within the scope of the reliability study, the expert scored the cheat sheet of three prospective teachers differently from the researcher. Reliability in the evaluation rubric was calculated as (reliability=  $21/(21+3)$  87.5%, which is sufficient as it was expected to be at least 80% (Miles & Huberman, 1994; Patton, 2002). Finally, the cheat sheet evaluation scores of these three prospective teachers were used by calculating mean scores of both evaluation scores. Ultimately, Pearson correlation analysis was applied in order to analyze the relationship between prospective teachers' cheat sheet evaluation scores and their exam scores.

The data about the opinions of prospective teachers were analyzed descriptively using traditional qualitative data analysis. The answers given by prospective teachers were downloaded onto the computer by giving numbers to the interview forms according to the order of the online forms. In closed-ended question, the frequencies were given so as to reflect the situation. However, in open-ended questions, the frequencies were not given since the opinions of prospective teachers included more than just one category. After the answers were examined in general, similar opinions were the grouped into categories. Direct quotations were included in order to reflect the opinions of prospective teachers more accurately. While giving direct quotations, the letter "PT" for prospective teacher, numerical codes such as 1, 2, 3, 4 ... for the order of submitting the interview form, and the letters "F" and "M" to indicate their gender were used. For example, the code "PT1F" was used for a female prospective teacher who submitted the first form.

### FINDINGS

State test anxiety levels of prospective teachers who used cheat sheets in the exam were analyzed and the findings (Table 2) displayed that prospective teachers' mean score for cognitive anxiety ( $X=2.79$ ) was at "somewhat" level. Their mean score for psychosocial anxiety ( $X=1.65$ ) and physiological anxiety ( $X=1.75$ ) were at "not at all" level. Finally, prospective teachers' mean score for overall state text anxiety ( $X=2.15$ ) was at "very little" level. The findings suggests that the process of preparing cheat sheets and the idea of having cheat sheets with them during the exam have presumably affected prospective teachers' state test anxiety levels and led to lower anxiety levels.

**Table 2.** The state test anxiety levels of prospective teachers

	N	Minimum	Maximum	X	Sd	Level
Cognitive anxiety	24	1.56	4.00	2.79	.73	Somewhat
Psychosocial anxiety	24	1.00	4.00	1.65	.73	Not at all
Physiological anxiety	24	1.00	3.88	1.75	.73	Not at all
Overall state text anxiety	24	1.27	3.95	2.15	.65	Very little

The correlation between the cheat sheet evaluation scores of prospective teachers and their exam scores was analyzed and the findings (Table 3) indicated that there was a statistically significant and positive ( $r=.56$ ,  $p<.01$ ) correlation between prospective teachers' cheat sheet evaluation scores and their exam scores. In other words, the higher the cheat sheet evaluation score, the higher the exam score.

**Table 3.** The correlation between the cheat sheet evaluation scores of prospective teachers and their exam scores

Variables	X	SS	1	2
1. Cheat sheet evaluation score	20.16	4.50	-	
2. Exam score	69.50	14.90	.56**	-

\*\*p<.01

Opinions of prospective teachers were analyzed and the findings were given in the order in the interview form. Analyses revealed that most of the prospective teachers (f=9) started taking notes at the beginning of the semester to write on their cheat sheets. These prospective teachers may be considered to be the most self-disciplined and self-directed ones. While 9 prospective teachers started taking notes 5, 3 or 2 weeks before the exam, 6 prospective teachers started to take notes the week before the exam. However, when starting time for writing cheat sheets was analyzed, it was observed that the majority of prospective teachers (f=7) started to write their cheat sheets 1 day before the exam. These prospective teachers may have thought that they could easily remember what and where on the cheat sheet they had written; and thus, they could find the answers of the questions during the exam immediately. In addition, 6 prospective teachers started to write their cheat sheets 3 days before the exam, 5 prospective teachers started to write their cheat sheets 1 week before the exam, and 3 prospective teachers started to write their cheat sheets a few hours before the exam. Finally, 1 prospective teacher started to write his/her cheat sheet 2 weeks before the exam, 4 days before the exam and 2 days before the exam, respectively.

