Doctoral Dissertation

A Teacher Professional Development Model Based on Knowledge Management and Blended Learning

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ABSTRACT

In order to respond to the demands of globalization process, governments worldwide are engaging in seriously educational reform because education plays an important role in the development of nations and it can be seen as central to economic growth and social development (Green, 1997). One of the key factors in the education reform is teacher professional development because 'the quality of an educational system cannot exceed the quality of its teachers' (Barber and Mourshed, 2007).

During its education reform process, the Vietnam Ministry of Education and Training (MOET) has developed many policies and strategies to enhance the professionalism of teachers. However, there is still a large number of secondary school teachers are facing difficulty to access to the professional development recourses for a variety of reasons. This becomes true for teachers who are working at remote areas, because almost of teacher professional development (TPD) programs were based on face-to-face classroom form.

Recently, knowledge management (KM) is becoming a new discipline that involves capturing, utilizing, sharing, presenting, distributing and creating knowledge (Ungaretti et al., 2011). Although there were many industrial institutions, which have been integrated KM in the development of human resource programs (Ferguson et al., 2005). However, KM is still rarely applied in teacher education programs (Yeh, et al., 2011).

The rapid development of computer, communication and Internet technologies in education has paved the way to the emergence of new teaching and learning environments and methodologies such as online learning, teleconferencing, web-based distance learning, computer assisted learning and blended learning…. A study of Means et al. (2009) pointed out that the outcomes for BL to be significantly better than either face-to-face or fully online modalities. Other studies argued that BL increased access and flexibility (Macedo-Rouet el al. 2009), and increased the cost and time effectiveness of learning (Dziuban et al., 2004). Therefore the interest in and research on BL in

the context of teacher education have increased and developed respectively. However, empirical studies on using BL and KM for teacher professional development are limited (Keengwe et al. 2012; Means et al 2009; Owston et al., 2008; Young et al. 2008).

In this context, a new professional development model based on KM for teachers in blended learning (BL) environment was proposed. In which teacher's professional will be developed through four KM processes, namely, knowledge co-creation; knowledge internalization; knowledge sharing and knowledge evaluation (CISE model). And teacher's professionalism will be developed continuously and sustainably in a teacher learning community.

To examine the effectiveness of the CISE model, a quasi-experimental design was implemented. A 24-hour teacher-training course for Hands-on Approach (HOA) using the CISE model was administered to 117 secondary school teachers (SST), while face-to-face classroom modality was given to 60 SSTs. The following dependent variables such as degree of leaners' knowledge, teaching skills and satisfaction with the teacher-training course were compared.

The results indicated that the experimental group indicated a significantly higher level of knowledge for HOA and overall satisfaction with the TPD course. However, the teaching efficiency and others items related to learner's learning satisfaction were similar between two groups. Moreover, the findings indicated that access, flexibility, cost effectiveness, improving interaction, formation of teacher network and involvement of administrators, instructors and school leaders were factors that contributed to the success of CISE model.

Although results of the present study indicated that the experimental model for teacher professional development which based knowledge management within blended learning environment was perceived positively by learners and stakeholders, there is a need for further research to determine the similar results could be obtained at other courses in different settings.

Keyword: Teacher professional development; blended learning; knowledge management; teacher learning community; in-service teacher training.

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LIST OF ABBREVIATIONS

3G	3rd generation mobile telecommunication protocol
ADSL	Asymmetric Digital Subscriber Line
BL	Blended Learning
CISE	The KM-based model for teacher professional development
CMS	Course Management System
DTEA	Department of Teachers and Educational Administrators
DOET	Department of Education and Training of Provinces
ECE	Early Childhood Education
F2F	Face to Face
HCE	Hanoi College of Education
HNUE	Hanoi National University of Education
HOA	Hands-on Approach
ICT	Information and Communication Technology
ILF	Inquiry Learning Forum
IT	Information Technology
KM	Knowledge Management
MOET	Ministry of Education and Training
OECD	Organization for Economic Co-Operation and Development
OLC	Online Learning Community
SST	Secondary School Teacher
TPD	Teacher Professional Development
VNU	Vietnam National University

CHAPTER 1. INTRODUCTION

This chapter presents an outline of the dissertation. First, it describes the background of this study. Then an overview of the Vietnam TPD context and the educational context is introduced. Next, the study problem is stated, and then the research questions were proposed, later the significance of this study is discussed, followed by the overview of TPD context in Vietnam. A summary of the dissertation is reviewed at the end of this chapter.

1.1 Background to the study

In the age of globalization and knowledge-based economy, knowledge could be seen as an important recourse that could bring for organizations sustainable competitive advantages (Durucker, 1993). Hence, the organizations are now trying to use, apply and manage knowledge in an effective way (Na et al., 2002).

Knowledge management (KM) has been applied and utilised by organizations for enhancing the capturing, utilizing, sharing, distributing and creating knowledge. Moreover, KM can be seen as results of enhancing of productivity, innovation, competitiveness and better relationships among people in those organizations (Ungaretti et al., 2011). To present, there were many industrial institutions, which have been integrated KM in the development of human resource programs (Ferguson et al., 2005). However, KM is still rarely integrated in teacher education programs (Yeh et al., 2011).

The development of computers, communication and internet technologies in education has given rise to many new teaching and learning

environments and methodologies such as online learning, teleconferencing, distance learning, computer assisted learning and blended learning... In recent years, studies revealed that students' learning outcome as successfully in online environments as in traditional face-to-face (F2F) classroom instruction modality (Donnely 2010; Woltering et al. 2009). However, the online learning approach has limitations, such as separation, confusion, isolation, limited feedback, and lack of responsibility (Kelly, 2009); it is not enough face-to-face interactions among teachers and their peers in online learning (Arbaugh et al., 2002).

Consequently, educators have combined F2F instruction with online learning components in blended learning (BL) modality. The BL becomes an important alternative modality for reducing the limitations of both F2F and online learning because BL adopts the advantage of both instruction modalities (Graham 2005).

According to a meta-analysis of Means et al. (2009) about reviewing of online learning studies, which conducted from 1996 to 2008, pointed out that the outcomes of BL to be significantly better than pure face-to-face or pure online learning methods. Other studies argued that BL increased access and flexibility (Macedo-Rouet el al. 2009), and increased the cost and time effectiveness of learning (Dziuban et al., 2004).

In order to meets to the above context, the governments in over the world are engaging in seriously educational reform. Because education is the key to develop a country and it can be seen as central to economic growth and social development (Green, 1997).

The most important factor that could contribute to the successful of the educational reform is teacher professional development (TPD), because teachers play a crucial role in improving the quality of education (Green, 1997). As a recent study of Barber and Mourshed (2007) about the

common characteristics of the most successful school systems highlighted the central role of teacher, which argued that ‘the quality of an educational system cannot exceed the quality of its teachers’.

According to the Organization of Economic Cooperation and Development (OECD) (2010), “TPD can be seen as activities that develop skills, knowledge, expertise and other characteristics of an individual as a teacher”. “The TPD includes activities, namely, initial training, induction training, in-service training, and continuous professional development in school setting” (OECD, 2010). In this study, the definition was used is that TPD can be seen as “continuing education offered to develop knowledge, skills and expertise as teacher” (iNACOL, 2008).

When discussing about the role of teachers in the 21st century, Donnely (2010) argued that the role of teachers has been transformed from a central-position as a knowledge provider, task giver, or leader into as a facilitator on learning process of student. To adapt to this transformation, teaching skills and pedagogies of teachers could be facilitated through an on-going professional development process (Daeking et al., 1994). However, currently TPD practices often have the following limitations.

- Do not encourage teacher engage and motivate on participating in community of practice (Joyce & Showers, 1980);
- The teacher training course contents may not be relevant to the needs of teachers and not match school conditions (Daeking et al., 1994).
- Do not enough to encourage for collaboration and refection on-going of teachers on their professional practice (Helleve, 2010);
- Delivering of teacher training course requires much time and cost for both learners and instructors (Helleve, 2010).
- Do not enough to provide support continuously for teachers (Scott,

2003).

In order to ensure for the success of comprehensive reform of education to meet the demands of the society in new period, besides the development a new curriculum, textbooks and improvement facilities to support teaching and learning activities for secondary schools, the MOET of Vietnam has made many policies and numerous strategies for implementation through various method to improve the teacher profession of secondary school teachers. However, a large number of teachers who live in the difficult regions such as remote area, mountain, and central-highland… are facing many challenges on developing of their profession (MOET, 2011). Moreover, According Huberman (1995) showed that the conventional TPD form has been little discernible change in teaching practice, thus an alternative solution is needed. Hence, developing an effective and appropriate model for TPD within the Vietnamese condition is one of the priorities of the Ministry of Education and Training (MOET) of Vietnam in the current period.

1.2 Statement of the problem

In order to examine the current situation and the needs of professional development in Vietnam, a survey has conduced by the researcher for staff of the MOET and DOETs as well as the SSTs who participated in a nation-level teacher-training course in Ho Chi Minh City in August 2012.

A questionnaire for secondary school teachers was delivered to 200 SST participants and another questionnaire for officials was delivered to 50 staff of MOET and DOETs. 123 and 23 valid responses have received, respectively. The respondent's characteristics are presented in Table 1.1 and Table 1.2.

1.2.1 Response results

The teachers' responses

- 69% of respondents reported that, it has only one content level of TPD courses, which was applied for all learner levels (experienced teacher, novice teacher…);
- 65% of participants responded that normally, the durations for teacher-training courses were shorter than their expectation;
- 46% of teachers responded that facilities for the teacher-training courses were inadequate;
- 53% believed that they have met difficulties in rotating of participation in TPD courses.

The following are other factors, which might affected negatively to teachers' participating in TPD:

- Excessive number of teacher learners in a classroom of TPD course;
- The difficult geographic conditions of Vietnam for participating in TPD courses;
- The lacking of time and the conflicts in teaching schedule when participating in TPD activities;
- The costs of transportation and accommodation for participating in TPD activities.

The instructors' responses

- 69% of the instructors mentioned that they have spent too much time on traveling to deliver teacher-training courses;
- 58% responded that the MOET and DOETs have spent much money on covering teacher-training courses as F2F form (traveling and accommodation of both learners and instructors);

- 60% responded that they have very little time for preparing of TPD course as well as follow up after teacher-training courses.

The TPD needs of SSTs:

- 90% of respondents argued that it is necessary to have a long-term plan for TPD of educational institutions.
- 91% expected having more opportunities to participate in TPD activities than previous time.
- 99% of secondary school teachers expected having more opportunities participate in TPD to share and exchange with their peers in TPD activities.
- 90% believed that it would be better if the MOET have online useful material resources and teacher training systems for TPD in different levels.

The needs of administrative organizations:

- 97% of respondents argued that the delivery of teacher training programs should be much more effective and flexible than previous time.
- 89% responded that contents of TPD courses should be more relevant to the SST's needs and appropriate with the teaching and learning practices context in secondary schools in different areas; the interaction between learners and instructors should be improved in a long term (especially after the teacher training courses were completed).
- 90% of respondents argued that the quality of teacher training materials for TPD should be enhanced.
- 96% of respondents believed that the TPD's funding should be available in the annually general budget of educational institutions.

1.2.2 A current model for TPD in Vietnam

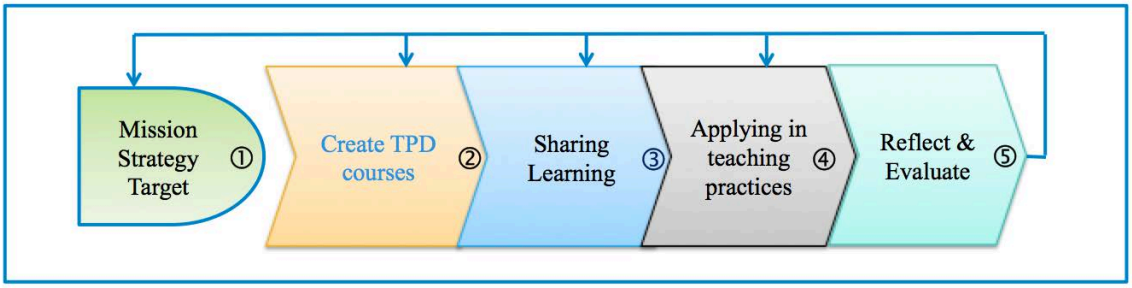

Figure 1.1. Current model for TPD in Vietnam

In this model, the TPD course started by determine MOET's educational strategies, mission and target for TPD, then instructors will create the course contents based on the requirements from MOET and exiting knowledge from materials. This stage takes about 2-4 weeks. Then face-to-face course will be organized to delivery the professional knowledge, in this stage, the learners will obtain knowledge from instructors as well as participate in interaction activities such as discussion, collaboration, and sharing among learners in the classroom.

After the teacher training course, the learners will apply what they have learnt in their teaching practices. Some contents need to be customized to suitable with teaching practices, they find out new questions, problems from this practice, however, they can not discuss or sharing with others, because in some school only one teacher in a subjects. Therefor, the TPD course feedback is limited to the organizers and stakeholders.

Table 1.1. Official respondent characteristics (n=23)

Category		n	%
Gender	Male	22	95.7
	Female	1	4.3

Age	Under 30	0	0
	30-40	5	21.7
	41-50	14	60.9
	Over 50	4	17.4
Educational level	Bachelor	11	47.8
	Master	9	39.1
	Doctor	3	13.0
Position of respondents	General Directory	2	8.7
	Deputy Directory	3	13.0
	Official	18	78.3
Teaching Experience	1-5 years	2	8.7
	6-10 years	7	30.4
	+10 years	14	60.9
Organizations	MOET	4	17.4
	DOET	19	82.6

Table 1.2 Teacher respondent characteristics (n=123)

Category		n	%
Gender	Male	74	60.2
	Female	49	39.8
Age	Under 30	48	39.0
	30-40	54	43.9
	41-50	16	13.0
	Over 50	5	4.1
Educational level	Associate Degree	8	6.5
	Bachelor Degree	93	75.6
	Master Degree	22	17.9

Location of schools	Urban area	41	33.3
	Flat area	30	24.4
	Mountainous area	27	22.0
	The most disadvantage	25	20.3
Position of respondents	Vice Principle	9	7.3
	Team Leaders	25	20.3
	Teachers	89	72,4
Teaching Experience	1-5 years	35	28.5
	6-10 years	52	42.3
	+10 years	36	29.3
Secondary school level	Lower Secondary School	28	22.8
	Higher Secondary School	95	77.2

From above survey's findings of problems and needs on development of teacher professional were the motivation for us to do the present study. The review of studies in the field of knowledge management and blended learning environments inspired the research that via implementing a KM-based course with a computer mediated of an online learning environment, which could also facilitate the peer discussion, sharing, feedback, exchange ideas about the content courses which related to their teaching practices. Moreover, through these activities, professional knowledge will be co-created and sharing amongst teachers. However, due to the nature of hands-on approach is study through experimental learning, which requires face-to-face discussion and observation for all learners, offering an online learning environment might not serve its purpose. Therefore, it is supposed that such a learning method can be obtained through implementing a "blended learning" course based on knowledge management where secondary school teachers are able to discuss, sharing, exchanging and get

feedbacks from instructors and their peers through both online and face-to-face discussion in a learning community.

As to offer a blended learning environment, the teaching training course for HOA was re-designed as a blend of face-to-face and online instructional modality. To implement such a teacher-training course, this study intended to propose a KM-based model in the BL environment; moreover, the effectiveness of education and learners' satisfaction level of model might be examined. If the model is effective, what are underling factors, which contributed to the success of the course?

The purposes of this research, therefore, are to propose a new TPD model, which based on KM in the BL environment and to examine its effectiveness through delivering a teacher-training course of hands-on approach for in-service secondary school teachers in Vietnam context.

1.3 The research questions

As discussed above, the purposes of this study are to propose a new TPD model based on KM within the BL environment and examine its effectiveness in Vietnam context through implementation and delivery a teacher-training course of hands-on approach for secondary school teachers. Regarding these purposes, the study will seek the answers to the following research questions.

Research question 1: How to build a KM-based model for TPD of secondary school teachers?

The first research question was concerned with the proposition a new model for teacher professional development based on knowledge management. In which a teacher-training course will be delivered via blended learning environment for secondary school teachers in the

instruction context of Vietnam.

Research question 2: Could the new model improve learners' knowledge, teaching skills and satisfaction level on the course for hands-on approach?

The second research question aimed to examine the benefits of the model in improving teacher's knowledge and teaching skills of hands-on approach. The data of the pre and post-test of the experimental and the control group were collected, analysed and compared to answer this research question.

Another purpose of the second research question is to examine the learners' satisfaction level through comparing the leaners' satisfaction level between the two groups, traditional classroom course and the experimental course. The data collected and analysed from the questionnaire of both the experimental and control groups to answer this research question.

Research question 3: What are underlying factors that contributed to the success of the new model?

The third research question aimed to investigate the underlying factors that contributed to the success of the new model. The data collected and analysed from the open-ended questions for the experimental group to answer this question.

1.4 Significance of the study

In response to the 21st century global knowledge economy age, the government in over the world are engaging in seriously educational reform because education is playing a great role in the development of nations. Moreover, education could be seen as central to economic growth and social development (Green, 1997). One of the key elements in these

reforms is to develop teacher professionalism because teachers play a crucial role in improving the quality of education (Ho et al., 2014).

Conventional classroom face-to-face instruction has been the most common delivery method of teacher-training courses and it seems a routine for teacher education for many years. Since the early 1990s, the Internet appeared and influenced to many aspects of our society. The widespread availability of the Internet has brought learners more convenient opportunities based on the online learning. Hence, study on a TPD model based on KM within the BL environment might bring to the following significances.

Firstly, the present study proposed a new model for development of professional teachers based on knowledge management, in which teachers' professional is developed continuously and sustainably within the blended learning through based on four KM processes, namely, knowledge co-creation, knowledge internalization, knowledge sharing, and knowledge evaluation. The model creates and brings to secondary school the convenient opportunities in improving their continuous profession. Hence, it would be hoped that the model would contribute to enhance the quality of the teaching experience of in-service secondary school teachers in particular as well as improve the quality of education system in general. And the model will also contribute to the success of the comprehensive reform process of education, which is conducting in the Vietnam.

