THE DEVELOPMENT MODEL OF KNOWLEDGE MANAGEMENT VIA WEB-BASED LEARNING TO ENHANCE PRE-SERVICE TEACHER'S COMPETENCY

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ABSTRACT
This research explores that the model of knowledge management and web technology for teachers' professional development as well as its impact in the classroom on learning and teaching, especially in pre-service teacher's competency and practices that refer to knowledge creating, analyzing, nurturing, disseminating, and optimizing process as part of the learning quality improvements. In this process, web technology particular web-based learning has a necessary role to drive and integrate knowledge and learning activities within the knowledge management process (I-Can do model). In this respect, this research aims to study and develop the appropriate model of knowledge management via web-based learning by the 18 expert's consensus and evaluate competency of the 64 pre-service teachers that divide and random assignment into 2 equal groups (control and experimental group). The competency assessment tools are conducted the volunteer participants' competency particularly in knowledge, attitude, and skills approach. The research results exhibited that the model of knowledge management via web-based learning was appropriated and enhanced the pre-service teacher's competency.
Keywords: Knowledge Management (KM), Web-Based Learning (WBL), Competency.

INTRODUCTION

Teacher quality is the top contributing factor to student achievement. Quality ongoing professional development contributes to teacher growth and success. The need for professional development that can meet today's educators' demanding schedules, that uses quality content and resources that are available to teachers from any place and any time, and that can deliver relevant, accessible, and ongoing support has stimulated the development of online teacher professional development programs. Online teacher professional development programs make it possible for educators to communicate, share knowledge and resources, and reflect via asynchronous interactions. Moreover, Chai (2010) suggest that the many current ICT-supported reform efforts demand teachers to assume the role of epistemic facilitator of knowledge construction supported by technology. In addition, Koc and Bakir (2010) explored the characteristics of such technology training programs were discussed to help pre-service teachers learn how to use technologies as instructional tools to enhance their teaching and students` learning. The condition of education in Thailand today still has several problems. Especially, the quality of teachers seems shortages (Secretariat of the Council of Education, 2010: 53). Along with the lack of pedagogy training that is not match in the actual practical needs for schools (Keawdang, 2009: 131). Likewise, the competency problems effect on operations of teachers and learners (Ratchatavipasnant, 2009). Particularly, the lack of the good knowledge management let the opportunity to exchange and share knowledge is decreased between them and focuses on the upstream of training from real situations process (Dejakoop and Khangkhan, 2008) furthermore, Lee, et al (2010) have suggests that the common difficulties and limitations regarding the implementation of knowledge management into schools' organizational cultures are reviewed and discussed. In addition, Erkunt (2010) exhibited that students' collective inquiry relied on socially distributed cognitive resources that were generated by their social interactions in class and online using technology. The concept of web-based learning that based on the appropriate tool and the medium to deliver knowledge, and helps learners can communicated with each other (Catherall, 2008) especially in teaching and learning using the potential of internet network to access with various sources of learning (Speranza, 2008). The main purpose of this study is to research and develop activities to be appropriate with the learners that integrated with the concept of knowledge management and web technology. The question then becomes, "How to develop the appropriate model of knowledge management via web-based learning to enhance pre-service teacher's competency". The expected benefits are the appropriate model that is the systematic approach to enhance pre-service teacher's training. More over the results of quality assessment of model that is body of knowledge to develop the pre-service teacher's curriculum. In addition the results of pre-service teacher's competency assessment by using the knowledge management model via web-based learning that are information to support the educational systems policy maker.

THE STUDY

The first phase: Studying the model of knowledge management via web-based learning to enhance pre-service teacher's competency.

1. Analyzing the elements of knowledge management (KM) are included the knowledge management activities: Creating (Explore and Capture), Analyzing (Identify and Organize), Nurturing (Utilize and Demonstrate), Disseminating (Transfer and Share), and Optimizing (Evaluate and Improve)
2. Analyzing the elements of web-based learning (WBL) are included the elements of web-based learning (instruction, interaction, and internet) and web technology (collaboration, communication, and storage technology).
3. Analyzing the elements of competency (Knowledge, Attitude, and Skill approach).
4. Integrating the elements of knowledge management, web-based learning and competency.

The second phase: Developing the model of knowledge management via web-based learning to enhance pre-service teacher's competency and competency assessment tools.

1. Developing the model of knowledge management via web-based learning.
2. Developing the competency assessment tools that include the achievement test, attitude test, and performance test.
3. Developing the efficacy of the model of knowledge management via web-based learning to enhance pre-service teacher's competency.

The third phase: Evaluating the model of knowledge management via web-based learning to enhance pre-service teacher's competency.