The vast majority of prospective teachers (f=12) wrote their cheat sheets in 3-5 hours. While 6 prospective teachers spent 6-8 hours, and 5 prospective teachers spent less than 3 hours writing their cheat sheets, only 1 prospective teacher spent 9-11 hours. Whereas the majority of the prospective teachers (f=10) spent 3-5 hours studying for the exam, 8 prospective teachers spent less than 3 hours. In addition, 2 prospective teachers studied 6-8 hours, and 4 prospective teachers studied 9-11 hours for the exam. The prospective teachers who spent less time on writing their cheat sheets may have preferred to study more; on the other hand, those who spent more time on writing their cheat sheets may have preferred to write and study at the same time.

The majority of the prospective teachers (f=10) rarely (for less than half of the questions) used their cheat sheets during the exam. While 7 prospective teachers sometimes (for half of the questions) used their cheat sheets, 4 prospective teachers often (for more than half of the questions) used their cheat sheets, and 3 prospective teachers always (for all the questions) used their cheat-sheets during the exam. In addition, 13 prospective teachers thought that cheat-sheet was helpful, and 6 preservice teachers thought that it was very helpful during the exam. Whereas 4 prospective teachers were not sure about the effect of using their cheat sheets, only 1 prospective teacher thought that it was not helpful. The findings evoke that the process of preparing cheat sheets and the idea of having cheat sheets with them during the exam, similar to lowering anxiety levels, have presumably led prospective teachers to learn the material thoroughly and get a solid grasp of the topics covered in the courses.

Another finding of the study was that most of the prospective teachers (f=18) thought that writing cheat sheets helped them learn. However, 4 prospective teachers thought that writing cheat sheets did not help them learn, and 2 prospective teachers were not sure about the effect of writing their cheat sheets on their learning. Similarly, most of the prospective teachers (f=15) thought that they could have got a score between 50 and 66 in the exam without using their cheat sheets, which means they would have performed worse than they did with their cheat sheets. The finding also supports the previous finding of the current study that most of the prospective teachers thought that writing cheat sheets helped them learn the material. 6 preservice teachers thought that they could have got a score of 49 and below. Finally, only 3 prospective teachers thought that they could have got a score between 67 and 83. When their preference in exam types were analyzed, the vast majority of prospective teachers (f=12) preferred taking the exams using all their notes, which may have resulted from their indecision about what was important and what to write on their cheat sheets. 8 prospective teachers preferred taking the exams using their cheat sheets, and 2 prospective preferred open-book exams. On the other hand, 2 prospective teachers preferred traditional exams. These 2 prospective teachers may be the ones who are less innovative than others.

In the same vein, when the opinions of the prospective teachers about using the cheat sheet in other courses were analyzed, the findings (Table 4) reflected that most of them wanted to use the cheat sheet in the exams of other courses because it enabled them to learn permanently, it helped them remember the material, it helped them repeat the material, it enabled them to learn by writing, it reduced their stress/anxiety, it increased their effort, and it enabled them to comment on the questions during the exam. To illustrate, PT10M declared, “*Yes, writing over and over again enabled learning.*”, PT21M stated, “*Yes, because I am a prospective teacher, I forget some of the information since we comment more in the exam than just writing the knowledge.*”, and PT23F explained, “*Yes, we have notes, so it makes us feel comfortable.*” On the other hand, some of the prospective teachers did not want to use the cheat sheet because they studied less, they couldn’t write everything on the cheat sheet, or it took them

a lot of time to prepare. PT17F emphasized, *“Although I think it has helped me in the exam, I don’t want to use it in other courses because it takes time to fit notes on the cheat sheet, and all of the information cannot be included.”*, and PT3F expressed, *“No, I don’t want to use cheat sheets because I studied less because I trusted the cheat sheet, but I didn’t use cheat sheet, either.”* A few prospective teachers wanted to use cheat sheets in some courses expressing that it can be used in social sciences courses, it is not suitable for all courses, and it can be used for formulae in numerical courses. To exemplify, PT7F stated, *“It can help in verbal classes. I think it could be easier to memorize the topics when I try to write on the cheat sheet.”*, and PT5F explained, *“I want to use the cheat sheet in the exams because most of my courses are numerical, and it can help about formulae.”*