Secondly, in the learning process, teacher-learners could acquire their professional knowledge through not only online lectures, but also interaction activities with their peers such as situated teaching practice sharing, observational learning, peer evaluation, reflection, group discussion, and feedback for assignments. Therefore, though the implementation such a professional development environment, the model

will create a teacher network to facilitate the connection of pre-service and in-service secondary school teachers with educational experts from educational universities/institutions. This could help SST having more chances to develop their profession through collaboration and learning from their peers.

Thirdly, in the CISE model, the knowledge, skill and expertise of secondary schools teachers are developed based on the construction and participatory approaches. Hence, the secondary school teachers can be seen as active participants who are participated in the courses tasks such as teaching, evaluation, observation and reflection. Moreover, through the providing the BL environment, the secondary school teachers could study online by self-paced learning. Moreover, the teacher could discuss and share with their peers about the topics related to their professional courses, and they take part in regular evaluation. In addition, the teacher-learners can receive on-going supports from other teachers and they can have opportunities on coordinating with their peers from the learning environment for TPD. That brings teacher-learners a flexible opportunity in their own professional development. They could study at anytime, from anyplace. As a result, a lifelong professional learning community for secondary school teachers will be established.

Finally, although knowledge management and blended learning is not new in industrial field, however, in teacher education and especially, in secondary school teacher can be seen a new phenomenon. Thus, the study contributed to the growing empirical literature on the effectiveness of KM-based model for TPD for SST, teacher-learners perception of blended learning environment for a teacher-training course as well as the factors affected to the course delivery. The findings could help educational institutions' administrators, school leaders and stakeholders in determining

and developing the TPD’s policy, plans, strategies and changing delivery methods of teacher training course for teachers, “who can be seen as the most significant important agent in education” (Villegas - Reimers, 2003).

1.5 The context of the study

1.5.1 Vietnam

Vietnam is a developing country located in Southeast Asia. The land area of Vietnam is 329,314 square kilometres and its coastline of approximately is 3,200 kilometres. Vietnam consists of 63 provinces and cities (see Fig 1.2). The countries, which have border with Vietnam as follows: China from the north, Laos from the northwest, Cambodia from the southwest, and the east of Vietnam is Eastern Sea (South China Sea). The population of Vietnam (2013) is approximately 90.0 million people; it stand at the world's 13th-most-populous country, and the eighth-most-populous Asian country. Vietnam has 54 ethnic minority groups. In which the percentage of Kinh ethnic group is nearly 85.8% of the population (According to the national census in 2009). The Kinh people live mainly in the river deltas and coastal plains of the country. The official national language of Vietnam is Vietnamese (Tiếng Việt) (Viet Nam General Statistics Office 2010).

Figure 1.2 The map of Vietnam

1.5.2 Educational structure

According to MOET (2014), the academic year 2013-2014, there were 10,882 lower secondary schools (junior high school), 2,758 upper secondary schools (high school), 601 combined primary and lower secondary schools and 319 combined lower and upper secondary schools in the country.

The number of student enrols at the lower secondary level was about 4.9 million students (2.3 million were girls), and at the upper secondary level, it was 2.53 million students (1.4 million were girls). At the lower secondary level, the total number of teachers was 315,405 (212,184 was women). At the upper secondary level, the number of teachers was 150,915 (91,418 were women) (MOET, 2014). Structure of the education system is showed in the Fig 1.3

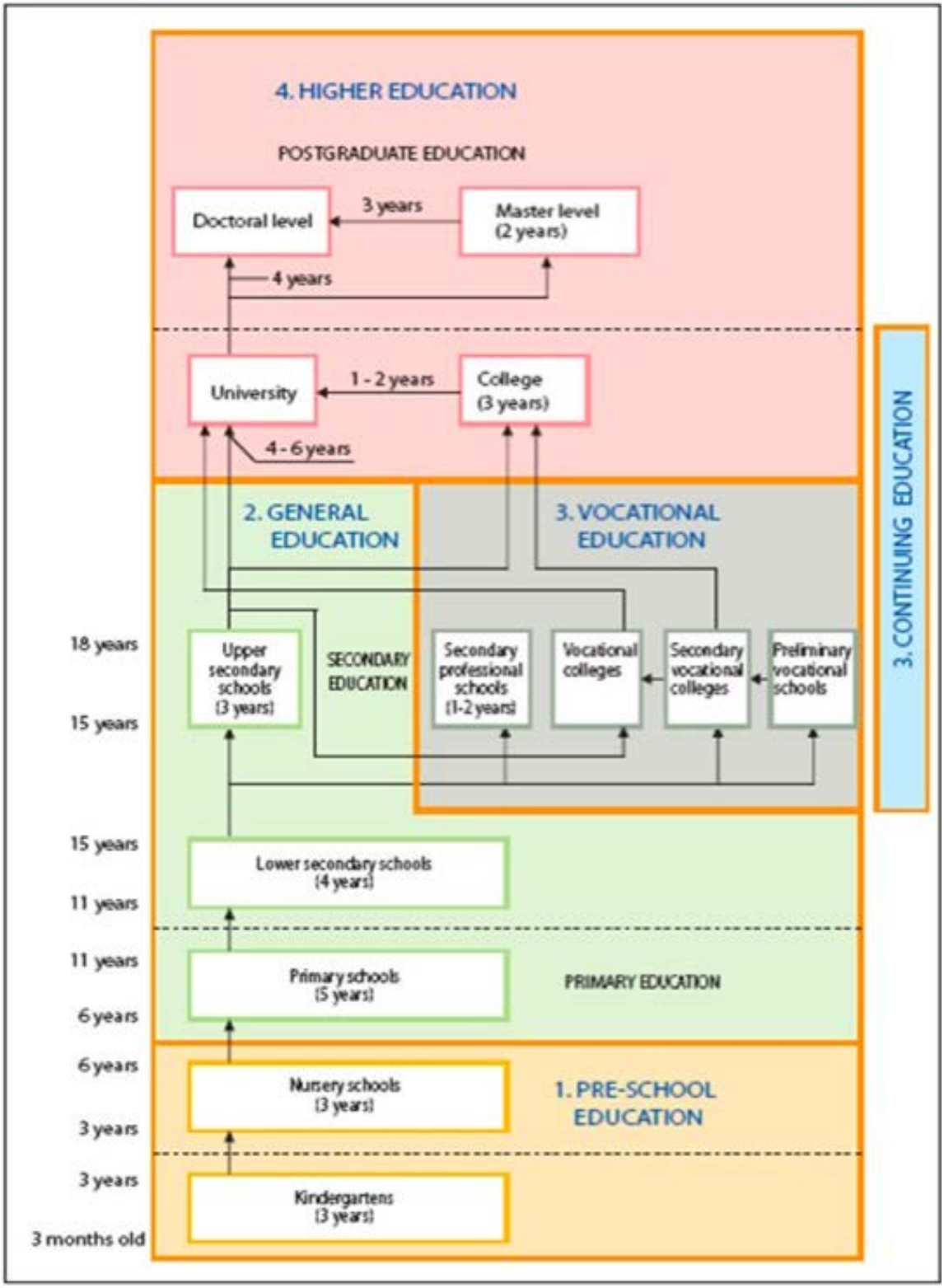

Figure 1.3 Structure of education system of Vietnam

(According to the Education Law 2005)

1.5.2.1 Pre-school education

According to the Education Law of Vietnam in 2005 (which was amended and supplemented 2009), pre-school education includes the children from 3 months to 6 years olds. In which, Crèches level, childcare groups for children from 3 months to 3 years of age. Kindergarten schools and classes for children are from 3 years to 6 years of age. While Young sprout schools are those that combine crèches and kindergartens, for children from 3 months to 6 years of age. It is not compulsory. It is offer by both public and private sectors.

1.5.2.2 Primary education

According to the Education Law of Vietnam in 2005 (which was amended and supplemented 2009), the primary education is part of general education and it is compulsory, which is conducted for five school years, grade (1-5). The age of entrance to the first grade is six; it is intended for children in the age group 6-11 years old. It is offer by both public and private sectors.

Figure 1.4 Students of a secondary school in Hoabinh province

1.5.2.3 Secondary education

According to the Education Law of Vietnam in 2005 (which was amended and supplemented 2009), secondary education is part of general education and it is compulsory, which is divided into two levels that could be described as follows.

- Lower secondary education: grade (6-9), which is conducted for four school years. The age of pupils entering the sixth grade is eleven and they must complete the primary education program; Students having successfully completed lower secondary education receive a

certificate. Admission to upper secondary education is normally subject to passing an entrance examination. It is offer by both public and private sectors.

- Upper secondary education, which is conducted for three school years, from the grade (10-12). Pupils entering the tenth grade must hold a lower secondary education diploma, at the age of fifteen. To obtain the degree of secondary education, students have to take the final examination and those who pass are awarded the diploma of secondary school graduation. It is offer by both public and private sectors.

Figure 1.5 A lower secondary classroom in Dak Sar commune of Dak-Lak province

1.5.2.4 Higher education

According to the Education Law of Vietnam in 2005 (which was amended and supplemented 2009), it is offer by both public and private

sectors. Higher education includes the following forms:

- College education, which, offers for two to three academic years for persons with upper secondary education diplomas or professional secondary education diplomas (depending on the discipline); and for one and a half to two academic years for persons with professional secondary education diplomas in the same discipline;
- University education, which offer the programs from four and six academic years for persons with upper secondary education diplomas or professional secondary education diplomas (depending on the discipline); and from two and a half to four academic years for persons with professional secondary education diplomas in the same discipline; from one and a half to two academic years for persons with college diplomas in the same discipline (depending on the discipline);
- Master education, which offers the courses from one to two academic years for persons holding university diplomas;
- Doctoral education, which is offer the courses with four academic years for persons holding university diplomas; and from two to three academic years for persons holding master degrees. In special cases, the duration of doctoral education may be extended as stipulated by the Minister of Education and Training.

1.5.3 Teacher professional development in Vietnam

The teacher professional development (TPD) activities are administrative by institutions under MOET (see Figure 1.6). In the TPD administrative system, the MOET's responsibility is to make the policies and strategies of TPD. Whereas units under the MOET are responsible for administrating, implementing the TPD activities. More specifically, the

Department of Teachers and Educational Administrators (DTEA) takes a role as organizers and administrators of TPD activities. Teacher-training course contents are designed and implemented by the Department of Secondary Education, MOET and the Teacher Educational Universities. Some of activities for TPD are covered funding by educational projects and institutions. The Educational Universities take the responsibility for providing contents and instructors for the teacher-training courses. The secondary schools are responsible for supporting the teachers on daily activities through supervising, monitoring and evaluating.

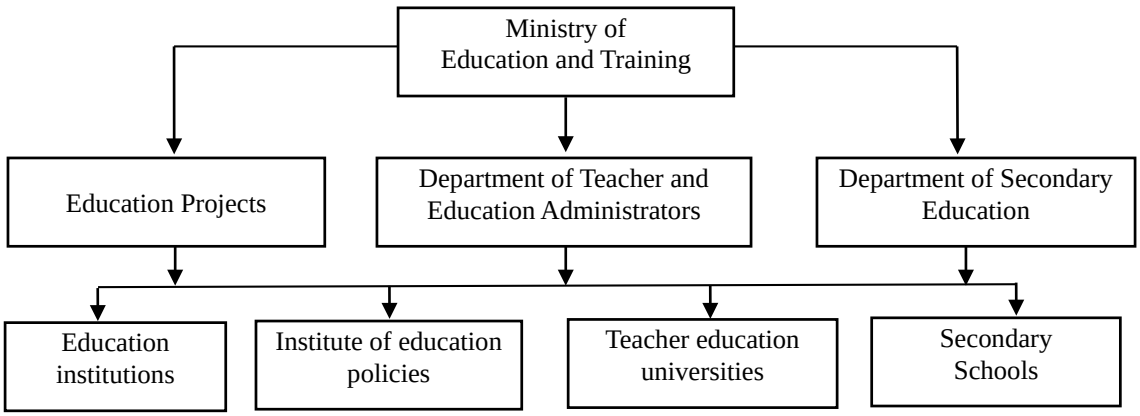

Figure 1.6 The TPD administrative system in Vietnam

1.5.4 In-service TPD policies

In order to facilitate teacher professional development of SSTs, the MOET issued the circular number 26/2012/TT-BGDĐT regarding to regulations on TPD activities for teachers in secondary level. According to the circular, Secondary school teachers have to participate in teacher-training courses is at least 120 hours per an academic year. The duration of the TPD activities is allocated as follows: 30 hours for the contents which meet the needs of secondary school; 30 hours for the contents which meet the local's demands of TPD; and 60 hours for contents meet the demands

from the MOET.

The contents of TPD courses include three core matters:

(i) The knowledge of subject matters,

(ii) The knowledge of instructions, and

(iii) The knowledge of students.

The TPD form is a combination of the self-learning and engaging TPD activities such as observing peers' classrooms; attending conferences and teacher training courses; discussing with peers, etc.

The delivery methods of teacher training courses are centralized approach (top-down and cascaded model) and face-to-face form.

The education institutions under the Department of Education and Training (DOET) of provinces and secondary schools are responsible for developing and implementing TPD's activities within their locations. The SSTs are responsibility for developing individual on TPD and they have to attend TPD courses. The result of TPD assessment be recognised in teacher's profiles and it is an important factor for the annual classification and promotion of SSTs.

In order to facilitate for SSTs in building their professional development plan, the MOET issued the circular No 30/2009/TT-BGDDT regarding to regulation on the teaching competency standard for SSTs, which lists knowledge and skills that SSTs have to achieve in their career.

1.6 Organization of the study

This study is presented in seven chapters. Chapter 1 introduces the background, research questions, and the significance of the study as well as the context to conducted the study. Moreover, this chapter has also presented a brief overview of the dissertation.

Chapter 2 presents the literature of this study. It begins with the introduction of the chapter. Then definitions of teacher professional development (TPD) are presented. In the next section, blended learning for teacher education is described. Then, knowledge management theories are presented. Later, the hands-on approach program is presented in the last sections.

Chapter 3 introduces the research design of the study. It begins with an introduction of this chapter. Then a KM-based model for TPD in Vietnam is presented. The entities of the CISE model and stages of design a TPD course this proposed in two last sections.

Chapter 4 is implementation, it begins with an introduction of this chapter, and then experimental design, participants and experimental procedures are presented. Description of experimental procedure, data analysis and the validity and reliability of the research are presented in the last three sections.

Chapter 5 presents the result of the research. It begins with the chapter's introduction. The data analysis of demographic characteristics is presented in the next section. Then the results of the effectiveness of the model as well as the learners' satisfaction levels are presented.

Chapter 6. Discussion, which is started by an introduction of this chapter, then the discussion of education effectiveness, satisfaction level and the successful factors that contributed to the CISE model in last three sections.

Chapter 7 reviews some conclusions of the research. Summarizes this dissertation is presented in the first section. Conclusions, contribution of theories and practices are presented in the next two sections. Lastly, limitations of this study and recommendations for future research are presented in the last sections.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

This chapter explores definitions, characteristics of teacher professional development (TPD) models. Then there will be the characteristics of learning online and blended learning for teacher education. Next the definitions of Knowledge Management (KM) and theories of KM theories are presented. Lastly, characteristics of the hands-on approach is briefly reviewed

2.2 Teacher professional development

2.2.1 Definition of professional development

To present, there many definitions of professional development were proposed by authors. However, the most popular is defined and employed depending on the needs of the organizations and stakeholders. According to the Organization of Economic Cooperation and Development (OECD) (2010), “TPD can be seen as activities that develop skills, knowledge, expertise and other characteristics of an individual as a teacher”. The TPD includes activities namely “initial training, induction training, in-service training, and continuous professional development in school setting” (OECD, 2010). Similarly, Ganzer (2000) argued “teacher professional development consist of formal events such as attending workshops and professional meetings, mentoring, etc. and informal experiences such as reading professional publications, watching television documentaries related to an academic discipline, etc.”. Similarity, “professional development can be seen as a growth that occurs throughout their carrier of

a teacher" (Glattenhorn, 1987). However, the definition that was used in this study is "continuing education offered to develop knowledge, skills and expertise as teacher" (iNACOL, 2008).

2.2.2 Teacher professional models

2.2.2.1 Conventional education model

This model is conducted via short-term events, such as one-shot workshop or conference, continuous training course. Educational organizations use this form to deliver through the cascade model (Villegas-Reimers, 2003). This form can be called as top-down, cascades or training to trainers approach with gives opportunities for teachers' collaboration, sharing and reflection. The contents of the model always are to offer new knowledge, teaching skills or expertise for secondary school teachers (Villegas- Reimers, 2003).

According to Gaible el al., (2005), conventional education model has the following advantages: it could disseminate easily the new contents in a large-scale; it can be seen as a good way to demonstrate visibly to a particular course of action; with this model, some confusing contents could be easy to receive the consensus from participants.

However, According to Gaible el al., (2005) this model has also the following limitations. It has only a content for all learners at different level (one fit all) and it do not based on teaching contexts; Some complex information of contents tend be lost due to they have been transferred through many levels of less experienced trainers; this form normally is one-shot. It is rarely received on-going supports; this form has not encouraged motivating teachers to participate, collaborate and experiment with new experiences; this form requires much time and cost for delivery.

2.2.2.2 Teachers' networks

In the research of Villegas-Reimers (2003), she pointed out that, the model could promote their own professional development through bringing teachers together to address the problems in their teaching practices. These networks can be created through meeting amongst teachers informal, or by collaboration, communication and dialogue formally.

The teachers network has been viewed as an important means on providing support among teachers. The participants who involve the teacher networks might be within the same or in different schools. In the networks, teacher able share, exchange or discuss about common opinions in their disciplines, subject matter knowledge what they meet in their practise (Huberman 2001). Moreover, Huberman (2001) emphasised that teachers themselves could manage and maintain these networks.

