



A model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand

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Abstract

This research is aimed 1) to synthesize elements of innovation competencies of teachers, 2) to investigate conditions, problems, and guidelines for developing innovation competencies of teachers, 3) to develop a model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand. Instruments used in this research were a synthesized record form, a confirmation questions, and a verified form. Data were analyzed by frequency, mean, standard deviation, and content analysis and synthesis. Results of the research were as follows: 1) innovation competencies of teachers consisted of 5 elements with 13 indicators. 2) conditions of practicality were the methods that created innovations, cooperation, and teamwork; problems encountered were not that teachers changed teaching methods and innovations to be the problems; while the guidelines consist of the developing process for teachers' to develop innovation competencies including five aspects and the developing method to achieve greater efficient and effective performance on their teaching duties through eight different methods. 3) a draft model is constructed for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand consisting of five components and twenty-eight sub-components.

Keywords: A developing model, innovation competencies, schools under the Foundation of the Church of Christ in Thailand

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1. Introduction

Due to the development of education management in order to have better quality and an acceptable standard, educational institutions have to play a role in developing students to be the quality adults in the future. The focal point of education is to drive the teachers' educational and knowledge development process. Teachers are the most meaningful and important factors in the classroom because the quality of the learners are based on the quality of the teachers. The Office for Promotion of Learning Society and the Quality of Youth [1] in line with the Office of the Education Council (ONEC), Ministry of Education [2] also realized that the teachers were the most important personnel to enhance and improve the quality of education because of the teachers' knowledge and their teaching competencies lead to the students' learning outcomes for society's expectation.

Moreover, the Secretariat of the House of Representatives [3] mentioned that the status and problems with education which occurred in Thai society over the past years, and arose for by a variety of reasons: the organizational structure and the educational management system, educational institutions, as well as

schools, teachers, learners and other relevant sectors. These causes were interrelated and affected the overall quality of education in the country. One of the important problems was the teachers. Whenever there was any educational reform, teachers were involved every time with many dimensions specially, problems arising from the organizational structure, the educational management system, and problems arising directly from the teachers.

The same was the case noted by the educational institutions of the Thailand Development Research Institute [4]. In order to raise the educational quality, teachers therefore had to enhance their own professions, and develop skills and operational competencies appropriate to the changing situation. The teachers would then develop by competencies and performances which would affect the learners. Teachers had to improve their knowledge and traditional teaching and learning methods to meet the new desirable competencies.

According to Chang *et al.* [5] who investigated teachers' core competencies in relation to their innovative teaching performances, four competencies (learning competency, educational competency, social competency and technological competency) were theorized as the core competencies for teachers' innovative teaching. Similar to the finding of Arisa *et al.* [6],

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the salient points found that, as whole the needs for teacher competency development required at a three-highest levels; namely, innovation and communication technology, learning management, and measurement and evaluation.

Additionally, Mike and Rachel [7] indicated the innovation competencies and mindsets consisted of creativity, initiative, teamwork, networking, collaboration, visioning, enterprising, intelligent risk-taking, critical thinking, challenging the status quo, identifying problem, intellectual curiosity, flexibility, perceptiveness, positive self-efficacy, effective communication, and leadership.

However, problems were noted that some schools under the Foundation of the Church of Christ in Thailand had decreased student numbers. Some of those teachers lacked good morale and moral support affecting to the quality of teaching and learning management. The research results of the Educational Research Center [8] revealed that most of the problems were personnel problems such as the teachers lacked of skills in researching and using innovation, and technology media, and the schools lacked professional development for teachers. Just like Apidech and Santchai [9], who had studied the management strategies of small school of the Foundation of the church of Christ in Thailand, their findings showed that one of the main strategies was to reform academic administration in order improve the quality of education to respond to the national education plan that is suitable for the needs of the community and society and essential skills in the 21st century and the global change in the digital age.

Considering all this, the researcher, positioned as a school administrator realized that teachers should be trained in accordance with creating innovation competencies to increase the higher potential of students and create learners to be capable thinkers of creating new innovations to cope with the future. Therefore, it is essential to construct a model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand in order to develop teachers to achieve the educational results.