**Table 4.** Desire to use the cheat sheet in other courses

Desire to use cheat-sheet in exams of other courses	
Yes	<ul style="list-style-type: none"> <li>• Because it enabled me to learn permanently.</li> <li>• Because it helped me remember.</li> <li>• Because it helped me repeat the material.</li> <li>• Because it enabled me to learn by writing.</li> <li>• Because it reduced my stress/anxiety.</li> <li>• Because it increased my effort.</li> <li>• Because it enabled me to comment on the questions in the exam.</li> </ul>
No	<ul style="list-style-type: none"> <li>• Because I studied less.</li> <li>• Because I couldn’t write everything.</li> <li>• Because it took me a lot of time to prepare.</li> </ul>
In some courses	<ul style="list-style-type: none"> <li>• Because it can be used in social sciences courses.</li> <li>• Because it is not suitable for all courses.</li> <li>• Because it can be used for formulae in numerical courses.</li> </ul>

When it comes to experiences of the prospective teachers on preparing the cheat sheet, the findings (Table 5) indicated that opinions of the prospective teachers were positive about the cheat sheet preparation process, and that they benefited from their cheat sheets. They expressed that they used the paper effectively applying different strategies. While some of them numbered the topics, some of them wrote the notes in headings and subheadings, some of them folded the paper in two and wrote back and forth, and some of them divided the paper into sections. PT10M explained his strategy, *“I struggled a lot to fit the material, and it was also effective for me to learn. I underlined and numbered the titles with colored pencils in order not to confuse what I wrote, and at the same time, I divided the paper into sections.”* Moreover, PT6F expressed, *“After I wrote it, I underlined the important sentences or headings. I wrote in a way that I could understand.”*

Some of the prospective teachers didn’t have much problem during the cheat sheet preparation process. To illustrate, PT18F declared, *“I did not have any problem. I only wrote certain topics my teacher emphasized. I wrote the definitions. I think I used the page effectively. I did not write every detail. it was short and clear. I started 3 days before the exam. What I learned is that if we do not understand and grasp the subject, it does not change the truth even if we use the cheat sheet and get 100. We had to write the cheat sheet using our own sentences after reading and understanding the subjects.”*, and PT23F explained, *“I had no problems, but I was afraid of not fitting. I did not write descriptions or details. I prepared it as a reminder using short sentences in the form of headings and subheadings. I wrote from the first topic to the last topic covered in the courses. Since my notes are ready, I did not start to write too early. I prepared it 3-4 days before the exam. Since I wrote it 3-4 days ago, what I wrote was all in my mind.”*

**Table 5.** Experiences on preparing the cheat sheet

Experiences on preparing cheat-sheets
<ul style="list-style-type: none"> <li>• I used the paper effectively.</li> <li>• I wrote the topics that were emphasized in the course and that I considered important.</li> <li>• I was worried about writing all my notes on a piece of paper.</li> <li>• I did not write in details.</li> <li>• I did not have any problems.</li> <li>• I wrote my notes in the order covered in the courses.</li> <li>• I could not decide what was important and what to write.</li> <li>• It took time to write/fit my notes on a piece of paper.</li> <li>• I wrote what I didn’t know, not what I knew.</li> <li>• I wrote down the notes that I took every week.</li> </ul>