So far, many examples of effective teacher networks were successful in the world. The Japanese teacher network is an example. This model can be seen as an alternative to government-created and sponsored programmes of in-service development. It has been developed and implemented by the Japanese teachers Union. The primary purpose of this model was to promote teaching, independent of government control, and a democratic education (Shimahara, 1995). Palinecsar et al, (1998) introduced another example of teacher's network. The network in his study is a community of practices that was established from teachers from 14 schools. They bring together professionals with different expertise to improve their science teaching.

2.2.2.3 Online learning

Nowadays, computer, communication and Internet technologies in

education have developed rapidly. These have opened many new modalities for teaching and learning such as online learning, teleconferencing, distance learning, and computer assisted learning and so on. Recent studies revealed that students learning outcome in online environments are similar with traditional face-to-face (F2F) classroom settings (Donnely, 2010).

To present, along the significant increase of Computer Information and Technologies (ICT), online education has been transformed dramatically. Online learning has become a common way on developing teacher's profession. Because it brought many convenient opportunities for teachers through offering online services, such as online discussion, sharing applications, teleconferencing, etc. and especially, the e-learning learning systems required much for autonomy of self-paced learning and asynchronous active interactions such as email, forum...

To present, there are many online-learning system, which are successful on delivering online courses to large learners from countries they are called is Massive Open Online Course - (MOOC). The Coursera system of the Stanford University and the Khan Academy of are examples of such online courses. Killion, (2000) argued online model become more popular model for TPD because online learning could bring many advantages for the learners such as access, flexibility, access, convenience, collaboration and it could save the cost and time.

However, the online learning model have also some limitations, such as the separation, confusion, isolation, limited feedback, and lack of responsibility of the learners (Kelly, 2009); it does not encourage the interactions directly among teachers and peers in online learning (Arbaugh et al., 2002).

2.2.2.4 Blended learning model

As mentioned above, the development of computer, communication and Internet technologies in education have established many teaching and learning methods. In order to reduce the limitations of both conventional learning method and online learning models, educators have combined F2F instruction with online learning components into a blended learning (BL) modality. BL becomes an important alternative modality because BL not only reducing the limitations of both F2F and online learning, but also obtained the advantages of both these models (Graham 2005). Accordingly, BL is using widely with increased frequency as a domain of practice and of research around the world (Halverson et al. 2014).

According to Graham (2013); Strauss et al. (2012); Garrison et al. (2011), BL approach is a combination of an online component with a face-to-face instruction method. Or it is a learning approach that combines several delivery approaches with the primary goal is offering the efficient and effective instruction experience (Harriman 2004); BL maximize benefits of both F2F and online methods (Garrison et al., 2011);

Moreover, according to a meta-analysis of Means et al. (2009) regarding blended learning which conducted from 1996 to 2008, the learners' outcomes for BL to be significantly better than either face-to-face or fully online modalities. Other studies argued that BL increased access and flexibility (Macedo-Rouet el al. 2009), BL increased the cost and time effectiveness of learning (Dziuban et al., 2004), and it improves student's motivation and participation (Ugur et al. 2011) (see Table 2.1).

Table 2.1. Types of online learning which was adapted from Allen et al. (2007)

Proportion of Content Delivered Online	Type of course	Typical Description
0%	Traditional	Course do not use online technology for delivering instruction
1-29%	Web Facilitated	Course, which uses some web technology to facilitate a face-to-face course.
30-79%	Blended learning	Course that blends online and face-to-face delivery methods to deliver instruction. Such as online discussions, and has some classroom face-to-face session.
80+%	Online	A course delivery based on online modality. Without face-to-face sessions.

2.2.3 Blended learning in teacher education

To present, many studies have examined on various aspects of BL in teacher education (Halverson et al. 2014). In the teacher professional development (TPD) field, Oliver et al. (2005) argued that BL offers an appropriate and effective instruction for teacher's needs and learning styles because it offers a flexible schedule rather than a lectures-only course. Oliver et al. (2005) pointed out how to develop an effective BL course in education to bring meaning to learners' activities. According to Motteram

(2006), BL model not only provides them opportunities to reflect on an online forum about their practice but also helps teachers to develop relevant skills through F2F sessions.

One of reasons, which made BL becoming more popular, is it provides effective pedagogical practices. As Graham et al. (2003) argued that the level of active learning strategies, peer-to-peer learning strategies, and central-learner strategies could be increased through using BL approaches. According to Driscoll (2002), there are three stages, that learners have to take, these are provides a self-paced learning to acquire background information in the first stage; then offers classroom F2F learning focused on active learning; and the last stage is the support from online modality.

While examining the perception of learner in teacher education program, Young et al. (2008) concluded that teachers enjoyed participating in the blended education course. Similarity, Owston et al. (2008) showed that the middle school mathematics and science teacher has attitudes positively on influencing by the blended education program.

In a study of Motteram (2006) about the perception of graduate students in teacher education on a Master's program at Manchester University towards blended learning. The results advocated that if the arranging the tasks in the BL environment is good, it could help learners to develop their knowledge and skills. Moreover, the result of the study also suggested that through teacher professional could be developed through providing them with the relevant and useful deep learning experience.

Delfino et al. (2007) conducted an education technology course in secondary teacher education in Italy. The finding concluded that the BL environments could be used in pre-service teacher training.

Sung et al., (2008), implemented a medical course for nurse education

by using blended learning between F2F and E-learning instruction, concluded that, blended learning that integrate e-learning and face-to-face instruction not only enhancing medication knowledge of nurses, but also reduce the lecturing time and cost of repeated topics. And the study suggested that BL could be an effective component in nurse education programs.

2.2.4 Characteristics of TPD models

Based on previous studies, a literature of characteristics of effective TPD model was conducted. The following is a brief summary of these characteristics.

2.2.4.1 TPD model should has clear goals and be balanced the needs between teachers and educational institutions

Earley et al., (2004) asserted that addressing clear missions of TPD is important in implementing and it could help effectively conducting the TPD activities. Therefore, before any TPD activities, the organizers and planers should consider what they expect to accomplish through the TPD activities.

Another important factor ensure the success of TPD activities, which we should consider is the needs of TPD. According to Loucks-Horsley et al., (1998), TPD could be viewed as a tool for improving of the school education quality and the professional advancement of teacher individuals. Therefore, teacher professional development should consist of the activities that offer for the teacher needs and education institutions requirements (Eleonora, 2003).

According to Goodall et al., (2005), teacher's personal needs can be

intrinsic or extrinsic. Engaging of teachers in continuing professional development that meets their own personal and professional requirements is very important.

The needs of educational institutions might come from external requirements such as policies and the demands from the society (Wan. 2011). Therefore, the development and evaluation of needs for TPD is always important to examine the way should be used for archive learning outcome (Rouda et al., 1995).

Therefore, during analysis process of the needs of TPD of institutions, teachers and education leaders of institution should be involved in the process for identifying their needs, how to learn is suitable and when is possible (Newmann et al., 2000).

2.2.4.2 Teacher professional contents should be developed based on situated learning, job-embedded activities and constructivism approach.

According to Landt (2002), in order to encourage the teacher participate in TPD activities, these activities are organize and implemented through an appropriate learning way. This learning way is called the situated learning based on the context of the practice. In the TPD process, through interaction such as social construction and negotiation of meanings by means of sharing, collegiality and reflection… teachers could apply what they have been learnt into their classroom practice (Lave, 1991).

To present, there are various model to develop teacher professional, however, the most effective model of TPD is related to the daily activities of learners and based in schools (Dudzinski et al., 2000). Schools can be seen as learning communities of teacher-learners or professional learning communities (King et al., 2000) and study group, collaboration, project

approach and portfolios are the good opportunities for teacher develop their profession (Wood et al., 1999).

Dadds (2001) concluded that the most effective approach that teacher professional is developed based on the constructivism approach rather than on a transmission-oriented approach. Accordingly, the teachers-learners can be seen as active learners. And they will be engaged in the concrete tasks of exchanging, collaboration, and assessment...

2.2.4.3 TPD is a long-term process, and teacher-learners need to receive the on-going support from other teachers.

According to Ganser (2000), the effective teacher professional development model should be a long-term over time and on-going learning process rather than as a short-term process such as a one-off course, conference. Moreover, Dudzinski et al., 2000 emphasised that TPD activity is effective if new knowledge teacher to correlated with their prior knowledge and it is very important if learner received the follow-up supports after teacher training courses.

In the teacher professional development process, it is very important and effective if the learner received continuously the support from their peer, school and government (Timperley, 2008). Because these supports will allow the learner overcome the challenges and engage in implementation TPD activities (Guskey, 2002). Indeed, schools play an important role on providing the support to their teachers. This support is also crucial for teachers that could help building their strengths on TPD activities (Loucks-Hrsly at al, 1998).

2.2.4.4 Teacher's professional should be developing based on collaborative process through professional learning community.

In the teacher professional development process, collaboration can be seen as a significant activity (Schon, 1989; Gordon, 2004). Because the collaboration not only reduce the isolation of teachers' profession but also creates teachers' professional confidence as well as increase interactions amongst teachers (Harris, 2003). More specifically, teacher professional development could be taken place where the learner have changes to collaboration and to learn from each other (Harris 2002) and especially is to promote sharing practices (Little, 2001). According to Michell et al., (2000), a professional learning community could be established when teachers have opportunities for sharing their practices through on-going activities such as collaborative, inclusive, learning oriented growth promoting way. In this professional learning community, teachers can support and learn from each others (Anderson, 2001).

Collaboration allows teachers engaging in their activities such as problem solving, sharing and discussion, simulations and role play, visual representations, application and follow through and reflection (Quick et al., 2009). These activities will help teacher developing their profession through learning communities. From these communities teachers could have a chance to work, share, collaborate and learn from each others (Carney, 2003).

2.3 Knowledge management theories

2.3.1. Definition of knowledge management

According to Gundry (1998) and Kelley (2002) data-raw facts and

numbers is the first point of knowledge. *Data* is a set of values of a fact. *Information* is data, which is putted into the context of relevance to the recipient.

Knowledge is information, which was combined with experience, understanding, capability and judgment, etc. Knowledge could be shared through exchanging information within an appropriate context. Knowledge could be hard to codify (Kelley 2002).

In this study, the contexts where knowledge is shared between instructors and learners or between learners and learners are through the blended learning environment and communities of practice based on knowledge management.

To present, there are no single definition of KM has been recognized widely, however, many definitions of KM that have been proposed by studies. For example, Prusak (1997) defined 'KM can be seen as any process of knowledge creating, acquiring, capturing, sharing, wherever it resides, to enhance learning and performance in organizations'.

Similarly, Roknuzzaman et al., (2009) defined that 'KM is a dynamic and continuous social process that involves acquisition, organization, storage and retrieval, and dissemination of knowledge resources to user group with relevant feedback to achieve organizational goals'. According to the value chain viewpoint, Shin et al., (2001) argued that knowledge management consist of four major steps: knowledge creation, storage, distribution, and application.

According to Bassi (1999), "KM can be defined as the process of creating, capturing, and using knowledge to enhance organisational performance"; In addition, He stated that "knowledge management can be understood as the management of its intellectual capital, of knowledge as a form of capital that, like physical or financial capital, has to be managed to

achieve the aims of the organisation within a social organisation".

The OECD, (2000), defines the KM processes as "involving in the production, mediation and use of knowledge". Alavi el al, (2003) pointed out that "knowledge creation, knowledge storage and retrieval, knowledge transfer, and knowledge application are four key knowledge management processes".

2.3.2 SECI model

Nonaka and Takeuchi (1995) proposed the SECI model (see Figure 2.1). This spiral describes how the tacit and explicit knowledge is conversed.

They could be described as follows (Nonaka al el, 2003).

- *Socialization* (from tacit to tacit): where knowledge transfer takes place in a tacit form. Through shared experience, observation, imitation and so on, an individual acquires tacit knowledge directly from others
- *Externalization* (from tacit to explicit): through articulation of tacit knowledge into explicit concepts. This field prompted by meaningful dialogues or reflections.
- *Combination* (from explicit to explicit): through a systematization of concepts drawing on different bodies of explicit knowledge present in the environment of an organization.
- *Internalization* (from explicit to tacit): it is learning by doing. Through a verbalization and documentation of experiences.

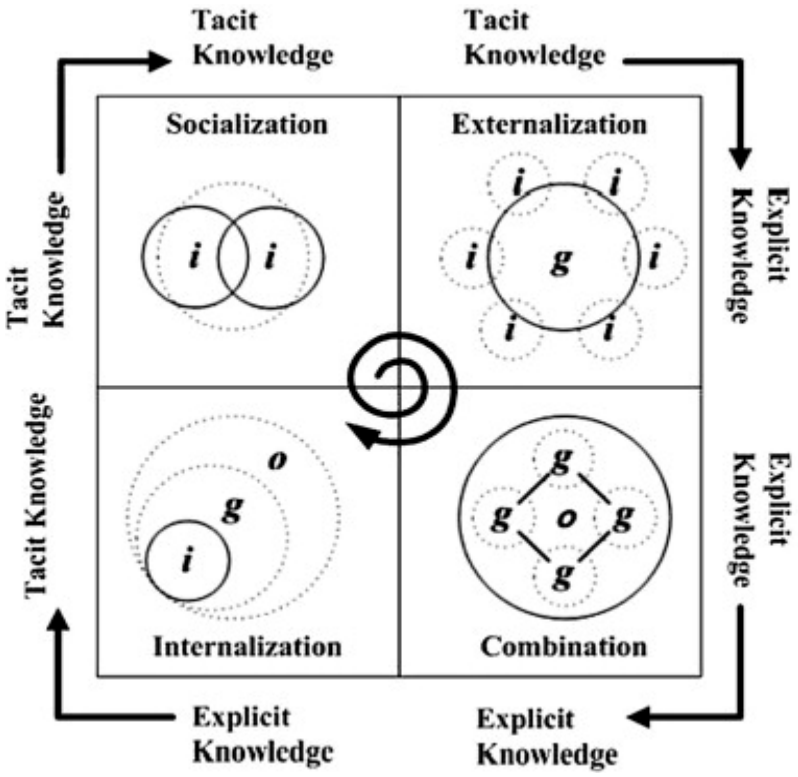

Figure 2.1 SECI Model (Nonaka, et al., 1995)

2.3.3 Knowledge management in education

Recently, the roles of knowledge management (KM) have become clearer in educational organizations. To reduce the increased pressures of accountability from external and internal sources, the educational organizations are finding beneficial from to adopt KM programs to improve their performances and outcomes. More specifically, knowledge management can be integrated into instruction activities of educational institutions to improve their outcome performances (Petrides et al, 2003).

In education filed, according to Kidwell et al., (2000), educational institution could benefit from knowledge management of the following areas: research, curriculum development, student and alumni services enhancement (Kidwell et al., 2000). Moreover, knowledge management could provide the administrative applications such as institutional

organization administration, strategic planning, and classroom management process.

In educational process, according to Miller et al, (1996) learning activity is a process that student obtains information then translates it into knowledge or skills. These processes could be defined as the process of acquiring knowledge, attitudes, or skills from study, instruction, or experience. To describe more specifically about a learning process, Sammour *et al.*, (2008) proposed a model to describe a learning process based on KM (see Figure 2.2) as follows.

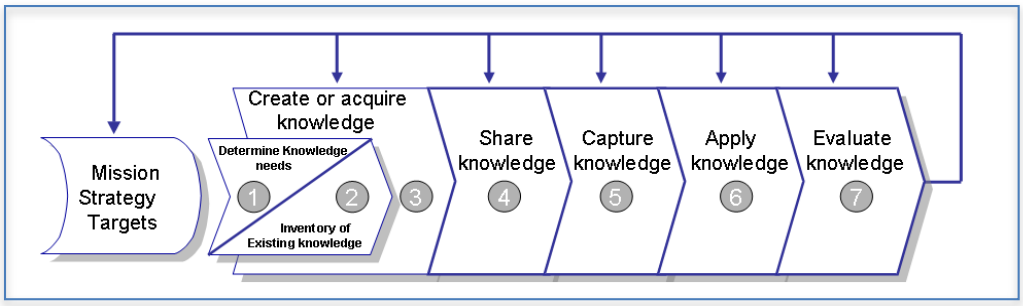

Figure 2.2. KM based learning process (Sammour et al. 2008)

In this process, it is started from determination mission, strategy, and targets of whole learning process. Then the next stages are knowledge creation and acquisition, which are processes for finding existing knowledge which could be hidden from mind of either individually or teams of communities of practice; the next stages is knowledge sharing process- it will be happened when people are would like to help each others on developing new capacities for action; knowledge capture process take responsibility for selecting, choosing and archiving knowledge. On of the most difficult factors of this stage is obtaining the tacit knowledge from instructors. Next stage is knowledge application process, which is applying what they have learned into practices. Final stage is knowledge evaluation.

This is a process to review for verifying whether knowledge is relevant and accurate with the first stage (mission, strategy and target).

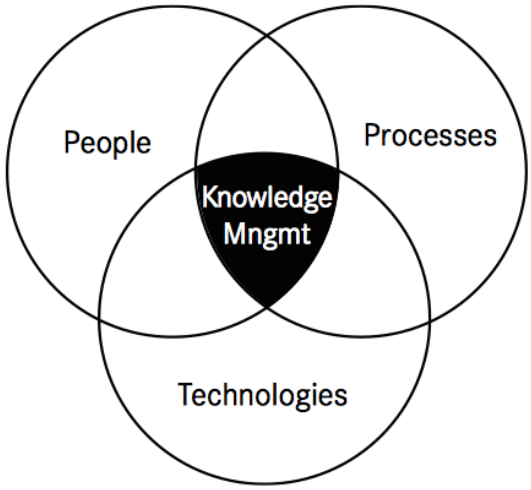

Figure 2.3. The key realms of KM (Petrides & Nodine, 2003)

In order to improve knowledge management within educational institution, the three the following resources is important on supporting knowledge using and sharing, these are people, processes, and technologies (See Figure 2.3).

