A Development of Management System for Professional Learning Community Using ICT for Teachers

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ABSTRACT

This research aimed to study the management system of professional learning community of practice to enhance the practical community using ICT for instruction. The samples were 1) 7 experts for brain storming 2) 42 teachers from school under basic education commission. The researcher synthesized the management system of professional learning community for creating community of practice in online learning management using ICT for teachers. The management system connected and supported the community of practice to share knowledge. The management system consisted of:

1. Professional online learning community system consists of learning community management system: LCMS using Moodle (Open Source) as a base in creating learning community system and applied web conference technology using BigBlueButton to develop CoP virtual room to response by visual and audio among teachers and experts in the learning community by the real time.

2. The virtual professional learning community management by online consists of content, media, resources, communication, tracking, and assessment and evaluation.

3. The activities used in virtual professional learning community management by online are live or real-time, interaction, presentation, discussion, group collaboration, demonstration, sharing knowledge in workshop.

4. The tools used in professional learning community for sharing knowledge;

   4.1 Tools for Collaborating consists of discussion board, chat, VDO conference, blog, Wiki

   4.2 Tools for Content Management consists of upload, create and share content

   4.3 Members connection system via social networking or tools for social networking consists of Facebook and YouTube

The research findings were as follow 42 teachers joined the community of practice used ICT via video clip to share knowledge and good teaching experience. There were 47.61% of occupation and technology learning group, 28.57% of sciences learning group, 7.14% of mathematics and foreign language learning group, and 4.76% of social sciences and Thai language learning group.

1. INTRODUCTION

Wijarn Panich (2012) [1] mentioned about professional learning community or PLC that means the continual process of teacher and educators to work together to ask question and do action research for the better learning achievement of the students. It is believed that the main purpose of developing the better learning achievement of the students is to embed the work habits of teachers and educators. The work habits focus on learning of learners. The culture of teachers should be the cooperation for learning achievement of students, the cooperation on asking good questions, the focus on practical work, and the concept of continual development and the learners' achievement. The principle of professional learning community (PLC) was used to develop the potential of teachers in using information communicative technology (ICT) to integrate in teaching profession of teachers. The teachers are stimulated and reinforced to manage the effective instruction. The activities of professional learning community might be the gathering of teachers to have the community of teachers, empower to change in terms of educational reform by teachers, cooperation on driving intrinsic reinforcement to extrinsic reinforcement to gain the community of practice or professional learning community. At last, the professional learning community of teachers will gain the practical of using information communicative technology continually and lead to gain sustainable learning achievement of the students.

The non-formal online community of practice for learning often uses the telling story and experience as tools of doing. The experience of doing best practice will stimulate and motivate the community members to cooperate, fulfill the skill in their profession skills and develop the innovation of teaching in multi dimension. The community of practice helps the members to take good relationship in working and communicate among the members via online technology and learn to do their work on the social network. (Gray, 2004) [13]

The researcher developed the administrative system of professional learning community to support the professional learning community in using ICT of teachers. The teachers should have ability to use ICT and applied to use in the instruction. The ICT are used to add in the potential of knowledge sharing under

the procedure of professional learning community. The sustainable professional learning community using ICT aims to use ICT as a base for learning management and create the learning environment for the 21st century students.

2. RESEARCH OBJECTIVES

2.1 to study and develop the management system of professional learning community using ICT for instruction

2.2 to study the implementation of professional learning community using ICT for instruction

3. OPERATIONAL DEFINITIONS

Management system of professional learning community using ICT for instruction is the system of supporting the teachers in gathering for professional learning community, sharing knowledge of working and experience, using ICT for communication and discussion among members, and doing activities for the learning achievement of the students, and to create the practical online ICT teachers network.

4. RESEARCH METHODOLOGY

This research is a research and development with 2 phrases; 1) study and develop the management system of professional learning community using ICT for instruction, and 2) to study the implementation of professional learning community using ICT for instruction

5. RESEARCH CONCLUSION

The research finding of developing management system of professional learning community using ICT for instruction that was done by studying the theories, principles and idea about community of practice for teachers, the process of professional learning community, a creation of administrative system for professional learning community. The synthesis of the study and conclusion were as follow:

Table 1 The synthesize of administration management for professional learning community

[5] Warakorn and Thapanee (2012)	[4] Bolam, rsy and others (2005)	[3] Schwier (2002)	[2] Bryce-Davis (2001)
Use Ning as a tool for knowledge sharing			
Resource base on online learning community	Resources and facilities inside and outside the community	Technology of online learning community	Technology of virtual learning community