- 
- It was very difficult.
  - I wrote informative notes instead of comments.
  - It was a different experience.
  - I wish I could use all my notes.
  - It remembered everything easily in the exam as I wrote the cheat-sheet a few days before the exam.
  - I realized that using the cheat sheet alone wouldn't work.
  - I wrote almost everything.
  - I just wrote the headings.
- 

On the other hand, some of the prospective teachers declared that it was a troublesome and tiring process, and they couldn't see the forest for the trees. In addition, some of them depended more on their cheat sheets and didn't study enough. PT17F expressed her experience, *"I had some problems. It took a lot of time to fit the notes on the cheat sheet. It was a disadvantage in terms of time, and I could not include all information in terms of using the paper. For this reason, unfortunately, I could not include details on all issues. I wrote the topics in the order that we studied in the courses. I started to prepare it 2 weeks ago in order not to get stuck with other courses during the exam week. Moreover, I started to write early because I may have to erase it all and write over again if I couldn't write all the material on the paper. I decided on what to write by paying attention to the topics that the teacher explained and emphasized more in the courses."* As some of the prospective teachers stated, the most important point in preparing and writing the cheat sheet is knowing how to take effective notes. PT14M explained, *"Actually, it was very difficult because this was the first time I encountered such a notetaking. But I had got great tips from our teacher about how to use an A4 paper effectively while taking notes in biology course at high school. God bless him."* Similarly, PT22F expressed, *"I didn't elaborate, I thought I would comment during the exam. I was mentally tired while writing."* The quotations echo the significance of knowing how to take effective notes on the cheat sheet because preparing effective cheat sheets entails to read material, process information actively, select, organize, and prioritize the content, and the lack of these skills may probably make prospective teachers be fed up with the process of preparing the cheat sheet.

## DISCUSSION AND CONCLUSION

The aim of the study was to investigate the use of cheat sheets in teacher education course. A convergent parallel mixed-method research was applied in the study using both quantitative and qualitative methods. The research analyzed state test anxiety levels of prospective teachers, the correlation between the cheat sheet evaluation scores of prospective teachers and their exam scores, and opinions of prospective teachers about the cheat sheet.

The findings achieved from quantitative data revealed that prospective teachers' overall state test anxiety was very low and analyses of qualitative data support this finding since prospective teachers also expressed that using cheat sheets reduced their stress/anxiety and increased their effort. Moreover, this finding echoes the findings in the literature (Cone, 2003; Erbe, 2007; Gharib & Phillips, 2012; Gharib, Phillips, & Mathew, 2012; Vogelweid, Kitchel & Rice, 2014; Hamouda & Shaffer, 2016; Rice, Vogelweid & Kitchel, 2017).

The study found out that there was a statistically significant and positive correlation between prospective teachers' cheat sheet evaluation scores and their exam scores. In other words, the higher the cheat sheet quality, the higher the exam score. Similarly, Shaw and Almeida (2018) found correlations between the cheat sheet use and exam scores, and between the numbers of colors used on the cheat sheet and exam scores. Appiah-Kubi (2016) showed that an effective cheat sheet was highly likely to help a student score above average, and Song and Thuente (2015) concluded that exam scores are highly related to the cheat sheet quality. Another research found that both higher quality and lower density of cheat sheets were related to higher test performance (Ludorf & Clark, 2014). However, Visco et al. (2007) and Hamouda and Shaffer (2016) found no direct relationship between the cheat sheet quality and exams scores in chemical engineering. Another study in the literature found out that cheat sheets were more useful for undergraduate students than graduate students (Song, Guo & Thuente, 2016).

The processes of designing, preparing and writing the cheat sheet improved prospective teachers' exam scores since prospective teachers wrote their own cheat sheets in handwriting. The preparation process may have helped prospective teachers make less effort to find information on their cheat sheets during the exam. In addition, most of the prospective teachers had written their cheat sheets just before the exam, which may have a positive effect on their exam scores. The finding is also in parallel with Erbe (2007)'s finding that students spent a lot of time creating their cheat sheets, they did not actually refer to them during the exam. Prospective teachers declared that they adapted the information in the way to meet their own needs, and wrote only the information that they couldn't learn thoroughly. The act of organizing and writing the information on the cheat sheet enabled most prospective teachers to fill in the gaps in their knowledge as suggested in previous studies in the literature (Erbe, 2007; de Raadt, 2012).