2.3.3.1 People

Davenport & Volpel (2001) supposed that KM is managing people because people are the originator of knowledge. In the organization, knowledge management can be enhance through incentive policies and mechanisms, which encourage people sharing what they know, what they are learning based o their activities such as collegial and professional teamwork. To help sharing knowledge, working team of teacher should be organized and encouraged based on building relationships and trust between sections and department in institutions.

2.3.3.2. Processes

According to Petrides et al., (2003), the following process: administrative procedures, curriculum development processes, information sharing patterns, information silos, salary incentives, etc. could be affected to information follow within the processes in organizations. These processes become very important for organizations because they offer the necessary information, and share it with people when they need it. Moreover, they could help to improve the decision-making processes of the institutions.

2.3.3.3 Technologies

Technology always can be seen as important component in the organizations. Hence, effective technologies should be wildly applied across departments of institutions to enhance sharing and exchange of useful information (Petrides & Nodine, 2003).

Knowledge management in education can be seen as a process that can inform a wide range of practices within an educational organization (Petrides & Nodine, 2003). Knowledge management can improve the benefits for students, educators, and the education community as a whole (Petrides & Nodine, 2003).

2.4 Hands-on approach program

Hands-on approach (HOA) is an inquiry-based science education approach of science subjects (Worth et al. 2009). HOA plays an important role in education nowadays, because:

(1) It ensures students truly understand what they have been learn, not simply just repeat information of learning contents (Worth et al. 2009),

(2) It encourages student on creativity for problem solving, promotes student independence, and helps students overcome initial handicaps (Shymasky et al. 1981),

(3) And it enhances ability of reading skills and oral communication skills among children (Barufaldi et al. 1997).

HOA was launched initial at the Academy of Sciences - institute of France by France-professor Georges Charpak in 1996. The primary purpose of HOA is to reform the teaching science and technology in primary schools by promoting education based on a scientific investigation (Abrams et al. 2008). To date, HOA program has been implemented among more than 35 countries in over the world including China, Brazil, Cambodia, Argentina, Belgium, Colombia, Cameroon, Chile, Egypt, Slovakia, Germany, Morocco, Senegal, Serbia, and Vietnam ... (Abrams et al., 2008).

With the supports of Vietnamese education experts work and live in France, the Ministry of Education and Training (MOET) of Vietnam have launched a program of HOA since 2011. The aim of this program was to enhance the effective application HOA in instruction practice of the experimental science subjects within primary and secondary school levels (MOET, 2011). The program emphasized that HOA is an experience instruction approach and it could affected positively the quality of school education in Vietnam (MOET, 2011). And teacher’s behaviours in the classroom could be profoundly influenced by their subject knowledge (Borko et al. 1995) and teaching skills (Aguirre et al. 2000). In order to apply successfully HOA in instruction practice, therefore, teachers’ knowledge and teaching skills on HOA need to be improved.

To present in Vietnam, as other teacher-training courses, several course of HOA have been delivered to in-service SSTs and primary school

teachers based on the F2F form. According to Russell et al. (2009), the F2F learning form allows the learners and the instructors interact with each other easily. However, it requires lot of human resources, time, cost and facilities to deliver, especially once it is delivered in a wide-scale. From the above situation, which indicates the urgent need to have an effective TPD model for the nationwide delivery of HOA.

CHAPTER 3. RESEARCH DESIGN

3.1 Introduction

Chapter 2 provided a literature review of definition, characteristics and models of TPD. In addition, learning theories of teacher education and blended learning for teacher education are also presented. This chapter describes the methodology of this study. It begins with presentation of a new KM-based model for professional development of secondary school teachers in Vietnam context (CISE model). Then, the entities of the CISE and the stage designing a course based on the CISE model are described.

3.2 KM-based model for TPD

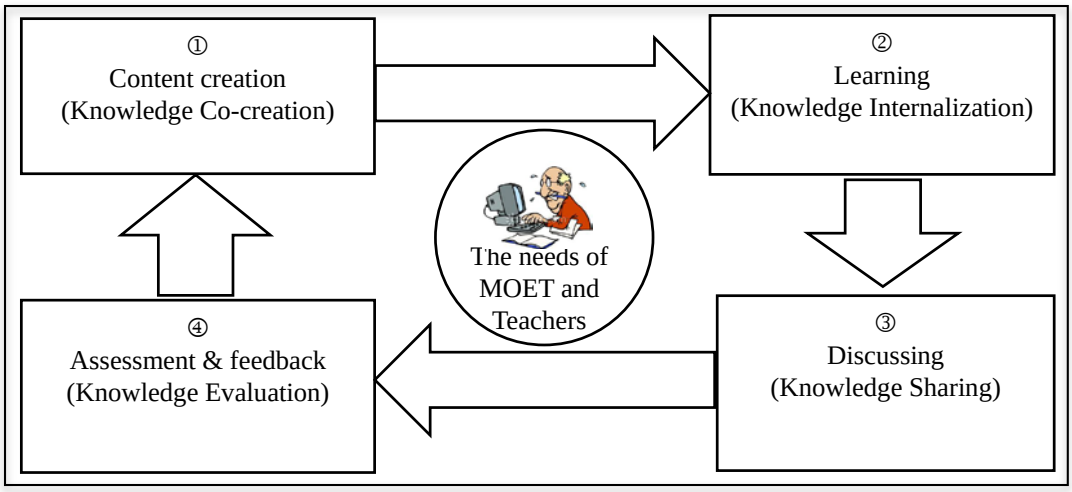

Figure 3.1 KM-based TPD model (Ho et al., 2013)

Ho et al., (2013) argued that in the new TPD model, teacher professional could develop based on four knowledge management (KM) processes: namely, knowledge Co-creation, knowledge Internalization, knowledge Sharing, and knowledge Evaluation (CISE model). The

MOET's policies and strategies for TPD, secondary school teachers' needs and teaching and learning practice are regarded as fundamental requirements of the TPD processes (Figure 3.1). The TPD are on-going process and the model becomes a lifelong learning tool for SSTs.

- Content creation (Knowledge Co-creation)

This is a process of interaction and collaboration between instructors, learners and materials on creating courses' contents. Professional knowledge is created through the following activities: discussing between instructors and learners; choosing information of learners' feedback from previous courses, selecting the core information from instructional materials. Moreover, SSTs' needs, MOET's policies and strategies of TPD and context of teaching and learning practices in secondary schools were also considered in creating TPD knowledge. Then the knowledge will be verified and evaluated by experienced SSTs and educational experts. Then the knowledge will be covered by the instruction's pedagogy and learner's psychology. These activities enable creation the authentic, relevant and useful knowledge for learners.

- Learning (Knowledge Internalization)

In this process, learner acquires the professional knowledge, skills and expertise (knowledge internalization) through the constructive-learning approach based on social interaction activities. More specifically, the learner studies by participate in collaboration learning activities; they can learn through using the material resources and online lectures and they learn from each other. On the first stage of this process, the self-paced learning is used through using TPD materials including online-lectures, articles, video-clip of situated teaching practices, and other resources. Then

teacher-learners will discuss and collaborate with their peers via the online forum. Moreover, the learner could acquire their professional knowledge through observing and giving the feedbacks for peer's products as well as though collaboration with their peer on doing the reflective assignments.

- Discussion (knowledge sharing)

Knowledge sharing is a process based on discussion, exchanging, collaborating activities within professional learning community. The learners engage in discussing and exchanging their ideas with peers in both F2F and online forum session. The learners will have a presentation about their assignments in the F2F/online session after that they will receive feedbacks, advices and comments from peers or facilitators. Their presentations and its comments be videotaped and unloaded into the website to shared with other groups within the professional community via the website and online forum. By this way, the individual's knowledge will be converged gradually into knowledge of the model. As a result, the professional knowledge of the CISE model are enrichment and useful. This might allow the model running sustainably because the model knowledge is created based on the bottom-up and participatory approach.

- Assessment and feedback (knowledge evaluation)

The purpose of this process is to review and verify whether what teacher-learners have learned is accurate and relevant with the expected objectives and purposes of the course. The learner's performance will be evaluated based on results of online tests; reflection journals; assignments and products of teacher-learners throughout the course. These results not only help learners self-analyse their competences for determining the TPD plan on the next steps, but also give organizers the useful information for

developing TPD plans for secondary school teachers in the future.

3.3 Entities of the CISE model

In the CISE model, the teacher-training program is regarded as a central element, it is operated based on the involvement of entities namely organizers, instructors, learners and technical assistants. Their characteristics and relationships are presented in Figure 3.2.

The organizers include staff from the education administration organizations, leader of secondary schools and stakeholders. They play a crucial role in organizing, implementing and supporting the TPD activities such as providing policies and legal frameworks; creating an appropriate learning environment, which could encourage secondary school teachers engage in TPD activities actively. Moreover, the organisers take also the responsibility for operating the model smoothly.

The instructors are educational experts from the educational institutions or teacher education universities or experienced teachers from secondary schools. They take the role as the instructors, mentors and facilitators throughout the teacher-training courses. More specifically, the instructors interact with learners and materials on creating knowledge for TPD courses. They facilitate participants in F2F discussion sections; they take a role as mentors for novel teachers. Moreover the instructor will share their experiences with participants.

In the CISE model, learners are regarded as the critical element. They are pre and in-service secondary school teachers who come from teacher education institutions and secondary schools. They are responsible for active engaging in learning activities, completing courses' tasks and giving feedbacks for their peers throughout the courses.

The technical assistants include software systems and people that take the responsibility for running the model as well as helping to answers the user's questions. Hence, participants could receive directly answer from technical assistants or receive the supports through technical materials which available on the TPD website.

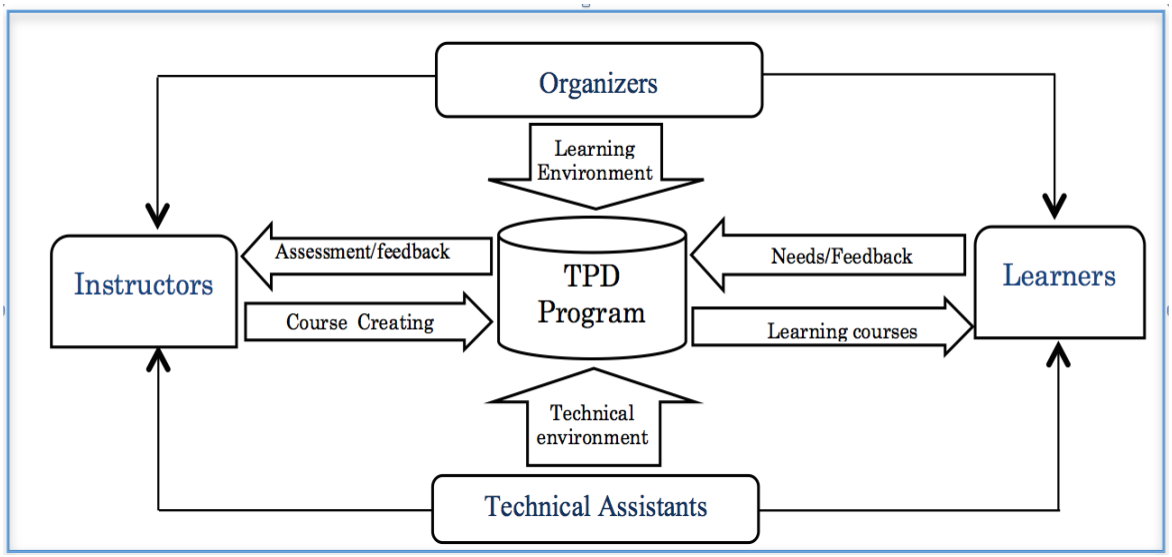

Figure 3.2 The entities of CISE model (Ho et al., 2013)

3.4 The stages of design a TPD course based on CISE model

As mentioned above, the CISE model is the KM-based TPD model in the BL environment. Ho et al., (2013) argued that teacher's professional could be developed based on four key knowledge management modes: namely, knowledge co-creation, knowledge internalization, knowledge sharing, and knowledge evaluation. The model was implemented in practice as following stages (Figure 3.3).

- Stage 1: Determining purposes and goals of the course

According to Earley et al., (2004), addressing clear purposes of TPD activities is crucial in designing and conducting the effective TPD activities. Hence, before any TPD activities, TPD planners should reflect

on what they wish to accomplish through those TPD activities. In the model the purposes are determined based on the MOET's strategies and policies, teachers' needs, and teaching practice contexts. These purposes are fundamental factors that provide necessary supports on implementation, management, and operation process of the CISE model.

- Stage 2: Creating course contents

According to Landt (2002), TPD is an effective process when teacher's learning process takes place in a situated learning through the interaction activities such as active engagement, discussion, sharing and collaboration. This learning process in practice could lead to the better outcome of learning (Lave et al., 1991). Hence, in the model the TPD knowledge is co-created by the interaction between instructors and learners; instructors and materials; learners and learners. Then, the knowledge for TPD will be evaluated by educational experts and experienced teachers then it will be approved by the MOET and relevant agencies. Then, it will be covered teaching pedagogy to ensure that the knowledge is useful and accurate with the adult learner style. Next, the knowledge will be converted into materials for TPD courses such as learners' learning materials, instructors' materials, and supplementary materials. All of them will be available for the participants before the courses' starting.

- Stage 3: Self-paced learning

TPD activity is effective if it allows teacher to relate prior knowledge to have more time for experiences (Dudzinski et al., 2000). So, with the necessary information is provided, the learners could log-in and access to learning materials such as the study guideline for learners (how to study, how to do the assignments, how to participate in online-discussions, learning timeline…), video-clips of lectures or teaching situations, and

other resources. In this learning process, the learners could share, chat, e-mail, or discuss online with their peers and instructors.

- Stage 4: Discussing and sharing

In the learning process, collaboration activities with peers are important on formation TPD model (Schon, 1983, 1989; Gordon, 2004). Because, collaboration activities could create confidence sense for teachers, that allows them interacting and sharing amongst community (Harris, 2003). Since throughout the learning process in the model, besides self-paced learning and take the online-course lectures, the teacher-learners could join an online forum to discuss and exchange their opinions with their peers group, instructors and facilitators regarding to relevant

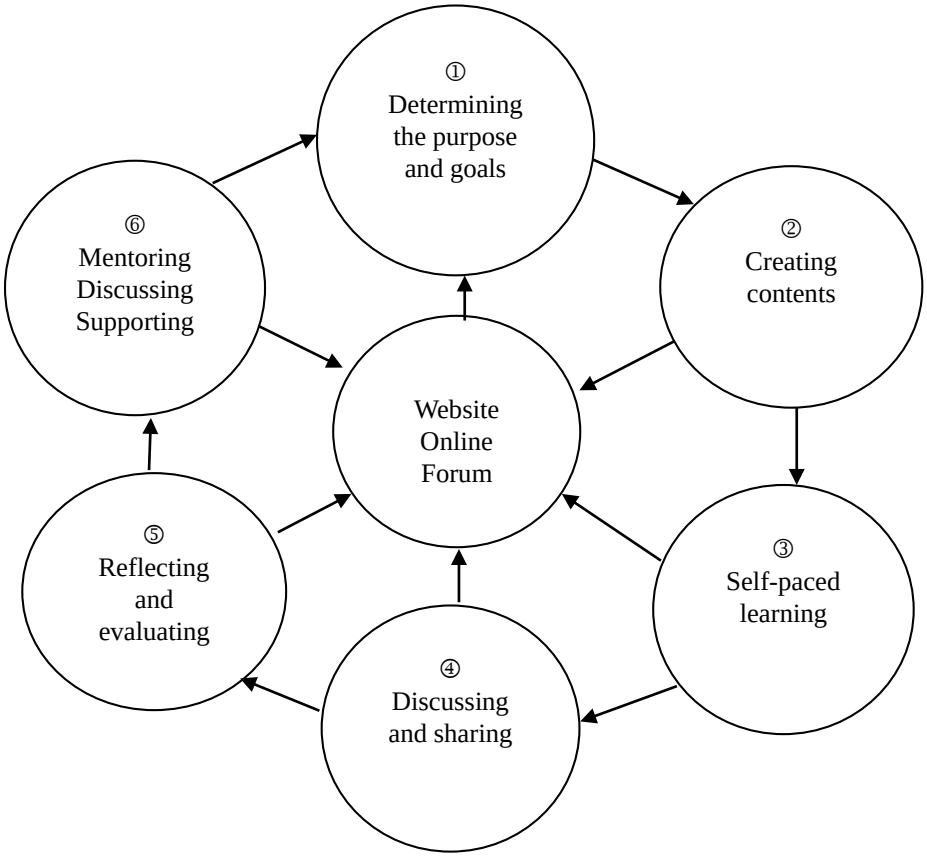

Figure 3.3. A teacher training course based on CISE model (Ho et al 2013)

knowledge of training course contents or answer questions or post

questions which related to the teacher-training course or situated teaching practices. Next, they have to attend F2F sessions according to the schedule of the course.

The F2F session begins with an introduction on the direction of discussion and the coursework need to be completed. After that, the participants will be divided into small groups. The participants will discuss, present their products/assignments, observe and evaluate peers' presentations in the groups. The purpose of this stage is to give the learners the opportunities working hands-on, collaborating with their peers, sharing their experience, and learning from each other.

-Stage 5: Reflecting and evaluating

The learners have to do assignments with their group and post reflective journal on the online forum. The learners also have to take part in online tests. The evaluation of learners' performance is based on the results of their works throughout all stages of teacher training course and the online tests as well as the results of final products of the course. The learners will receive a participation certificate after the end of the course. A summarized evaluation of the course is sent to the educational instructions as a reference for further TPD courses.

- Stage 6: Mentoring, coaching, and supporting

According to Ganser (2000), the effective model for TPD is a going learning process over time rather than one-off course. Most of study argued that support from school; government are essential to create an effective TPD model (Timperley, 2008). In the model, TPD process will be continued by on-going interaction among community's members via the online forum and other communication means. The learners could raise new questions that related to the TPD course or that occurred in the instruction practice. They could receive the on-going supports via the

responses of the community members. The responses become lessons not only for questioners but also for all other members. As a result, a professional learning community and a teacher network are established and the network which helps learners in developing their professional skills and identity as a teacher.