[5] Warakorn and Thapanee (2012)	[4] Bolam, rsy and others (2005)	[3] Schwier (2002)	[2] Bryce-Davis (2001)
Online learning group	Group dynamics Learning team	Online learning community	Virtual learning community
Tools for knowledge sharing - Chat room - Forum Discussions - Blog Posts	Tools for creating online learning community - tools for learning together (cooperative learning) - tools for interaction	Technology for learning of the community - technology to stimulate the gathering of community - technology for interaction	Technology for creating the identity of community - tools for practical - technology for helping among members and learning together
- Notes - Photos - Videos	- tools for cooperative working and trust - tools for reflection of opinion - tools for creating network	communication - technology for reflection of opinion and feedback	Cooperative learning - tools for communication
Technology support learning	Technology for outcome presentation	Technology support interaction, stimulation of collaborative learning	Technology for practical and cooperative learning from practice

Table 2 The synthesize of administration management for professional learning community (continue)

[6] Bua-ngam and Onjaree (2013)	[7] Onjaree (2013)	[8] Sayamon and Suthinee (2011)	PLC system (Conclusion)
Use Weblog as a tool for knowledge sharing	Use Facebook and Weblog	Use Moodle and Bigbluebutton as tools for virtual knowledge sharing	Use Moodle and Bigbluebutton as tools for virtual knowledge sharing
Technology of learning community - Content - Knowledge Base	Technology of professional learning community	Management system of virtual online professional learning community - Content - Media - Resources - Communication	Technology of professional learning community - Management system of virtual online professional learning community

[6] Bua-ngam and Onjaree (2013)	[7] Onjaree (2013)	[8] Sayamon and Suthinee (2011)	PLC system (Conclusion)
		- Tracking - Assessment & Evaluation	
Team learning community	Professional learning community	Virtual learning community for training	Virtual professional learning community
Tools for supporting the knowledge sharing 1. Collaborative tools - Comment - Email	Technology for interaction and knowledge sharing - Large group and small group Experts system for supporting members	Tools that all members use for knowledge sharing 1. Tools for Collaborating such as discussion board, Chat, VDO Conference, Blog	Tools that all members use for knowledge sharing 1. Tools for Collaborating such as discussion board, Chat
- Links 2. Discovery tools - Search Engine - Vote	Member group - system for outcome presentation and discussion - tools for information searching -system of admire		Blog Wiki VDO Conference
		2. tools for creation and sharing content to the system such as upload tool, create and share content tool	2. Tools for content management such as upload tool, create and share content tool 3.system of members connection via social networking (Tools for Social Networking) to extend knowledge and joining community member such as Facebook, YouTube
Technology for knowledge sharing to gain team building	Technology for sustainable community	Technology for learning community by training strategy	Technology for professional learning community

After the synthesize of administration management for professional learning community, the researcher hold on a brain storming discussion by 7 experts and gained the management system of professional learning community using ICT for instruction as follow:
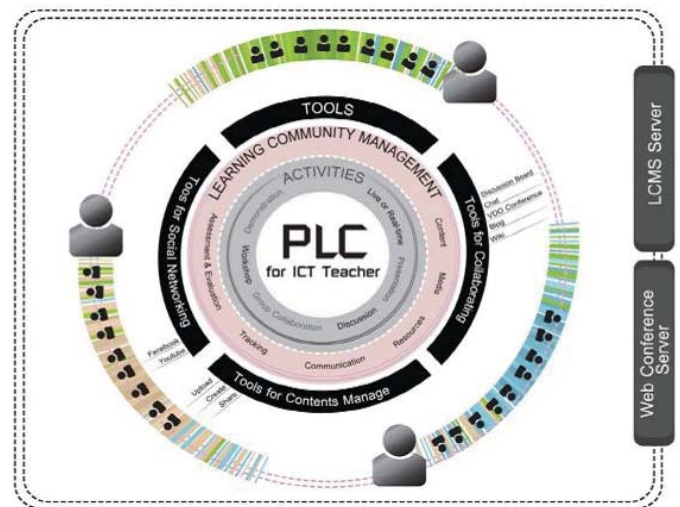

Figure 1 the management system of professional learning community using ICT for instruction

The management system of professional learning community using ICT for instruction is the management system of teacher to create the professional learning community or community of practice on instructional management using ICT via online technology and use ICT as a media to support the knowledge sharing among members of the professional learning community. The description was as follow:

1. The management system of professional learning community using ICT for instruction composes of learning community management system: LCMS using Moodle which is an open source as a base for learning community system. The management system of professional learning community using ICT for instruction applies web conference in form of BigBlueButton, one of open source, to develop the CoP Virtual Room for learning management. There will be a response of pictures and sounds among teachers, experts in the professional learning community at real time.