1. Research design by following the Two-Group Posttest Only Design.
2. Population and samples:
   2.1 Population are the first year pre-service teachers who study in 2nd semester, 2010 academic year at faculty of Education, Chandrakasem Rajabhat University, Thailand.
   2.2 Samples are random sampling the 64 pre-service teachers that divided into 2 groups: The first group is 32 peoples for experimental group and the other group is 32 peoples for control group.
3. Research tools:
   3.1 The model of knowledge management via web-based learning.
   3.2 The competency assessment tools (knowledge test, attitude test, and performance test).
4. Data analysis:
   4.1 Descriptive statistics ($\bar{x}$ and S.D.) are used to describe the basic features of the data.
   4.2 Inferential statistics (t-test with independent sample) are used to compare the data between control and experimental group.

FINDINGS

1. The model of knowledge management via web-based learning to enhance pre-service teacher's competency — I-Cando model was appropriated with the 18 expert's consensus.
   1.1 Input step: comprise that the elements of web-based learning (Instruction, Interaction, and Internet: I^3) and web technology (1.Collaboration technology: Wikis, Blogs, Forum, Peer review. 2. Communication technology: Skype, Presenter, Twitter, SLOODLE. 3. Storage technology: YouTube, Data mining, Mind Map) — I^3 - WBL (Figure 1)

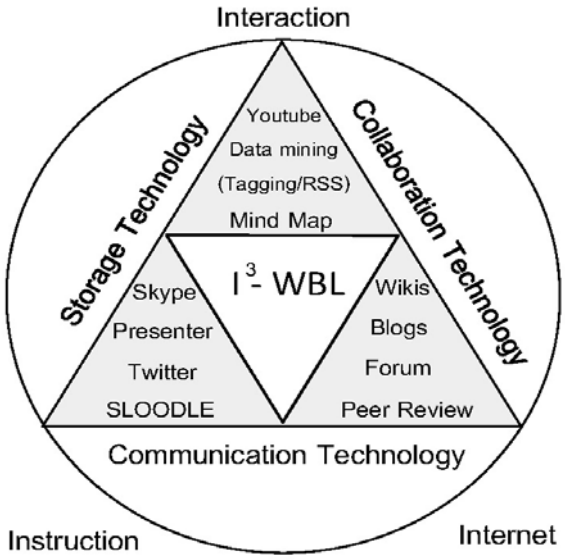

Figure 1: The elements of web-based learning and web technology— I ^{3} – WBL

1.2 Process step: comprise that the elements of knowledge management (KM) are include the knowledge management activities: Creating (Explore and Capture) is driven by Benchmarking: B_1 activity, Analyzing (Identify and Organize) is driven by Communities of Interest: C_1 activity, Nurturing (Utilize and Demonstrate) is driven by After Action Review: A-A-R activity, Disseminating (Transfer and Share) is driven by Communities of Practice: C_2 activity, and Optimizing (Evaluate and Improve) is driven by Best Practice: B_2 activity — I-Can do model (Figure 2).