CHAPTER 4. EXPERIMENT

4.1 Introduction

In the chapter 3, a new model for TPD was proposed and described. This chapter will describe the implementation the CISE model in practice. The numbers and demographic characteristics of participants who evolved in this study are described. Then research's instruments and procedures are presented. Lastly, data analysis and validity and reliability are described.

4.2 Participants

The participants of this study were in-service secondary school teachers (SSTs) and the staff of Departments of Education and Training (DoET) of four provinces in Vietnam, namely: Hai-Duong, Hoa-Binh, Thai-Nguyen, and Yen-Bai. The number of participants, who attending the course was 177, of whom 117 participated in the experimental model (i.e. they received the training materials before the course's starting, self-paced learning, sharing, discussing and attending a F2F session), and 60 attended by F2F lectures only (i.e. they attended a F2F conventional course in a classroom). The participants attending the experimental course have the ability to use computer well. The number of participants belonging to each group is showed in Table 4.1 as follows.

Table 4.1. Number of participants attending the TPD course

Provinces	Experimental group (n=117)	Control group (n=60)
Hai Duong	29	
Hoa Binh	31	

Thai Nguyen	36	30
Yen Bai	21	30

Table 4.2. Demographic characteristics

Categories		Experimental group		Control group	
		n=117	(%)	n=60	(%)
Gender	Male	30	25.6	16	26.7
	Female	87	74.4	44	73.3
Age	Under 30	4	3.4	4	6.7
	30-40	60	51.3	34	56.7
	41-50	37	31.6	13	21.7
	Over 50	16	13.7	9	15.0
Academic degree	Associate	26	22.2	21	35.0
	Bachelor	85	72.6	37	61.7
	Master	6	5.1	2	3.3
Teaching experience	1-4 years	7	6.0	12	20.0
	5-15 years	68	58.1	34	56.7
	16-25 years	33	28.2	11	18.3
	+25 years	9	7.7	3	5.0
Field of expertise	Physics	41	35.5	18	30.0
	Chemistry	46	39.3	17	28.3
	Biology	28	23.9	19	31.7
	DoET’s staff	2	1.7	6	10.0

4.3 Experimental procedures

The contents of the 24h-teacher-training course on HOA for the in-service SSTs were co-created through the collaboration between educators

from the HNUE, HCE and experiential SSTs. Then, the contents were evaluated and approved by the Department of Secondary Education (DSE) of MOET. The course contents were organized into the following modules:

(1) History of HOA;

(2) Fundamental theory on HOA;

(3) Instruction skills and techniques of HOA;

(4) How to apply HOA in the instruction practice.

Figure 4.1. The opening ceremony of TPD course at Hoa Binh province

The procedures of the participation in the teacher-training course for HOA of both the groups are described as follows.

4.3.1 Experimental group

On the first day of the course, participants attended an opening ceremony (see Figure 4.1). In the ceremony, participants were guided how

to participate in learning activities of the course. Then, they took a pre-test (see Figure 4.2) and determined their group by themselves (3-4 learners/group in the same subject). In the learning process, participants have to read introductions of the course and then study by themselves as self-paced learning. The leaners have enough time to apply what they have learned into the instruction practices after participate in the next stage of the course. In the next stage, secondary school teachers will discuss and exchange with peers in their group about topics, which related to the course's contents. During learning process, learners could obtain feedbacks from the facilitators and their peers. In the morning of the last day of the course, teacher-learners had to present their products/assignments and they received comments/advices from other participants and facilitators. Then in the afternoon, learners attended a closing ceremony, which based on a video-conferencing under the chairmanship of the officials of MOET and DOET as well as participating in all trainees from 4 provinces. In this ceremony, the participants shared challenges that they met during attending the course. And they exchanged their ideas about how to deal with the difficulties when applying the HOA into teaching practice. The participants received responses from the deputy minister, MOET's officials, and instructors.

Figure 4.2 Attending the online pre-test at the Hoabinh province

4.3.2 Control group

The learners participated in a classroom-based F2F course at the Departments of Education and Training of two provinces namely Yen-Bai and Hai-Duong provinces. On the first day of the course, learners attended an opening ceremony, and later they took the pre-test. During the training process, learners have listen to lectures, worked hand-on and collaborated with their peers in small groups based on assignments/products. On the last day of the course, the learners have to present their assignments/products, took the post-test, and then attended the closing ceremony together with the experimental groups.

The TPD course's contents, learning materials, evaluation requirements, and instructors of the TPD course for both groups were the same.

4.4 Research instruments

A mix-method that includes both quantitative and qualitative research methodologies was used in this study (Sung el al., 2008). To answer the research questions, all research instruments were translated in Vietnamese. The research instrument included:

- Achievement tests (teacher's knowledge of and teaching skills of HOA);
- Learner's satisfaction scale;
- Successful factors scale;
- E-learning platform of the Hanoi National University of Education (HNUE) (http://elearning.giaoducphothong.edu.vn).

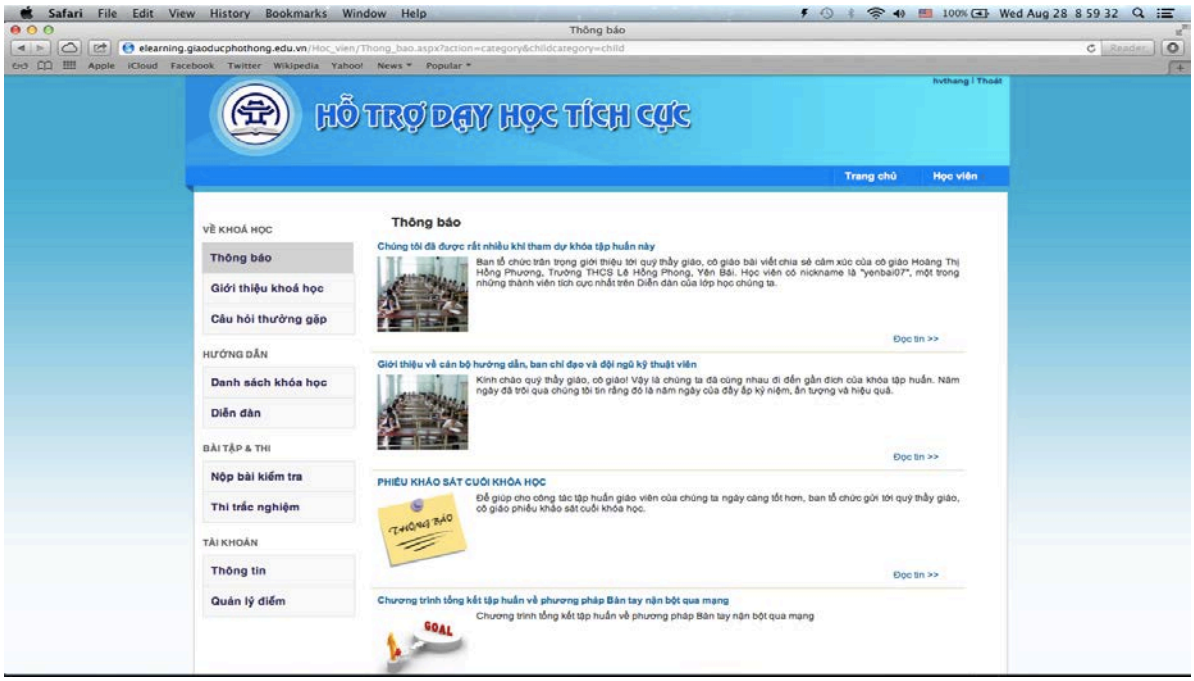

Figure 4.3. Home page of E-learning platform

The HNUE's E-learning platform consists of the following modules: information management, course management, online forum, assessment management, and user management (Figure 4.3).

4.5. Data Analysis

This is a quasi-experimental study with a non-equivalent groups design (Sung et al, 2008). All data of the study including pre-test and post-test, satisfaction of the learner was gathered throughout the study, were converted to an exportable format using Microsoft Excel, and then was imported to the statistical analysis software. The following are procedures for data collection of the study.

Achievement test

The learners' achievement including knowledge and teaching skills of HOA were analysed based on items which were gained throughout the learning process, and a post-test was taken into consideration to evaluate learners' achievement levels. There were various formats of question in the online tests such as true/false, multiple choices…

In the teacher training course process take place; these instruments were delivered to the learners in both two groups.

Once at the beginning and the end of the HOA course, the control group is instructors, while experimental group is conduced via online test system.

The outcome-test was administered to the control groups in a paper-and-pencil format, but was given to the experimental group via an online test system.

Learners' satisfaction survey

A literature review related to learners' satisfaction in the BL environment was conducted before developing a learners' satisfaction scale for this study. This scale is developed based on an adaption of the

questionnaire of Arbaugh (2000). The scale is composed 6 questions a five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), The leaners have to respond appropriate with their level of agreement with each item using. This questionnaire was given to both the groups including the experimental group via an online test system and at the control group in a paper-and-pencil format.

The questions and learners' responses summarized are showed in the result chapter.

Successful factors scale of CISE model

The instrument employed to examine underlying factors that contributed to the success of the BL delivery method was a reflective questionnaire consisted ten open-ended questions, which was developed by the researcher. This questionnaire was given to the experimental group via an online test system.

The questions and learners' responses are showed in the results section.

An independent sample T-test is use for comparing analysis the data of both two groups.

In order to examine the satisfaction the learners of both training methods, participants' opinions ranks in five-point Likert-scale. The frequency distribution of the items in the survey was employed while interpreting the results.

Regarding to the open-ended questions of the participants of experimental groups, they were analysed after coding the interview data with reference to each question.

4.6 The validity and reliability

In research study, reliability and validity are very important elements. They focus on the issues about the quality of data and appropriateness of methods, which were used in a study. In other words, reliability of a study indicates the degree of comparability between outcomes when an event is repeated under similar conditions; whereas, validity of a study means whether research explains or measures what it would suppose to measure or explain.

The methods that we used to increase the validity and reliability of this study were described as follows.

- A group of instrument development including the researcher and instructors was established for proposing and evaluation the study's instruments.
- All relevant existing instruments were reviewed.
- An appropriate analysis technique was used to analyse the data collected.
- To clarify response of the participants, a combination of open and closed questions was used.
- All instruments were piloted with a group of twenty SSTs, who did not attend the course to ensure reliability of the instruments. All types of questions required that answers be justified. SSTs participating in both groups administered the final course test within a time frame (45 min) re-calculated in the pilot testing stage.
- The participants were secondary school teacher of four provinces, which are the representative for variety of social and economics conditions in Vietnam.

CHAPTER 5. RESEARCH RESULTS

5.1 Introduction

In the chapter 4, research methodologies were presented, in this chapter, all research results are presented. First, it begins with an analysis of participant characteristics. The results will be discussed with reference to the following research questions of the study.

Research question 1: How to build a new KM-based model for TPD of secondary school teachers?

Research question 2: Could the new model improve learners' knowledge, teaching skills and satisfaction level on the course for hands-on approach?

Research question 3: What are the underlying factors that contributed to the success of the new model?

5.2 Demographic characteristics

The demographic characteristics and results of the homogeneity test are listed in *Table 4.2* In both groups, the majority of participants attending the training course were female, with percentage of the experimental and control groups being 74.4% and 73.3%, respectively. The percentage of the learners aged 30-40 in the experimental and control groups were 51.3% and 56.7%, respectively, while in both groups these percentages were much lower for other ages. The majority of learner are holding bachelor and associate degrees, with the percentages in the experimental and control groups being (72.6% and 61.7%) and (26% and 22.2%), respectively. The numbers of SSTs participating in the course were the highest. The

percentages of them in the experimental and control groups were 90% and 73.3%, respectively. The percentages of learners who were teachers of Physics, Chemistry, and Biology for the experimental group were 35.5%, 39.3%, and 23.9%, respectively, and these for the control group were 30%, 28.3% and 31.7%, respectively.

5.3 The Effectiveness of Education

Table 3 lists the compared results of learners' knowledge between the experimental and control groups for the pre-test and post-test. There was an increase in mean score of learners' knowledge of both groups between the pre-test and post-test. There was no statistically significant difference for the leaners' knowledge between both groups before attending the course ($t=0.643$, $p=0.521$). The mean scores of knowledge in the pre-test of experimental and control groups were (14.97 SD=1.950) and (15.57 SD=1.170). However, there was a statistically significant difference from learners' knowledge of HOA between two groups after attending the course with $t=8.556$ and ($p=0.000<0.05$). The mean score for knowledge in the post-test of the experimental group was 21.89 (SD=3.232), while that of the control group was 18.23 (SD=2.360) (see Table 5.1).

Table 5.1. The pre-test and post-test results for learners' knowledge of HOA

Category	Experimental group (n=117) Mean±SD	Control group (n=60) Mean±SD	t	p
Knowledge of pre-test	14.97±1.950	15.15±1.147	0.643	0.521
Knowledge of	21.89±3.232	18.23±2.360	8.566	0.000

post-test

With regard to participants' teaching skills of HOA, there was an increase for the mean score of learners' teaching skills in both two groups between the pre-test and post-test (see Table 4.3). There was no difference for teaching skills between two groups in the pre-test (t=0.604, p=0.547>0.05), with mean score of the experimental and control groups being (10.93, SD=1.809) and (10.77, SD=1.533), respectively. Similarity, there was no significant difference in mean score of teaching skills of two groups in the post-test (t=1.674 and p=0.96>0.05). However, the mean score of the control group was higher than that of the experimental group (14.73 SD=1.149 and 15.03 SD=1.164) (see Table 5.2).

Table 5.2. Pre-test and post-test results for participants' teaching skills of HOA

Category	Experimental group (n=117) Mean±SD	Control group (n=60) Mean±SD	t	p
Teaching skills of pre-test	10.93±1.809	10.77±1.533	0.604	0.547
Teaching skills of post-test	14.73±1.149	15.03±1.164	1.674	0.960

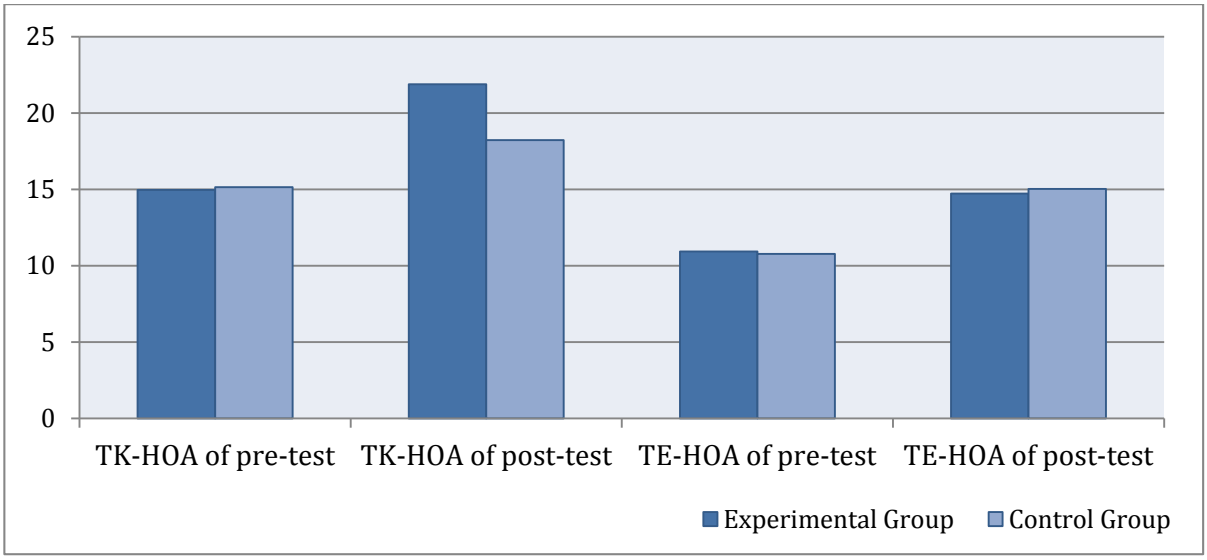

Figure 5.1. The mean score of the educational effects

Note: TK- HOA: Teacher's Knowledge of HOA; TE-HOA: Teaching skills of HOA

5.4 Learner's satisfaction with teacher-training course

Table 5.3 lists the results of the comparisons of learners' satisfaction between the experimental and control groups of the post-test. With regard to item 'overall satisfaction with the course', the mean score of the experimental group 4.32 (SD=0.554) was higher than that of the control group 3.97 (SD=0.450), with a statistically significant difference ($p=0.000<0.05$). Similarly, in the item 'information is fully provided', mean score of the experimental, and control groups were 4.25 (SD=0.540) and 3.72 (SD=0.666), respectively, with a statistically significant difference ($p=0.000<0.05$).

The mean scores of the experimental and control groups for the following questions 'participating the course in the future', 'help in job performance', 'understanding of education', and 'would like to recommend this course to others' were 4.21 (SD=0.565) and 4.03 (SD=0.637); 4.36

(SD=0.533) and 4.13 (SD=0.503); 4.17 (SD=0.557) and 3.97 (SD=0.520); 4.42 (SD=0.529) and 4.30 (SD=0.530), respectively, with no statistically significant differences between two groups.

Table 5.3 Satisfaction degrees of the learners with the courses

Category	Experimental group (n=117) Mean±SD	Control group (n=60) Mean±SD	t	p
I am satisfied with overall the course	4.32±0.554	3.97±0.450	4.624	0.000
I would like to participate in other courses in the future	4.21±0.565	4.03±0.637	1.823	0.069
The course help me to perform my teaching duties better	4.36±0.533	4.13±0.503	2.278	0.060
The content is easily understandable	4.17±0.557	3.97±0.520	2.305	0.220
All information that I required is fully provided	4.25±0.540	3.72±0.666	5.342	0.000
I would recommend this course to other learners	4.42±0.529	4.30±0.530	1.413	0.159

5.5 Factors improve the educational effectiveness of CISE model

To further understand the underlying factors that contributed to the effectiveness of the CISE model in improving the learners' knowledge, teaching skills and satisfaction for HOA, ten open-ended questions were included in the reflection questionnaire. Which were delivered to the

experimental group. Content analyses based on the participants' responses were analysed and the frequency of each response was calculated. The results of these content analyses are presented in Table 4.6- Table 4.15

Q.1. This course was aiming to enhance knowledge of the HOA used for instruction? Did the course succeed in doing? If yes, how?