The study revealed that most of the prospective teachers started taking notes at the beginning of the semester to write on their cheat sheets. The prospective teachers were informed at the beginning of the semester that they would have their exam using cheat sheets as Grosz (2008) recommended. Thus, they wanted to be ready for taking notes in order to write on their cheat sheets, which suggests that they are self-disciplined and self-directed. However, the majority of prospective teachers started to write their cheat sheets the day before the exam. They may have thought that they would remember more easily if they wrote their cheat sheets just before the exam.

Most of the prospective teachers wrote their cheat sheets in 3-5 hours, and spent 3-5 hours studying for the exam. Similarly, in a study, students spent less time studying when they took the exam with cheat sheets than without it, and with cheat sheets their performance was better (Settlage & Wollscheid, 2019). Surprisingly, one prospective teacher spent 9-11 hours writing the cheat sheet. It may have resulted from that she couldn't decide what and how to write because most of the prospective teachers explained that the process of writing the cheat sheet was troublesome, and they were mentally tired during writing. The finding echoes another conclusion in the literature that spending excessive time creating cheat sheets alone do not help students do better on exams (Song, Guo & Thuente, 2016).

Although the majority of the prospective teachers rarely used their cheat sheets during the exam, they stated that the cheat sheet was helpful or very helpful. Likewise, students, in other studies, loved the idea of cheat sheets though they rarely needed them in the exam (Erbe, 2007; Smith, 2007; Song, Guo & Thuente, 2016). This finding supports the explanation that the act of organizing and writing the information on their cheat sheets enabled most prospective teachers to fill in the gaps in their knowledge (Erbe, 2007; de Raadt, 2012). In addition, most of the prospective teachers themselves proved this idea by reporting that writing cheat sheets helped them learn the material. On the other hand, in their two-year longitudinal study, Rice, Vogelweid and Kitchel (2017) reached different conclusions. In their former application, students indicated that the cheat sheet helped them retain the course information longer, but in the following study, students did not have the same idea. Supporting their finding, Burns (2014) and Funk and Dickson (2011) ascertained that there was a negative relationship between cheat sheet use and exam scores. In other words, the more students looked at their cheat sheets during exams, the lower their exam scores were, which may indicate that students used the cheat sheet as a crutch but not for truly learning the course material.

Another finding of the study displayed that most of the prospective teachers thought that they could have got a score between 50 and 66 in the exam without using their cheat sheets, which was lower than the results of the actual exam because most of them got a score between 67 and 83. The finding indicates that prospective teachers gave enough importance to exam preparation, as in Burns (2014)'s study, the cheat sheet worked as a security blanket for high-achieving students who consider exam preparation seriously, but as a crutch for low- and moderate-achieving students. Furthermore, the finding reflects that both preparing and having their cheat sheets with them during the exam helped them get higher scores in addition to reducing anxiety. Likewise, Erbe (2007) concluded that cheat sheet enhanced learning, improved test performance, and reduced test anxiety.

Overall, prospective teachers preferred taking the exams using all their notes or their cheat sheets. The finding is in parallel with the literature because students got slightly better scores if they had the additional resources, and because they preferred open book and cheat sheets to closed book exams (Gharib, Phillips, & Mathew, 2012; Hamouda & Shaffer, 2016). The finding is also consistent with other findings of the study. To illustrate, prospective teachers were worried about writing all their notes on a piece of paper, so it was very difficult, and they had problems, which reflected that they would be more comfortable with all their notes. Moreover, they were mentally tired while writing, and they explicitly emphasized that they wished they could have used all their notes because they couldn't write all the information. The finding also embraces Rice, Vogelweid and Kitchel (2017)'s claim that the matter of course is not the cheat sheet itself, but how it is prepared, organized and used by the students. On the other hand, as Appiah-Kubi (2016) indicated, students can easily get experienced in preparing better cheat sheets in time if they are let to use cheat sheets more in their exams.