2. The management system for virtual online professional learning community using ICT for instruction composes of content, media, resources, communication, statistic collection, tracking, evaluation, assessment & evaluation.

3. The activities of virtual online professional learning community using ICT for instruction compose of live or real-time broadcasting, immediately interaction, presentation, discussion, group collaboration, demonstration, and workshop for practical sharing knowledge.

4. The tools used for knowledge sharing in the professional learning community contains:
4.1 Tools for collaborating such as discussion board, Chat, VDO Conference, Blog, Wiki
4.2 Tools for content management such as upload, create and share content
4.3 System of connecting members via social networking (Tools for Social Networking). These tools are used

for connecting and expanding the knowledge and add more members for the community by using Facebook, YouTube.

2. The result for implementation of professional learning community using ICT for instruction

2.1 the creation of learning community was done as follow;

1) Announced to the teachers who are interested to have a training program of operational workshop for professional learning community

2) Held on the operational workshop of "creative media and ICT used for developing high level thinking skill of the 21st century students" for 94 teachers of Basic Education Commission.

3) Presented the teaching experience with ICT by recording the videotape of teaching experience with ICT, and uploaded the videotape to the learning management system of professional learning community via the website at http://www.plcictteacher.com/

2.2 The result of using learning management system of professional learning community can be concluded as follow;

The members of professional learning community classified by the subject of teachers group, presented and shared knowledge about using ICT in learning management as follow;

1) The group of mathematic teachers – this group had created "a mathematic funny website by teacher" and made videotape of teaching mathematic by GSP program. The videotapes were presented via YouTube. The instructional activity was project based learning and the students studied via the website and social network of Facebook.

2) The group of science teachers – this group took the technology literacy and life skill using ICT for instruction management. The teachers used PowerPoint and slide share for lecturing. The teachers also used the videotape on the topic "microscope". The students were assigned to make video clip about genetics and uploaded on YouTube for sharing knowledge among the students. The teachers also made a website for Biology and encouraged the students to learn individually which response to the lifelong learning and ubiquitous learning. The students were ready to be a part of learning society. The teachers also assigned the students to make website on the topic "Organic System of Human". The students made decision to choose the topic themselves to enhance ICT skill. This can completely enhance the thinking skill and ICT literacy for the students. The result to the students was that they were more eager to learn. Different from reading text, the students liked to surf internet for knowledge and eager to inquire knowledge on the lesson they were studying. The most important was that the students gained the learning efficiency by using ICT, multimedia, animation, video from YouTube to understand the lesson learned. The students were eager to top up their knowledge in the future. This can be concluded that the use of ICT in learning management can develop the students' advanced thinking skill.

3) The teachers group of social-science – this group shared the experience on using ICT. The students surf the media from YouTube and downloaded to share for classmates.

The course of history, geography was able to use the online media to stimulate the students to learn more.

4) The teachers group of occupation and technology - this group used ICT for helping in the task of making products such as graphic work. The students used graphic work in presentation on their own blog or in social network. The students were proud of their products or project. Their friends in network commented or pressed Like, they would be so proud and stimulate themselves to make better project. The students could learn individually from this activity. The teachers evaluated the learning achievement by sharing knowledge with the students. The students who did not like to talk or discuss, shy to speak with friends or teacher, were able to share their opinion via the blog. They could also answer via the blog or Facebook. The flipped classroom approach was also used in this group. The students did their homework at school and on the other way, they learned the lesson at their home. There existed the online classroom and specify the students activity to do at home by studying via internet.

5) The teachers group of foreign language - this group realized on the 21st century in school. So the teachers encouraged the students to use smart phone, iPad, Tablet for learning. In English language learning, these tools could also help the students to develop the language learning skills. Line application was used in sending video clip of speaking skill practice to the teachers.

6) The teachers group of Thai language - this group used ICT to make the students excited. The students used Google for searching new knowledge by themselves.

2.3 The follow up of joining the members of professional learning community via the learning management system and community of practice using ICT to integrate for instruction, the result found that the teachers changed the basic desire and the style of teaching. The teachers changed themselves for students included the culture of school, the evaluation technique. The level of practice was at the level of "much".