Most participants (98%) agreed that the course improved their knowledge of HOA. The primary reasons enhanced their knowledge of HOA were online-lectures (60%), supplementary materials (51%) and discussing and sharing with peers (40%). Meanwhile, the reasons which improved learners' knowledge through observing peer' product, giving feedbacks and mentoring being 13%, 6% and 5% respectively (see Table 5.4). Example of responses the question as follows.

'I could learn through my learning experience such as observing, discussing, giving feedbacks'.

'Through the online forum, we could share and exchange information, ideas and assignments with my peers that can help me to improve my knowledge of HOA'.

"I could learn through the peers' feedbacks"

'I could learn from peers' mistakes'.

'I can learn through observing peers' products/assignments'.

Table 5.4. Q1 content and analysis

Response	Percentage
Yes	98.3
Reasons (Yes)	
Online lectures	60.0

Materials	51.0
Discussing and sharing with peers	40.0
Observing template and peers products	13.0
Evaluating and feedbacks	6.0
Mentoring	6.0

Q2. This course was aiming to enhance teaching skills of HOA used for instruction? Did the course succeed in doing? If yes, how?

A significant majority (98.3%) responded positively that the course enhancing their teaching skills of HOA in instruction. The primary reason for these responses were lectures of instructors (50%), doing assignments (26.5%), exchanging and discussing (30%) and working in group (20%) (see Table 5.5). Examples of responses to the question are as follows.

'This model can help me improve my teaching skills because through doing in teamwork'.

'I can improve my teaching skills by observing, discussing, giving feedbacks and sharing with my peers'.

'I can improve my teaching skills by studying online-lectures, and doing assignments'.

'My efficacy can improve through work in-group by hands-on activities'

'My facilitators and mentors can help me improve my teaching skills'

Table 5.5. Q2 content and analysis

Response	Percentage

Yes	98.0
The reasons (Yes)	
Lectures of instructors	50.0
Doing assignments	26.5
Exchanging and discussing	30.0
Working in group	20.0
Observing from peers	11.0
Coaching and mentoring	15.4

Q3. Did the assignments of sharing and commenting on products contribute to your understanding and appreciation of how to use effectively HOA in classroom? How?

Significant majority (95%) of participants agreed that sharing and commenting for learners' products/assignments, which contributed to their understanding and appreciation of how to use HOA effectively in classroom. The reasons for that were from peers feedbacks (33%), peers observing (10%), peers' mistaking (6.8%) and exchanging and sharing ideas (5.1%) (see Table 5.6). Examples of responses to the question are as follows.

'I can learn a lot from the comments for assignments from peers and instructors'

'Instructors and peer's feedbacks help me understand my mistakes'.

'I can improve my knowledge when observing peers' products/lesson

planes'.

Table 5.6. Q3 content and analysis

Response	Percentages
Yes	98.0
The reasons (yes)	
Feedbacks	33.0
Peer observing	10.0
Peer mistaking	6.8
Exchanging and sharing ideas	5.1

Q4. Can you comment on the discussions and feedback from online discussion topics? Were you able to ask sufficient questions? Did you have sufficient opportunity to give input? Did you receive sufficient feedback? Were the discussions useful?

Most learners (93%) joined the online forum for discussing as well as receiving and giving feedbacks. 82% responded that the online forum was a useful tool for their learning experiences. The percentage of learners raising questions on the online forum was 76%. Meanwhile, 74% received the responses from their peers and facilitators (see Table 5.7). Examples of responses to the question are as follows.

'I joined the online forum to discuss with my peers'.

'I gave some questions and I received the responses from other members timely, which helped me improve my leaning motivation and knowledge.

'I had problems in talking in front of the class, but with the use of discussion forums in TPD system, I felt relieved'.

'I did not receive responses for all my questions. However I can learn from the questions and answers of other members. I think the forum is useful for all members'.

Table 5.7. Q4 content and analysis

Response	Percentages
Joint the online forum give and receive feedback	93.0
Forum is useful for learning experiences	82.0
Raising questions on the online forum	76.0
Receiving feedbacks from peers and facilitators	74.0

Q5. Did the course provided enough time for you to reflect on your abilities and competency of applying HOA in classroom?

Significant majority (98%) of participants indicated that the reflection time of the course was enough for their studying (see Table 5.8). Examples of responses to the question are as follows.

'I have enough time for applying what I learned into classroom practice before discussing with peers. While in traditional course, I do not have enough time for covering the required educational content and reflective activities'.

'I have enough time for reflecting about my lectures'.

Table 5.8. Q5 content and analysis

Response	Percentages
The course was enough time for reflecting	98.0
The learners can apply what they learn in teaching	81.0

practice

Q6. How do you feel about the learning process (e.g. materials, organizing) in this course?

76.1% of learners reflected that the course was well organized. All materials and resources needed to complete the class were readily accessible. Meanwhile 69% indicated that the BL model is an effective format for teacher education. 72% of SSTs believed the model is a promising form for TPD (see Table 5.9). Example of responses the question is as follows.

'Blended course was convenience and suitable to learn especially the theoretical part of the field'.

'I like taking course in the classroom; however, I believed that the courses that I took online were funny and useful'.

'I think the course were organized well and materials were available'

Table 5.9. Q6 content and analysis

Response	Percentages
The course was very good on preparing	76.1
BL is an effective format for teacher education	69.0
BL is a promising format for TPD	72.0

Figure 5.2 Closing ceremony of course at MOET site

Q7. How do you feel about flexible access in the new model? Why?

Ninety-one per cent of participants agreed that the model was very flexible for leaners on their professional development. They can learn anytime and anyplace (27%), 11% of respondents indicated that they could do other works while participating in the teacher-training course. (see Table 5.10). Examples of responses to the question are as follows.

'I can do housework, or giving lectures at school while participating in the course'.

'I can study anytime and anywhere'

'It is flexible foe me and it fit my work schedules and I could complete assignments at my own pace'.

Table 5.10. Q7 content and analysis

Response	Percentages
The CISE model was flexible for TPD	
Reasons	91.0
They can learn anytime and anywhere	27.0
They can do other works while participating in TPD course	11.0

Q8. How do you feel about the time to participate in TPD course in the new model? Why?

The responses are summarised in Table 5.11. Examples of the question's responses are as follows.

'I think that I saved more time for participating in the TPD course because I did not handing in their works at home and schools'.

'I did not need to spend time travelling.

Table 5.11. Q8 content and analysis

Response	Percentages
The CISE model could save the time	63.0
Reasons	
They did not handing in their works	57.0
They did not spend time traveling in order to participate in TPD course	11.0

Q9. How do you feel about the cost for participating in TPD course in the blended model?

The responses of the question are showed in Table 5.12. Examples of the question's responses are as follows.

'I could save money because I did not spend cost for travelling to

teacher-training center of the province which is far from my home'

'I did not have to pay any cost for accommodation during the course '.

'I did not have to buy any TPD materials because they available on the website'

Table 5.12. Q9 content and analysis

Response	Percentages
The CISE model could save the costs	60.0
Reasons	
The learners did not spend any travel cost	29.0
The learners and their organizations did not pay any cost for accommodation	27.0
The learners did not buy any TPD materials	9.0

Q10. How do you feel about the supporting, coaching and mentoring for you to participate in TPD course in the new model? Why?

55% of the learners argued that they received enough supports, coaching, and mentoring during the training process. 37.6% of the learners believed that mentors and instructors were very enthusiastic. 22% of participants indicated that facilitators helped them understand about their own ambiguity. 15% of learners believed that instructors and facilitators helped them overcome challenges (see Table 5.13). Examples of responses to the question are as follows.

'I received supports and coaching timely when I had problems'

'The instructors and mentors were very enthusiastic and they helped me a lot.'

'Let us always be together, share information and help each other in professionals'

Table 5.13. Q10 content and analysis

Response	Percentages
The learners received enough support, mentoring and coaching	55.0
Instructor and mentors were very enthusiastic	37.6
The facilitators helped learners to understand their ambiguity	22.0
The instructors and facilitators helped the learners overcome challenges	15.0

CHAPTER 6. DISCUSSION

6.1 Introduction

In the chapter 5, the research results were presented; this chapter gives the discussions and describing regarding the finding of the study, then the summary of finding and contribution of the study point out. Lastly, the limitations of the study and recommendations for future study were presented.

6.2 Education effects of the CISE model

The study findings indicated that there was a statistically significant difference of knowledge's mean score between two groups ($p=0.000< .05$) after attending the TPD courses. That suggests the effectiveness of the CISE on increasing leaner's knowledge. The finding of this study is consistent with the studies of Shea et al. (2010) and Means et al. (2009), that students' learning outcomes of online communities of the blended course might better than traditional classroom F2F course if technology is used suitably and teacher-student interaction is enhanced. This finding could be due to the following related aspects.

First, this can be mainly due to the CISE model offers a flexible access to the course contents and materials. Findings from the qualitative data seemed to support this interpretation. Almost of the participants argued that the CISE model was flexible for learners on attending the TPD course. The learners could study at anytime, from anyplace, by self-paced learning; they could do other works while participating in TPD course (question 7). Almost of learners also emphasised that they have sufficient time for reflection and applying what they have learned into their teaching

practice (question 5). This is consistent with the research results of Vrasidas et al. (2004) and Swenson et al. (2003), in which, online professional development could benefits for teachers including anytime, anyplace professional learning. Moreover, in previous study concluded that the flexibility and convenience of BL approach could enhance and help the learners have responsibility on their learning (Rigby et al., 2012; Smyth et al., 2012)

Second, this can be due to the CISE model offered tools, which enhance the interaction among participants. Finding from the survey data of the research supported this interpretation. The teacher learners indicated that besides online lectures and materials, they could acquire their knowledge of HOA via interactional activities such as discussing, observing, sharing, exchanging, evaluating, and giving feedbacks with the peers and tutors (question 1), In addition majority of the learners of experimental group agreed that they could interact easily with their peers and instructors via the online forum and the F2F discussion session (question 4). Almost of participants indicated that they could raise questions and receive responses from peers and instructions. Moreover, the learners also emphasized that the model gave them opportunities in collaboration with their peers through group assignments. The findings of the present study supported the study findings of Kupetz et al. (2005), they depicted that in-service teachers learned a lot from their peers when they reported back to their peers what they did while performing their practices.

Third, the CISE model contributed the formation of teacher network for professional development (professional learning community). The model becomes a bridge between SSTs and educational experts. This can be supported by the learner’s responses that they could develop their professional with the supports, coaching, mentoring from the network’s

members through the online forum (question 2,3). This is consistent with Chapman et al. 2005, that teachers' professional could be developed through the formation of a professional learning community. BL approach could develop relevant teacher skills based on face-to-face sessions, and help teachers structure the course via online forum (Motteram 2006).

With regard to the learners' teaching skills of HOA, the research finding indicated that learner's teaching skills score tended to increase for both groups after attending the TPD courses. But there was no significant difference between them in the pre and post-test. That suggests the effectiveness of the CISE model. This result can be due to the positive novel experience of the experimental group through F2F and online discussion and collaboration in small groups. Moreover, the learners have sufficient time for reflection about what they have learned and how to apply them into teaching practices. Findings from the qualitative data seemed to support this interpretation. That 98% of the learners argued that the model helped them on improving their teaching skills (Question 2). Almost (98%) of the participants agreed that the course provided enough time for their reflection (Question 5). Moreover, the research revealed that the reasons which improved learner's teaching skills were from online-lectures (50%); exchanging and discussing with peers (30%); doing assignment in groups (26%); observing from peers (11%) as well as from coaching and mentoring (15%) (Question 2). These results are in-line with study of Babenko-Mould et al. (2004) that there was no difference of teaching skills of learners in BL education compared to traditional lecture or other types of education.

The finding indicated that the participant's teaching skills result of the control group was higher than that of the experimental group. This indicated that learners could improve their teaching skills better in the

traditional-classroom course. This may be due to the direct guidance of the instructors with their learners throughout the learning experience. The findings are consistent with the research results of Butrymowicz (2012) and Means et al. (2009), which learners of online courses receive fewer benefits from practical contents, which can be modelled better in the classroom. For example course contents related to knowledge of classroom management.

6.3. Learners' satisfaction with the CISE model

The findings of the present research indicated that some items related to learner's satisfaction were similar between two groups, however, with respect to 'overall satisfaction with the TPD course' of the experimental group was higher than that of the control group. This finding might be due to the fact that the participants of the experimental group were provided fully course's information and materials during the learning process. Moreover, it showed that the learners were convenient on participating in leaning activities and receiving the supports timely from peers and tutors.

Findings from quantitative and qualitative data seemed to support this interpretation. 93% of participants of the experimental group joined the online forum and raised questions and they received feedbacks from peers, mentors and instructors timely (question 4). Most of the learner (76%) indicated that the course was organized well and the relevant information was provided fully. This finding coincides with the views of some theorists in the literature such as Dziuban et al. (2006), Bunderson (2003), Osguthorpe et al. (2003) and Twigg (2003), who suggested that the blended form might result in greater student satisfaction. The study was also consistent with Harrell et al. (2006) and Young et al. (2008) argued that

overall satisfaction of teacher-learners is positive response in the BL environment because the BL could improves overall satisfaction (Byers 2001).

6.4. Factors contributed to success of CISE model

The qualitative data of opening ended question from participants' responses revealed various factors, which contributed to the success of CISE model. And they were triangulated with quantitative data. These are the flexibility, access, cost effectiveness, improvement of interaction, formation of teacher network, and involvement of administrators, instructors and secondary school leaders.

The model offers a flexible and quality course. 91% participants argued that the CISE model was flexible for learners in attending the TPD course. The learners could study anytime and anyplace by their self-paced learning, and they can do other works while participating in TPD course (question 7). This is consistent with the results of Vrasidas et al. (2004) and Swenson et al. (2003), in which, online professional development could be beneficial them to learn anytime, anywhere.

The model offers for the learners an access to quality resources. The qualitative data supported this interpretation: 'I was provided fully important information and materials'. This coincides with Charalambos et al. (2004), that learners' professional could improve through providing access to networks of professionals with useful skills and knowledge of TPD.

The model improved a chance for interaction between learners, instructors and course contents. The findings revealed that the participants of the CISE model obtained knowledge not only from the online-lectures

and materials, but also through activities such as discussing, observing, sharing, exchanging, evaluating, and giving feedbacks. Almost of learners agreed that they could interact easily with their peers and instructors via the online forum and the F2F discussion session. The findings of the present study supported the study findings of Kupetz et al. (2005), which depicted that in-service teachers learned a lot from their peers when they reported back to their peers what they did while performing their practices.

The model allowed the formation of teacher network for TPD. Through this teacher network, SSTs could develop their profession based on the supports, coaching, mentoring. This result is consistent with Chapman et al. 2005, that teachers' profession could be developed through the fostering of a professional learning community. Within a university course structure, BL not only help the formation relevant skills through face-to-face sessions, but also provide them with an opportunity to reflect online about their practice (Motteram 2006).

The model increased the effectiveness of cost and time on delivering teacher-training course. The findings of the study identified that relative to F2F, BL course reduced the traveling time and cost for participants (Question 8 and Question 9). On the other hand, the CISE model increased the cost-effectiveness through the using online-course in many times in huge users, so that the model could reduce human resource as well as facilities. The data analysis supported for this interpretation, majority of participants of the course believed that the CISE model could become an effective model for TPD courses in a nationwide (question 6). This coincides with Means et al. (2009), that overall BL is higher cost-effective than face-to-face programmes. BL could save significant costs through the reduction of substitute teachers and teaching assistants for faculty members (Twigg 2003).

The involving of administrators, tutors and school leaders were the important factors that contributed to the success of CISE model. More than 50% of participants argued that they received enough the supports, mentoring and coaching. They also agreed that instructors, school leaders and facilitators helped them overcome challenges and ambiguity in learning process. Meanwhile, 76.1% of participants argued that the course was very good on preparing. 69% of learners thought that CISE model is an effective model for TPD.

CHAPTER 7. CONCLUSIONS

7.1 Finding Summary

In this part of the dissertation, the problem, the design and findings of the present study are summarized first, and concerning the findings, the conclusion of the study will be outlined.

In the era of knowledge-based economy and digital, knowledge can be seen as a strategic recourse that gives organizations sustainable competitive advantage (Durucker, 1993). In this sense, the organizations are now trying to use and manage knowledge in an effective way (Na et al., 2002). Accordingly, knowledge management (KM) is also widely applied by organization to encourage the capturing, utilizing, sharing, distributing and creating knowledge. The results could enhance improvements in productivity, innovation, competitiveness and better relationships among people in those organizations (Ungaretti et al., 2011). To present, there were many industrial institutions, which have been integrated KM in the development of human resource programs (Ferguson et al., 2005). However, KM is still rarely applied in teacher education programs (Yeh et al., 2011).

When discussing about the role of teachers in the 21st century, Donnely (2010) argued that the role of teachers has been transformed from a central-position as a knowledge provider, task giver, or leader into as a facilitator on learning process of student. To adapt to this transformation, teaching skills and pedagogies of teachers could be facilitated through an on-going professional development process (Daeking et al., 1994). The professional development process could improve through interaction with other practisers. However, traditional TPD practices often have the limitations as follows:

- Do not encourage teacher engage and motivate to participate in community of practice (Joyce & Showers, 1980);
- The teacher training course contents may not be relevant to the needs of teachers and not match school conditions Daeking et al., (1994).
- Do not enough to encourage collaboration and refection on-going of teachers on their professional practice (Helleve, 2010);
- Delivering of teacher training course requires much time and cost for both learners and instructors (Helleve, 2010).
- Lack of effort to provide support continuously for teachers (Scott, 2003).