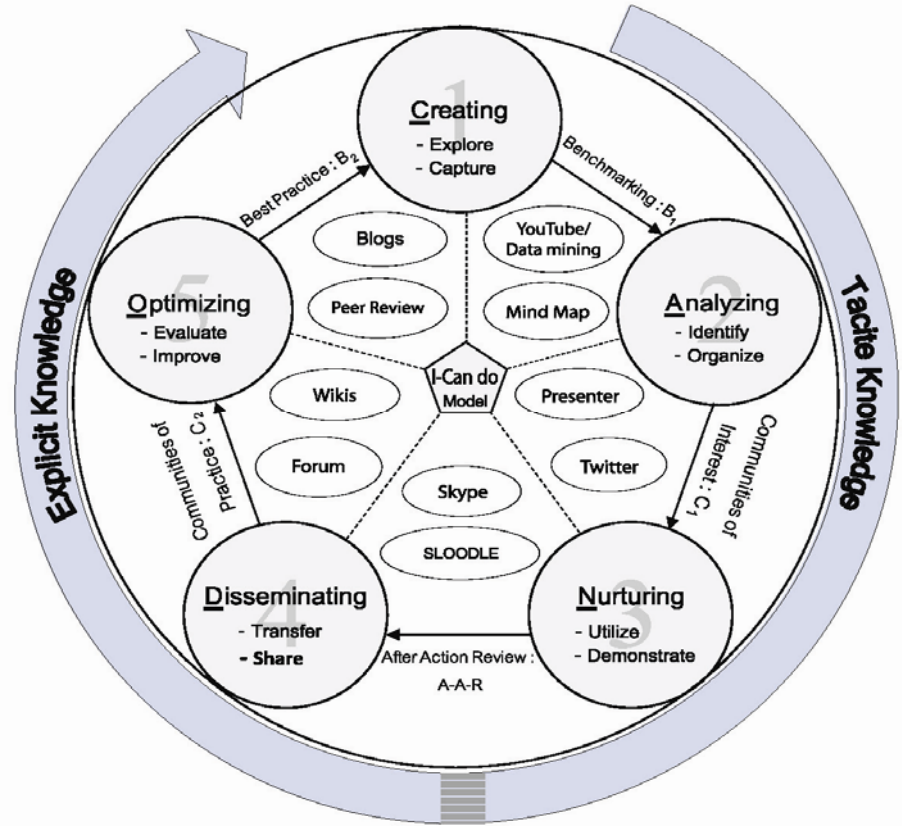

Figure 2: The elements of knowledge management process— I-Can do model

1.3 Output step: comprise that the elements of competency (Knowledge, Attitude, and Skill— KAS approach) and evaluate by Knowledge, Attitude, and Performance assessment (Figure 3).

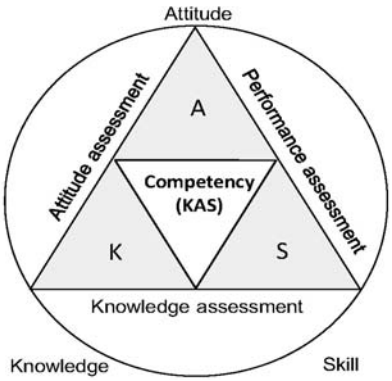

Figure 3: The elements of competency— KAS approach

2. The efficacy of knowledge management via web-based learning model was appropriated with the volunteer participants' competency (E1 / E2 = 86.23/85.33) that accord with the efficacy criteria of web-based learning (85/ 85 Standard) (Brahmawong, 2002; Whattananarong, 2004) (Table 2).

Table 2: The efficacy of knowledge management via web-based learning model

volunteer participants (n=30)	**Formative efficacy evaluation: E_1 score = (40)**	**Summative efficacy evaluation: E_2 score = (40)**
1	25	24
2	26	26
3	27	25
4	24	24
5	25	23
6	26	26
7	28	27
8	25	25
9	27	26
10	24	23
11	25	25
12	24	26
13	25	24
14	26	26
15	25	25
16	28	28
17	26	25
18	27	26
19	25	24
20	28	27
21	27	28
22	26	25
23	25	26
24	27	27
25	26	26
26	24	24
27	25	26
28	27	29
29	28	28
30	25	24
(Σx)	776	768
$\bar{x}$	25.87	25.60

E1 / E2	E_1 =  x 100 = x 100 = 86.23	E_2 =  x 100 = x 100 = 85.33

3. The model of knowledge management via web-based learning was enhanced the pre-service teacher's competency (Knowledge, Attitude, and Skill assessment). The research findings revealed that the competency of pre-service teacher exhibited the experimental groups was high competency than control group at the 0.05 level of significance (Table 3).

Table 3: Comparison of competency assessment (control and experimental group)

Competency	Group	n		S.D.	t	p
Knowledge	Experiment	32	23.09	2.59	4.47	.000
	Control	32	20.44	2.13		
Attitude	Experiment	32	4.01	0.26	8.07	.000
	Control	32	3.48	0.27		
Skill	Experiment	32	16.44	1.05	6.89	.000
	Control	32	14.53	1.16		

p < .05

CONCLUSIONS

The research results exhibited that the model of knowledge management via web-based learning was appropriated and enhanced the pre-service teacher's competency. Norbert Pachler, et al (2010) have suggests that teachers' participation in online communities exists in complex interrelationship with other learning practices, only some of which use technology. Collaborative professional development involves the use of technologies for the sharing of experiences and artifacts within and across schools as a basis for critical reflection on pedagogy. Developing and sustaining an effective online learning community can be challenging even in the midst of an era of much technological advancement. More over developing and sustaining an effective large-scale online community is even more challenging. As online teacher professional development is an emerging trend it is still a "new frontier." Educators around the world experience many demands on their knowledge, time, and professional development (Zygouris-Coe and Swan, 2010). In addition, professional development has mainly centered on training processes that involve updating knowledge, yet it has made little headway as a construct that includes both the professional and personal characteristics and working conditions. It has also focused more on developing training program than on analyzing the tools for continuous training (Gairín-Sallán and Rodríguez-Gómez, 2010). Finally, online learning technologies have the potential to transform the professional development of teachers; penetrate cultural, discipline, and other barriers; bring educators together to learn, share successes and challenges; and co-construct and transfer learning.

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