Most of the prospective teachers voiced that they wanted to use the cheat sheet in other courses, because it enabled them to learn permanently, it helped them remember, it helped them repeat the material, it enabled them to learn by writing, it reduced their stress/anxiety, it increased their effort, and it enabled them to comment on the questions in the exam. In the same vein, another study reported that students preferred using the cheat sheet during all exams of other courses (Rice, Vogelweid & Kitchel, 2017). On the other hand, some of the prospective teachers stated that they didn't want to use the cheat sheet in other courses because they couldn't write everything, and it took them a lot of time to prepare. Some of them also expressed that they studied less because they were too dependent on the cheat sheet; therefore, they didn't want to use the cheat sheets in other exams. Likewise, some studies in the literature exposed that some students used cheat sheets as a crutch, and developed a dependency on it (Gharib, Phillips & Mathew, 2012; Larwin, Larwin, & Gorman, 2012; Burns, 2014; Rice, Vogelweid & Kitchel, 2017). The dependency may be reduced with proper training on the preparation and use of the cheat sheet as a tool because

students' willingness to prepare and use the cheat sheet and how to prepare it has a significant role (de Raadt, 2012; Rice, Vogelweid & Kitchel, 2017). Some of the prospective teachers asserted that the cheat sheet was not suitable for all courses, and they suggested it could be used in social sciences courses or for formulae in numerical courses. This finding reflects thinking, studying and learning differences among prospective teachers.

Most of the prospective teachers expressed that they used the paper effectively. Each prospective teacher used a different strategy while writing their cheat sheets. Some of them numbered the topics, some of them wrote in headings and subheadings, some of them divided the paper into sections, some of them folded the paper in two and wrote back and forth. In addition, some of them wrote it first, and then they underlined the important sentences or headings, some of them wrote in a way that they could understand, and some of them wrote exactly what they wanted. These explanations also repeated the fact that all students are unique, and they think and learn differently as well as they have distinctive study habits.

The current study has some limitations. First of all, the research was planned to be conducted not only in the mid-term exam but also in the final exam of the course. However, due to Covid-19 pandemic, schools and universities were shut down, and prospective teachers were in their hometowns, so the second part of the research could not be applied. The repetition in the use of cheat sheets may enable prospective teachers to improve the quality of their cheat sheets from the mid-term exam to the final exam, so their scores may increase more in the subsequent exam. Thus, further research may include both mid-term exams and final exams, and a thorough conclusion may be drawn. Because of Covid-19 pandemic, the opinions of prospective teachers were obtained via online interview form, which may be regarded as another limitation. Further research may obtain more comprehensive data for qualitative research using face-to-face interviews or focus group interviews. Finally, the research was carried out in curriculum development in education course. Therefore, in the future, the research may be replicated in other courses in teacher education, and the results may be compared and contrasted. Beyond the current study, further research may investigate the use of ready-to-use high-quality cheat sheet versus student-produced cheat sheet and the effect of each practice on achievement and retention, explore the best practices of composing the cheat sheet, analyze the best time to produce the cheat sheet, or compare and contrast learning outcomes from students who created cheat sheets four days versus one day before the exam.

Based on the results of the research, teacher educators are recommended to let prospective teachers use the cheat sheet in exams in order to reduce their anxiety, increase their exam scores and most importantly, help them learn the material thoroughly. The cheat sheet can easily be used as an effective teaching tool in teacher education because teachers are expected to think critically and solve problems in schools and society. In the modern era, information is freely available, and it is the prospective teachers who should be encouraged first to search and consult the relevant documents to find the solution as appropriate as possible in a problematic situation. Therefore, they will be an ideal model for future generations.

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