The review of studies in the field inspired the researcher that an alternative way of teaching-training course might be obtained through implementing a KM-based model for TPD within the blended leaning environment. Hence, the goals of the present study were to propose a new KM based TPD model and examine its educational effectiveness on a teacher-training course for HOA via the test result of learners of knowledge and self-efficacy. Moreover, the study evaluated the satisfaction level of the participants through a comparison of satisfaction of both groups. In addition, the underlying factors, which contributed to the effectiveness of the CISE model, were also pointed out. In order to accomplish these purposes, the study seeks the answers to the following research questions.

- *Research question 1*: How to build a new knowledge management-based model for teacher professional development of secondary school teachers?
- *Research question 2*: Could the new model improve learners' knowledge, teaching skills and satisfaction level on the course for

hands-on approach?

- *Research question 3*: What are the underlying factors that contributed to the success of the new model?

The CISE model was proposed, which includes four KM processes namely, knowledge co-creation, knowledge internalization, knowledge sharing, and knowledge evaluation. The processes could be described more specifically as follows.

- Content creation (Knowledge Co-creation): This is interactive and collaborative process between instructors, learners and materials. TPD knowledge is created through the following activities: discussing among instructors and learners; selecting the core knowledge from learning materials to meet the needs of SSTs; choosing the feedback information from learners of the previous courses. Then courses knowledge is verified and evaluated by experienced teachers and educational experts. It will be covered by the instruction's pedagogy and learner's psychology. These activities allow creating the useful knowledge for TPD courses because it is co-created by instructors and learners.

- Learning (Knowledge Internalization): The purpose of this process is to allow the learners to develop their profession through the constructive-learning approach through social learning interactions. The learning activities, material resources and supports are the components of the learning process. On the first stage of the learning process, the self-paced learning is applied together with using TPD materials, which include articles, video-clip of situated teaching practices, and other resources. The learners could discuss with their peers via an online forum. The learning could be done through observing and giving the feedbacks for peer's products in the F2F session. And learners can learn by doing reflective

assignments.

- Discussion (knowledge sharing): Discussion with peers is a way to share knowledge and teaching experiences in the professional learning community. The learners engage in discussing and exchanging their ideas with peers in both F2F and online forum session based on the directed topics or their assignments. The learners have to present their assignments and receive the feedbacks and advices or comments from their peers or facilitators in the F2F session. By this way, the individual's knowledge will be converged gradually into the model knowledge. As a result, the professional knowledge in the CISE model becomes enrichment. This allows the model to develop sustainably because the model knowledge is created based on the bottom-up and participatory approach.

- Assessment and feedback (knowledge evaluation): The purpose of this process is to review and verify whether what teachers have been learned are accurate and relevant. The learner's performance is evaluated based on the result of the online tests, reflection journals and assignments on the online forum and reflection question throughout the courses. These results allow learners self-analysing their TPD competences and directions of their TPD plan. The result could be the useful information for organizers in developing TPD plans in the future.

A teacher-training course for HOA based on the CISE model were designed, delivered and maintained through the following six stages. Determining the purpose and goals, creating contents, self-paced learning, discussing and sharing, reflecting and evaluating, and mentoring, discussing and supporting. The course begins with determining the course's purpose, which is based on MOET's strategies, teacher's needs and teaching and learning contexts and educational trends worldwide. The course's contents are co-created by collaboration between instructors and

learners and materials. Next the third stage is the self-paced learning stage, which is the stage, in which learner study by themselves based a combination of TPD materials and online lectures. Then learners will join the online forum for discussing, exchanging and sharing their opinions with their peers. In the stage five, the learners have to do the reflective assignments as well as the online tests. In the last stage, TPD is continued by on-going interaction amongst community members. More specifically, the model could be described as follow.

- Stage 1: *Determining purposes*: The course's purposes are determined based on the MOET's strategies, teachers' needs, and instruction context. They are fundamental factors on providing necessary supports for implementation, management, and operation process of the CISE model.

- Stage 2: *Creating contents:* The knowledge of the TPD model is co-created by the interaction between instructors and learners; instructors and materials; learners and learners. The knowledge is evaluated by educational experts and experienced teachers and approved by the MOET. Next, the knowledge will be converted into materials for TPD courses such as learners' learning materials, instructors' materials, and supplementary materials. All of them will be available for all participants.

- Stage 3: *Self-paced learning*: With the users' information provided, the learners log-in into the learning system to gain access to the learning materials such as the study guideline for learners (how to study, how to do the assignments, how to participate in online-discussions, learning timeline…), video-clip of lectures or teaching situations, and other resources. In this learning process, the learners can chat, e-mail, or discuss online with their peers and instructors.

- Stage 4: *Discussing and sharing:* During learning process, learners

join an online forum to discuss and share their opinions with their peers group, instructors and facilitators about training course contents. Next, they have to attend F2F sessions according to the schedule of the course. The F2F session begins with an introduction on the discussion direction and the coursework to be completed. After that, the participants will discuss in small groups. The participants will present, observe and evaluate peers' presentations in the groups. The purpose of the stage is to give the learners an opportunity working hands-on by collaborating with their peers, sharing their experience, and learning from peers' products.

-Stage 5: *Reflecting and evaluating:* The learners have to do assignments with their group and post their reflective journal on the online forum. The learners also have to take online tests. The evaluation of learners' performance is based on the results of their works in all stages and the online tests as well as the results of final products. The learners will receive a participation certificate after the end of the course. A summarized evaluation of the course is sent to the educational instructions as a reference for further TPD courses.

- Stage 6: *Mentoring, coaching, and supporting:* The professional development process for teachers is continued by on-going interaction among community's members via the online forum. The learners could raise new questions that related to the TPD course or that occurred in the instruction practice. They could receive the on-going supports from the community members. The supports/advices become lessons not only for questioners but also for other members. As a result, a learning community as a teacher network are established and the network which helps learners in developing their professional skills and identity as a teacher.

In order to evaluate the educational effectiveness of the CISE model, a quasi-experimental study with a non-equivalent groups design is used.

Traditional-F2F classroom training was administered to 66 SSTs (control group) and BL model-based course utilising a combination of e-learning components and discussion was given to 117 STTs (experimental group).

The study utilized various data gathering instruments including an online test and reflective assignments, a survey on the participants' satisfaction with the blended instruction, field observations, participants' postings on the discussion forum, informal reflection reports of the participants, and standardized open-ended interviews with participants. The gathered data were examined and interpreted through descriptive analysis. The followings are the findings of the present study:

Education effects of the CISE model

- The study findings indicated that there was a statistically significant difference of knowledge's mean score between two groups ($p=0.000 <.05$) after attending the TPD courses. That suggests the effectiveness of the CISE model on increasing leaner's knowledge.
- The research finding revealed that learner's teaching skills score tended to increase for both groups after attending the TPD courses. But there was no significant difference between the control and experimental group in the pre and post-test.
- The finding indicated that the participant's teaching skills result of the control group was higher than that of the experimental group.

The finding could be due to following related aspects: The model can be mainly due to the CISE model provided a flexible access to content and instruction. Findings from the qualitative data seed to support this interpretation. Moreover, the model allowed enhancing participants' interaction, which can help the formation of teachers network teacher

professional development.

Learners' satisfaction with the CISE model

The findings of the present research revealed that some items related to learner's satisfaction were similar between two groups, however, with respect to 'overall satisfaction with the TPD course' of the experimental group was higher than that of the control group. Findings from quantitative and qualitative data seemed to support this interpretation. 93% of participants of the experimental group joined the online forum and raised questions and received feedbacks from peers, mentors and instructors timely (question 4). Most of the learner (76%) indicated that the course was organized well and the relevant information was provided fully. This finding coincides with the views of some theorists in the literature such as Dziuban et al. (2006), Bunderson (2003), Osguthorpe et al. (2003) and Twigg (2003), who suggested that the blended format might result in greater student satisfaction. The study was also consistent with Harrell et al. (2006) and Young et al. (2008) argued that teacher candidates have generally positive response to BL in terms of overall satisfaction. BL improves student morale and overall satisfaction (Byers 2001).

The factors contributed to the success of CISE model

The qualitative data from participants' responses to the end of the course opening-question revealed various factors, which contributed to the success of CISE. And they were triangulated with quantitative data. The following are the factors, which contributed to the success of the model.

- The model provided the flexible and high-quality course for learners
- The model provided the accessibility to TPD resources for learner

- The model offered the opportunities on interaction between learners, instructors and learning contents
- The model allowed the formation of a teacher network for TPD
- The model increased the cost and time effectiveness for TPD
- The involving of various people, namely: administrators, stakeholders, instructors and leader of schools.

7.2 Conclusions

This section will outline the conclusion and implications of the present study of the effectiveness of the model in terms of the educational effectiveness and participants' satisfaction with the teacher-training course in the blended learning environment.

We can conclude that teacher training course based on KM in the BL environment that improved interactivity, fostered peer collaboration and sharing of professional knowledge. Moreover, the model could establish a professional learning community; therefore learners could interact easily among their peers as well as facilitators through both face-to-face and online sessions.

The opportunities for leaners to obtain peers' feedback and supervisors' feedback for their works related to the course through asynchronous discussions increase the convenience and satisfaction in blended teaching practice course.

This study revealed that the in-service teachers did not have realistic expectations of the workload in blended teaching practice course. They believed that fewer face-to-face interactions with the instructors and reduced classroom time means less workload so it was quite a surprise to many of them that the online component of the course entailed a higher

level of engagement with the course material and an increased interaction with both their instructor and peers. That is, the blended teaching practice course demanded more course work than their other face-to-face courses.

The present study supported the argument in the literature that blended learning environments could combine and blend the advantages of face-to-face modality with online learning method and might provide effective instructional environments for TPD courses.

In conclusion, the KM based model for TPD indicated that BL course could benefits to the learners of the participants' teaching skills as well as leaners' satisfaction with the course.

The results of this study indicated that in-service teachers favour blended course and it is perceived as an effective way of learning and professional development in HOA courses. Hence, it could be claimed that through applying KM based model in the blended learning in teacher training course, teacher education programs may maintain and improve the quality of teaching practice courses for in-service teacher education.

Regarding the findings of the study, it could be stated that a course content is developed and organised well in the friend and trust environment could encourage learners to be active participants in the forum for discussing, sharing and exchanging their practise. That is a key factor in formation a learning community as well as a life-long learning tool for TPD.

In addition to improving practice in the teacher-training course, this study also served to the purpose of determining if blended instruction could be implemented within a teacher-training course in teacher training program at a university. That is to say, the study seeks to answer, whether or not blended instruction can be implemented within teacher-training course, which is one of the major courses in a HOA teacher-training

program. The findings of the present action research confirmed that blended instruction model could be implemented to the teacher-training course in a HOA program.

7.3 Contributions of the study

This section focuses on the contributions of this dissertation. The section is divided into two subsections addressing contribution to theory and practice.

7.3.1 Theoretical contributions

Both theory and empirical findings contributed to our understanding of the effectiveness of using KM and blended learning for teacher professional development for secondary school teachers in Vietnam.

The study also contributed to our understanding of the question of how to build an effective course for TPD in Vietnam condition.

The study proposed a new model for teacher professional development, which includes four KM process namely, knowledge co-creation, internalization, sharing, and evaluation. Through these processes, a learning community will be established. And professional of teachers will be developed continuously.

The research findings pointed out that the important factors that contributed to the success of a course based on KM model were: the flexibility, assess, improving cost and time effectiveness, increased interaction, established learning community, and involvement of relevant stakeholders, leaders of secondary schools.

The findings showed that the knowledge sharing was facilitated through participating in a professional learning community of secondary

school teachers. The building of community was improving interaction activities as discussions in the online forum. Moreover, in the learning process, the secondary school teachers were encouraged to present, share and exchange their opinions/ideas throughout learning process in both online forum and in the classroom session. Thus, the participants could articulate their tacit knowledge such as instruction practices, situated teaching… as explicit concepts personal teaching skills.

7.3.2 Practical contributions

In the CISE model, professional knowledge was co-created by the interaction between learners and instructors. The knowledge was created based on the bottom-up and participatory approaches. Then it was covered the pedagogies to ensure that professional knowledge was suitable, abundant and authentic for learners. The knowledge is created based on teaching and learning contexts, teacher needs and education strategy. Throughout the TPD process, professional knowledge was developed continuously through on-going interactive activities among the learning community members. Thereby, KM involved the transformation and integration explicit and tacit knowledge from individual to the learning community. As a result, teaching skills and professional knowledge of the teacher members were increased continuously.

In the learning process, the learners obtained professional knowledge based on constructivism approach. More specifically, that is through the interaction activities such as discussing, observable learning, sharing, collaborating, peer's evaluating, and giving feedbacks.

In the CISE model, evaluating the knowledge is conducted through the following activities: collaboration, discussion, observational learning,

feedbacks and taking part in the tests. The learners could realize their misunderstanding through their peers' feedbacks, discussion and attending the online tests. Through these activities, learners could self-correct their professional knowledge to ensure that what they have been learned are accurate and relevant. Moreover, these evaluation results could provide stakeholders and administrators with valuable information for developing plans of TPD in future. The study of the TPD model brought the significance as follows.

The study provided a new model to enhance the quality of the TPD courses for secondary school teachers based on knowledge management in blended learning environment. In which, professional knowledge is co-created by the interaction between learners, instructors and materials based on participatory approaches; TPD courses were delivered based on the combination of online lectures with both face-to-face and online discussion. As a result, the model becomes a bridge between the pre/in service secondary teachers with the experts of educational universities/institutions. A blended learning environment could offer the SSTs opportunities where they are able to collaboration and interaction with their peers from the online learning environment. Accordingly, teacher professional was developed continuously and sustainably through promoting the formation of professional learning community.

The study contributed to the empirical on the effectiveness of KM-based model for TPD within BL environment for SSTs in Viet Nam context. Administrators, school leaders and stakeholders may take into account the effectiveness information from the model to increase facilitating to develop an effective TPD for teachers who are regarded as the most important agent on enhancing the quality of education. This may affect the effectiveness of professional development planning (Wheeler,

2001). It is showed that TPD could contributed effectively in education system when it is well developed and designed to meet the teaching and learning context, teacher needs and TPD strategies (Wheeler, 2001).

The study proposed an effective and flexible tool for lifelong-leaning of secondary school teachers. In which, teachers' professional is developed based on constructive approach through interactive activities. Learners could obtained the professional knowledge through the interaction activities such as situated teaching practice sharing, observational learning, peer evaluation, reflection, group discussion, and feedback, etc. The model provided a flexible access to contents via the Internet and discussion with peer through an online forum. According, they could study at any time, from any place by self-paced learning. Which increased the effectiveness of time and cost of learning process.

Finally, although the interest in and research on BL and KM in the context of teacher education have increased and developed respectively, however, empirical studies on both of them for teacher professional development are limited (Keengwe and Kang 2012; Means et al. 2009; Owston et al. 2008; Young and Lewis 2008). Hence, implementation a KM-based model for TPD in the BL environment in Vietnam context is becoming crucial.

7.4 Limitations of the study

Since the limitation of number of participants participated in the study of both the groups (control and experimental groups) as well as the unequal of the number of participant in each groups, therefore, the results of the study may not similar in a larger sample.

Moreover, there was a difference of learning outcome of two groups

might be due to the duration of the teacher training course is not enough length to clarify the difference between two instruction modality;

In the experimental group, the participants attended in new experiences in learning methods, so they might have more motivation and exhibited better outcomes than F2F classroom form, rather than to the difference in the delivery methods.

7.5 Recommendation for future research

It is suggested from the results of this study that

(1) The CISE model is an effective model for TPD, so it should be considered for the nationwide delivery the HOA courses in the future.

(2) The CISE model has just examined the effectiveness of the course of HOA, it should be replicated at other teaching and learning setting to determine if similar result are obtained;

(3) This study just focused on in-service secondary school teachers; therefore, future studies should add follow-up research to investigate the influence of the model with pre-service teachers and its impact on student performances.

(4) A web portal based on the CISE model should be developed to offer the professional development opportunities for teachers.

LIST OF PUBLICATIONS

Ho, V.T., Nakamori, Y. Ho, T.B. Lim, C.P. (2014), Blended Learning Model on Hands-on Approach for In-service Secondary School Teachers: Combination of E-learning and face-to-face Discussion. *International Journal of Education and Information Technologies.* (Online published on February 22, 2014).

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APPENDICES

KHẢO SÁT VỀ HIỆN TRẠNG PHÁT TRIỂN CHUYÊN MÔN GIÁO VIÊN
PHIẾU DÀNH CHO GIÁO VIÊN TRUNG HỌC

Mục tiêu của khảo sát này là đánh giá hiện trạng về công tác phát triển chuyên môn cho giáo viên (PTCMGV)cấp trung học. Kết quả khảo sát sẽ để hỗ trợ đề xuất xây dựng một mô hình PTCMGV ở Việt Nam.

I. Thông tin chung

Hãy đánh dấu vào ô trả lời đúng.

1. Giới tính ☐1 Nam ☐2 Nữ
2. Tuổi ☐1 20 – 30 ☐2 31 – 40 ☐3 41- 50 ☐4 trên 50
3. Trình độ học vấn ☐1 Cao đẳng (hoặc tương đương) ☐2 Cử nhân ☐3 Thạc sĩ ☐4 Tiến sĩ ☐5 Khác (Ghi cụ thể): _____
4. Kinh nghiệm giảng dạy ☐1 <1 năm ☐2 1 – 5 năm ☐3 6 – 10 năm ☐4 trên 10 năm
5. Chức vụ hiện nay của bạn ☐1 Hiệu trưởng ☐2 Phó HT ☐3 Tổ trưởng CM
6. Trường bạn đang công tác:……
7. Cấp ☐1 THCS ☐2 THPT
8. Thuộc vùng ☐1 Thành phố ☐2 Đồng bằng ☐3 Trung du, miền núi ☐4 Vùng đặc

II. Công tác phát triển chuyên môn của giáo viên

9. Trong 18 tháng qua, bạn đã tham gia các hoạt động PTCMGV nào sau đây? Và nó có ảnh hưởng, tác động như thế nào đến các hoạt động chuyên môn của bạn?
Hãy đánh dấu để chọn ở phần A, Nếu câu trả lời là **có** thì chọn tiếp phần B.