5. DISCUSSION

The finding on using learning management system of professional learning community of ICT teachers found that the 6 group of teachers used ICT respectively as follow; the most were the teachers group of occupation and technology with 47.61%, the less were the teachers group of science with 28.57%. This might be caused by the group of teachers used technology for instructional management according to the content of the lesson. The use of ICT as tool for learning, both group of teachers, occupation and technology, and science teachers used electronic devices for instruction inside the class and outside the class. Moreover, the PowerPoint and video clip downloaded from many resources such as YouTube The knowledge sharing among this group and interaction of members among these group occurred at the level of "most". This is to enhance knowledge sharing and the interaction of members of community. The more they shared and interacted, the stronger the community gained. The help was higher among groups. The knowledge sharing for cooperative learning and concerning among members were occurred.

The study is harmonized to the study of Misanchuk, Anderson, Craner, Eddy and Smith (2000) [11] raised the notice that the growing of professional learning community depended on the members and connection of members. The more the teachers helped and work together, the bigger and stronger the community gained. The learning of community and interaction of community are the method of working that support each member. The community members drive the learning by discussion, cooperate, share, and encourage the atmosphere of working together. The efficiency of online professional learning community are occurred and lead to be sustainable online community as the study of Galbraith (1995) [12] that identified the lifelong learning which can change the behavior of human and effect to the community learning. The online professional learning community is one the alternative for individual learning.

Moreover, the process which concerned the readiness preparation, information technology resources, and the process of creating professional learning community, was related to the role of information technology for education in the 21st century. The information technology is used to gain better learning achievement. The use of information technology for instructional methodology, the use of information technology to reach the content, and the use of information technology for educational administration are significantly important at the present time [9] (Office of Education Council, 2014; Bryce-Davis, 2001). Schwier (2002) [3] also mentioned about community for being the prototype to enhance the knowledge sharing among members and leaded to the members to be eager to learn and support to gain the motivation of learning for members. The appropriate way to practice is supported and thought by the members of community.

In addition, the characteristics which composes of cooperative learning, community learning: experts list, group experts, will reflect the professional being of teachers. Open-minded, networking, cooperation, interesting group and trust are all characteristics of the professional learning community to help each members of the professional learning community. The activities of the members in the community should be continually done to gain sustainable community. The online activities will help the members learn together. Office of Learning Technologies (1998) advised that the professional learning community have to work together to solve the problem, improve and develop the community. This is harmonized to the idea of Bryce-Davis (2001) [2] that the online learning community should do the activities in any situation together to make the community lively and also help members in developing interactive skill among the members.

From the following up of online professional learning community, the overview of teachers' method of learning in gathering the professional learning community concerned about the change of basic aspiration which was at the level of "most". The less was the change of teachers' work habit. This is harmonized to the study of Worapot Wongkitrungruang and Athip Jittalerk (2011) suggested that the role of teachers and students had to change. The school culture and educational region should be adapted for professional learning community. The teachers had to change on team working, learned how to teach and aimed to the same achievement for the students and teachers. The PLC should think together and identify the level of importance for standard learning. The best practice approach for the teachers' group of science, occupation and technology, and foreign language use ICT to support outside the classroom. They also use project based learning, enhance life skill of learners by using ICT to do project work. ICT can help for decreasing the project work area of packing. Project based learning makes the students present the idea and enhancing the leadership of students. When the students need to use software for a presentation, the teachers will be a coach for the students to create their own presentation such as using video camera, editing the video presentation. The project work of the students will be outstanding from electronic portfolio and they do it themselves. The ICT literacy of the teachers and students for the instruction are used, for example the capability of using LINE application, the presentation using social cam, video clip. The students are proud of their project. The use of ICT for English class makes it better in terms of funny, interesting. The teachers and students have good attitude in using ICT. The use of ICT game also uses in English class and extend to other subject for teachers. The function of supporting ICT to accomplish in school is Uninet support. Schools have strong in using ICT with all groups of teachers in school. The school director supports the teachers in using ICT for the instruction. The teachers are eager to have a training program of using ICT for instruction and extend to colleagues. The teachers use ICT with the students and make them have good attitude with ICT. These activities harmonize with the policy of educational development in Thailand (Office of the Education Council, 2557) to create the good citizen with quality and completeness. The management to equilibrium the central and the decentralization, focusing on gathering, are done by teachers. Teachers are the heart of education development. The creation of good and quality teachers by creating professional learning community, creating the networking of self-development, and using ICT as a function of learning achievement to deliver knowledge depending on the age and the development of the students.

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