(A) Tham dự **(B) Tác động**

	Các hoạt động PTCMGV	**Có**	**Không**	**Không tác động**	**Tác động nhỏ**	**Tác động vừa**	**Tác động lớn**
a)	Khóa tập huấn bồi dưỡng GV						
b)	Hội thảo/Hội nghị						
c)	Tham gia các khóa ĐT để nâng cao trình độ						
d)	Thăm quan và chia sẻ kinh nghiệm day học với các trường khác						
e)	Tham gia mạng lưới giáo viên trong cụm,						

	vùng						
f)	Dạy học cộng tác						
g)	Tư vấn hoặc tham gia tư vấn						
h)	Dự giờ của đồng nghiệp trong trường						
i)	Tham gia dự án dạy học của nhà trường						
j)	Đọc các tài liệu chuyên môn có liên quan						

10. Ý kiến của bạn về các nội dung đã được tham gia bồi dưỡng, tập huấn trong 18 tháng qua. Mỗi câu hỏi dưới đây, hãy đánh đấu vào 1 lựa chọn của phần A, Nếu câu trả lời là '**có**' thì chọn tiếp phần B và phần C **(A) Tham gia (B)Hình thức (C) Mức độ**

	Chủ đề tập huấn bồi dưỡng	**Có**	**Không**	**Lớp học trực tiếp**	**Khóa Online**	**Rất thường xuyên**	**Thường xuyên**	**Hiến khi**	**Chưa bao giờ**
a)	Kiến thức cập nhật về môn học								
b)	Lý thuyết đánh giá học sinh								
c)	Quản lý lớp học								
d)	Vấn đề về phương pháp dạy học								
e)	Vấn đề về đạo đức và ứng xử của HS								
f)	Tư vấn học sinh								
g)	Dạy học tích hợp								
h)	Sử dụng hiệu quả và TBDH và SGK								
i)	Ứng dụng CNTT trong DH và KTĐG								

11. Trong 18 tháng qua, bạn muốn được tham gia các hoạt động PTCMGV nhiều hơn so với thực tế không?

☐ Có ☐ Không

12. Nếu 'Có' trong câu hỏi trước, lí do nào sau đây cản trở việc tham gia của bạn?

Hãy chọn những nguyên nhân phù hợp sau đây:

a	Tôi chưa đủ ưu tiên (VD trình độ, kinh nghiệm, thời gian công tác…).
b	Chi phí để tham gia PTCMGV quá đắt (ăn, ở, đi lại,…) tôi không thể đáp ứng được.
c	Thiếu sự ủng hộ giúp đỡ của lãnh đạo nhà trường
d	Thời gian tổ chức PTCMGV trùng với thời gian dạy học của tôi.
e	Tôi không đủ thời gian vì bận trách nhiệm với gia đình

f	Khác (xin ghi rõ):..

13. **Hãy cho biết ý kiến của bạn về một số nội dung dưới đây.** Hãy chọn 1 ô / 1 hàng.

	Nội dung	Rất không đồng ý	Không đồng ý	Đồng ý	Rất đồng ý
a)	Thời gian của các khóa tập huấn thường ngắn so với nhu cầu	☐1	☐2	☐3	☐4
b)	Nội dung quá chung chung, thiếu thực tiễn, không phù hợp với nhu cầu và không hấp dẫn với người học	☐1	☐2	☐3	☐4
c)	Chỉ có một nội dung cho tất cả các đối tượng tham gia (giáo viên mới, lâu năm; giáo viên giỏi, giáo viên trung bình..).	☐1	☐2	☐3	☐4
d)	Thời gian tổ chức thường vào mùa hè rất nóng nực	☐1	☐2	☐3	☐4
e)	Lớp học BDGV thường rất đông nên khó có điều kiện để giảng viên thực hiện đổi mới phương pháp trong dạy học.	☐1	☐2	☐3	☐4
f)	Các giảng viên là những người không nhiều kinh nghiệm giảng dạy ở trường Trung học.	☐1	☐2	☐3	☐4
g)	Phương tiện hỗ trợ bồi dưỡng, tập huấn đáp ứng được yêu cầu (phòng thí nghiệm, phương tiện giảng dạy khác…)	☐1	☐2	☐3	☐4
h)	Việc được tham gia các lớp tập huấn thường luân phiên nhau. Rất khó để tiếp thu kiến thức một cách có hệ thống	☐1	☐2	☐3	☐4
i)	Tôi thấy không quan tâm đến các hoạt động PTCMGV	☐1	☐2	☐3	☐4

14. Hãy cho biết ý kiến của bạn về một số nội dung sau đây. Hãy chọn 1 ô / 1 hàng.

	Nội dung	Rất không đồng ý	Không đồng ý	Đồng ý	Rất đồng ý
a)	Tôi mong muốn có cơ hội để được học hỏi, chia sẻ kinh nghiệm giảng dạy của các giáo viên giỏi trên cả nước.	☐1	☐2	☐3	☐4
b)	Nhà nước nên có các chính sách khuyến khích chúng tôi nỗ lực hơn nữa trong việc tham gia các hoạt động PTCMGV	☐1	☐2	☐3	☐4
c)	Tôi hài lòng về thu nhập lương của tôi ở nhà trường	☐1	☐2	☐3	☐4
d)	Ở trường tôi đầy đủ lớp học, đầy đủ bàn	☐1	☐2	☐3	☐4

	ghế cho học sinh				
e)	Ở trường tôi có nhiều tài liệu tham khảo về PTCMGV	☐1	☐2	☐3	☐4
f)	Các lớp học vừa đủ số học sinh qui định <35 hs/lớp	☐1	☐2	☐3	☐4
g)	Học sinh của tôi có đầy đủ sách vở để học	☐1	☐2	☐3	☐4
h)	Tôi mong muốn được tham gia các lớp tập huấn từ xa (Online) để tiết kiệm thời gian và tiền bạc	☐1	☐2	☐3	☐4

Teacher Professional Development Survey

Teacher Questionnaire

The aim of this survey is to examine the current situation of professional development for teachers in secondary schools in Vietnam. The result could use to review and develop a model that can help to foster the conditions for effective of TPD in schools.

In this survey, teacher professional development is defined as activities that develop an individual's skills, knowledge, expertise and other characteristics as a teacher. It includes the activities: Initial training, induction courses, in-service training, and continuous professional in school.

I. Background information

These questions are about you, your education and the time you have spent in teaching. In responding to the questions, please mark the appropriate box

1. Gender ☐1 Male ☐2 Female
2. Age ☐1 20 – 30 ☐2 31 – 40 ☐3 41- 50 ☐4 Above 50
3. Highest Edcation Level ☐1 Associated Degree ☐2 Bachelor Degree ☐3 Master Degree ☐4 Doctoral Degree ☐5 Other: _____

4. Teaching experience ☐1 <1year ☐2 1 – 5 years ☐3 6 – 10 years ☐4 Above 10 years
5. Your position ☐1 Principal ☐2 Vice Principal ☐3 Team Leader
6. Your school name:……
7. Level ☐1Lower Secondary School ☐2 Upper Secondary School
8. The regions ☐1Urban Area ☐2 Flat Area ☐3Mountain Area ☐4 Remote Areas

II. Professional development

9. During the last 18 months, did you participate in any of the following kinds of PD activities, and what was the impact of these activities on your development as a teacher?

For each question below, please mark one choice in part (A). If you answer 'Yes' in part (A) then please mark one choice in part (B) to indicate how much impact it had upon your development as a teacher. And write type of attended that you did: 1- Online; 2- Classroom Based on; 3 - others

		(A) Participation			**(B) Impact**				
	TPD Activities	**Yes**	**No**	**How long (days)**	**No impact**	**A small impact**	**A moderate impact**	**A large impact**	**By**
a)	Training courses,								
b)	Workshops / Conferences								
c)	Higher academic study								
d)	Observation visits to other schools								
e)	Participation in a network of teachers								
f)	Collaboration in teaching								
g)	Mentoring								
h)	Peer class observation								
i)	School-based projects								

j)	Reading relevant materials								

10. During the last 18 months, did you participate in any of the following kinds of PD contents? For each question below, please mark one choice in part (A). If you answer 'Yes' in part (A) then please mark one choice in part (B) and (C)

		(A) Participation		**(B)By**		**(C) How often**			
		Yes	**No**	**F2F**	**Online**	**3-4 times per year**	**Once per year**	**Less than once per year**	**Never**
a)	Knowledge and skill standards in my main subject								
b)	Student performance assessment								
c)	Classroom management								
d)	Knowledge and understanding of instructional								
e)	Student discipline and behavior problems								
f)	Student counseling								
g)	Integrated teaching								
h)	Use facilities and textbooks effectively								
i)	Apply ICT in Teaching and student assessment								

11. In the last 18 months, did you want to participate more PD than you did?

☐ Yes ☐ No

12. If "Yes" in the previous question, which of the following reasons best explain what prevented you from participating in the more professional development than you did? Please mark as many choices as

appropriate

a	I did not have the pre-requisites (e.g. qualifications, experience, seniority).
b	TPD was too expensive (accommodation, transport,…) I could not afford it
c	There was a lack of employer support
d	Professional development conflicted with my work schedule.
e	I didn't have time because of family responsibilities.
f	Other (please specify):…….

13 Please mark one choice in each row

		Strong Disagree	Disagree	Agree	Strong Agree
a)	The duration of the teacher training courses are shorter than the need	☐1	☐2	☐3	☐4
b)	There was no suitable professional development offered	☐1	☐2	☐3	☐4
c)	One content for all participant levels	☐1	☐2	☐3	☐4
d)	The time usually held in the summer season which is hot	☐1	☐2	☐3	☐4
e)	The numbers of participants are huge, so it is difficult to apply new methods on training.	☐1	☐2	☐3	☐4
f)	The instructors who are not enough teaching experience in secondary school.	☐1	☐2	☐3	☐4
g)	The facility for teacher training class is not enough quality	☐1	☐2	☐3	☐4
h)	The participating in the teacher training course usually rotate. It is very difficult to obtain knowledge in systematically.	☐1	☐2	☐3	☐4
i)	I do not care about the TPD activities	☐1	☐2	☐3	☐4

14. Please let us know about your opinions. Please mark one choice / a row.

		Strong Disagree	Disagree	Agree	Strong Agree
a)	I expect to have a chance to share and exchange about teaching experiences.	☐1	☐2	☐3	☐4
b)	The government should have incentive policies to encourage us participate in TPD	☐1	☐2	☐3	☐4

	activities.				
c)	I am satisfied with my income from the school	☐1	☐2	☐3	☐4
d)	My school has enough classroom, school furniture.	☐1	☐2	☐3	☐4
e)	There are many references of TPD	☐1	☐2	☐3	☐4
f)	The numbers of student in a classroom is under 35	☐1	☐2	☐3	☐4
g)	My student has enough books and other equipment for studying.	☐1	☐2	☐3	☐4
h)	I expect to participating in online teacher training course.	☐1	☐2	☐3	☐4

QUESTIONNAIRES

In order to improve quality of the CISE model in the future, We would highly appreciate if you respond honestly and clearly most of the following questions.

I. General information

In responding to the questions, please mark the appropriate box.

1. Organization/schools: _____Province: _____
2. Gender:☐ Male ☐Female
3. Age:☐<26 ☐ 26 – 35 ☐ 36 – 45 ☐ 46 – 55 ☐Above55
4. Highest Educational Level: ☐Associate Degree ☐Bachelor Degree ☐ Master Degree ☐Doctoral Degree
5. Teaching Experience: ☐<5year ☐ 6 – 15years ☐16 – 25years ☐> 25years
6. Duty: ☐Teacher ☐Officer ☐Leader of School ☐Leader of DOET
7. Field of expertise:☐ Physics ☐Biology ☐Chemistry ☐Administrative

2. Learning satisfaction level

		Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
8	I am satisfied with overall the course	☐1	☐2	☐3	☐4	☐5
9	I would like to participate in other courses in the future	☐1	☐2	☐3	☐4	☐5
10	The course help me to perform my	☐1	☐2	☐3	☐4	☐5

	teaching duties better					
11	The content is easily understandable	☐1	☐2	☐3	☐4	☐5
12	All information that I required is fully provided	☐1	☐2	☐3	☐4	☐5
13	I would recommend this course to other learners	☐1	☐2	☐3	☐4	☐5

3. Open-Ended questionnaires

Q.1. This course was aiming to enhance knowledge of the HOA used for instruction? Did the course succeed in doing? If yes, how?

……

……

Q2. This course was aiming to enhance teaching skillsof HOA used for instruction? Did the course succeed in doing? If yes, how?

……

……

Q3. Did the assignments of sharing and commenting on products contribute to your understanding and appreciation of how to use effectively HOA in classroom? How?

……

……

Q4. Can you comment on the discussions and feedback from online discussion topics? Were you able to ask sufficient questions? Did you have sufficient opportunity to give input? Did you receive sufficient feedback? Were the discussions useful?

……

……

Q5. Did the course provided enough time for you to reflect on your abilities and competency of applying HOA in classroom?

……

……

Q6. How do you feel about the learning process (e.g. materials, organizing) in this course?

……

Q7. How do you feel about the flexible access in the new model? Why?

……

……

Q8. How do you feel about the time to participate in TPD course in the new model? Why?

……

Q9. How do you feel about the cost for participating in TPD course in the blended model?

……

Q10. How do you feel about supporting, coaching and mentoring for you to participate in TPD course in the new model? Why?

……

PHIẾU KHẢO SÁT BỒI DƯỠNG GIÁO VIÊN

Để có thêm thông tin hỗ trợ cho việc nâng cao chất lượng của Mô hình BDGV trong thời gian tới, Ban tổ chức mong các Thầy/cô giáo trả lời một cách trung thực và rõ ràng nhất các câu hỏi sau đây.

I. Thông tin chung

1. Tên cơ quan/Trường:_____Tỉnh_____				
2. Giới tính	☐ Nam	☐ Nữ		
3. Tuổi	☐<26	☐ 26 – 35	☐ 36 – 45	☐ 46 – 55 ☐ Trên 55
4. Trình độ CM	☐ Cao đẳng	☐ Đại học	☐ Thạc sĩ	☐ Tiến sĩ
5. KN giảng dạy	☐ <5 năm	☐ 5 – 15 năm	☐ 16 – 25 năm	☐ Trên 25 năm
6. Chức vụ	☐ Giảng viên	☐ Chuyên viên	☐ LĐ nhà trường	☐ LĐ Sở GDĐT
7. Chuyên môn:	☐ Vật lý	☐ Hoá học	☐ Sinh học	☐ Cán bộ QL

II. Quan điểm của học viên

Hãy đánh dấu vào một ô/hàng

		Rất không đồng ý	Không đồng ý	Bình thường	Đồng ý	Rất đồng ý
8	Tôi rất hài lòng với hình thức tập huấn này	☐1	☐2	☐3	☐4	☐5
9	Tôi muốn tham gia ở các khoá tiếp theo trong tương lai.	☐1	☐2	☐3	☐4	☐5
10	Khoá tập huấn sẽ hỗ trợ tôi trong công tác giảng dạy ở trường được tốt hơn.	☐1	☐2	☐3	☐4	☐5
11	Nội dung của khoá tập huấn dễ hiểu.	☐1	☐2	☐3	☐4	☐5
12	Tôi có cơ hội tiếp cận được những thông tin tôi cần một cách nhanh và đầy đủ.	☐1	☐2	☐3	☐4	☐5
13	Tôi sẽ thông tin về khoá học này với đồng nghiệp của mình.	☐1	☐2	☐3	☐4	☐5

III. Hiệu quả của hình thức tập huấn

Hãy trả lời các câu hỏi bằng cách viết ra các quan điểm của mình.

Q1. Khoá tập huấn này có nâng cao được kiến thức của Thầy/cô về phương pháp Bàn tay nặn bột (BTNB) không? Nếu có, bằng cách nào?

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Q2. Khoá tập huấn này có nâng cao được kĩ năng của Thầy/cô về phương pháp Bàn tay nặn bột (BTNB) không? Nếu có, bằng cách nào?

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Q3. Các bài tập của khoá tập huấn khi được chia sẻ và nhận được nhận xét của đồng nghiệp trong môi trường online có đóng góp vào việc nâng cao kiến thức, kỹ năng của thầy/cô về sử dụng hiệu quả BTNB trong lớp học không? Bằng cách nào?

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Q4. Thầy cô có tham gia thảo luận và phản hồi cho các chủ đề online không? Bạn có thể hỏi được đủ các câu hỏi không? Bạn có đủ cơ hội để không? Bạn có nhận đủ phản hồi không? Việc thảo luận này có hữu ích không?

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Q5. Hình thức tập huấn này giúp Thầy/cô có thêm thời gian để suy ngẫm trong việc áp dụng phương pháp BTNB trên lớp học không? Vì sao?

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Q6. Thầy/cô có cảm nhận thế nào về cách thức tập huấn này (tài liệu, quá trình tổ chức, quá trình triển khai tập huấn…)

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Q7. Thầy/cô cảm nhận thế nào về sự linh hoạt trong khoá tập huấn? Vì sao?

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Q8. Thầy/cô cảm nhận thế nào về thời gian của mình dành để tham gia khoá tập

huấn này? Tại sao?

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Q9. Thầy/cô nghĩ thế nào về kinh phí để Thầy/cô để tham gia khoá tập huấn này? Vì sao?

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Q10. Thầy/cô cảm nhận thế nào về sự hỗ trợ, thảo luận, và tư vấn sau tập huấn? Tại sao?

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Xin cảm ơn Thầy/cô đã tham gia trả lời câu hỏi khảo sát!