2. Research Questions

2.1 What are elements of innovation competencies and how many elements?

2.2 What are conditions, problems, and guidelines for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand?

2.3 What is a model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand?

3. Research Objectives

3.1 To synthesize elements of innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand.

3.2 To investigate conditions, problems, and guidelines for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand.

3.3 To develop a model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand.

4. Materials and Methods

The research process was divided into three phases as follows:

Phase 1: Synthesize the elements of innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand. This phase was divided into two steps:

Step 1.1: The researchers synthesized the elements of teachers' innovation competencies from the concepts of seventeen educators both Thai and foreigners. The instrument used was a synthesized record form. Then data were analyzed by frequency.

Step 1.2: The confirmation of elements concerning the teachers' innovation competencies under the Foundation of the Church of Christ in Thailand, key informants were twelve experts positioning as administrators under the Foundation of the Church of Christ in Thailand selecting by purposive sampling to participate in connoisseurship, instrument used was a confirmation question form. Data were analyzed by content analysis.

Phase 2: Investigate the conditions, problems, and guidelines for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand. This phase was divided into 2 steps:

Step 2.1: Investigate the conditions of practicality and problems for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand, key informants were seven academic administrators under the Foundation of the Church of Christ in Thailand, instrument used was an in-depth interview to inquire the conditions of practicality / problems. Data were analyzed by summarizing.

Step 2.2: Investigate the guidelines for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand. Instrument used was a synthesized form concerning the developing process of innovation competencies of teachers and the developing method of innovation competencies of teachers. Data were analyzed by content analysis.

Phase 3: Develop a model for developing innovation competencies of teachers in schools under the

Table 1. Results of synthesizing of the elements of innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand.

Innovative elements	Innovative indicators	G. Dyer, 2011	B. Drew, 2011	Z. Chang, 2013	D. Lolly, 2014	K. Pradeep, 2016	OECD, 2017	P.K.John, 2018	T. warker, 2018	H. Jeera, 1997	T. Pasu, 2002	S. Narucha, 2003	S. Wasan, 2014	S. Wasan 1, 2016	S. Wasan 2, 2016	S. Paitoon, 2016	T. Kaweeewut, 2017	S. Pruk, 2017	Frequency (17)
Innovative and productive thinking.	Innovative creativity.	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	15
	Integration thinking.	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓			✓	13
	Creative problem solving and productive thinking.	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	14
	Accountability.	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓				12
Learning management to construct innovation.	Innovative knowledge and innovative process.	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	15
	Classroom management to promote learning.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	16
Cooperation and team-work.	Interactive exchanging.	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓					✓	✓	13
	Communication was created understanding.	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓					✓	✓	13
	Having a cooperative network to develop collaborative innovation	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓					✓	✓	13
Continuous self-development.	Open-minded for loving learning.	✓	✓			✓	✓	✓	✓			✓	✓	✓	✓			✓	12
	Seeking self-development opportunities.	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓			✓	13
Being a good role model.	Having passion for working.	✓	✓	✓	✓	✓		✓	✓	✓		✓					✓	✓	12
	Having teachers' spirit and living according to teachers' professional conducts.	✓	✓	✓	✓	✓		✓	✓	✓		✓					✓	✓	12

Foundation of the Church of Christ in Thailand, the researcher divided into two steps as follows:

Step 3.1: Construct a model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand. The researcher analyzed the model components and synthesized the results of phase 1 and phase 2 in order to construct a model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand. Key informants consisted of nine experts positioning as administrators or educational counselors under the Foundation of the Church of Christ in Thailand and educational educators. Instruments used were issues for focus group discussion and a record form. Data were analyzed by content analysis.

Step 3.2: The formal key informants from step 3.1 also verified and improved model components and sub-model components for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand. Then data were analyzed by classified issues.

5. Results and Discussion

Phase 1: Synthesize of the elements of innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand. This phase divided into two steps:

Step 1.1: Six elements of teachers' innovation competencies in schools under the Foundation of the

Church of Christ in Thailand were derived consisting of: 1) creative thinking, 2) questioning, 3) interaction and having a network, 4) linking of ideas and imagination, 5) observation, and 6) experiment and test new ideas as shown in Table 1.

Step 1.2: The confirmation results of elements concerning the teachers' innovation competencies in schools under the Foundation of the Church of Christ in Thailand were derived from the participation of twelve experts as key informants in connoisseurship to correct and improve the indicators of the innovative elements consisting of 5 elements with 13 indicators as shown in Table 2.

It was similar to Peerawat and Karn [10] who studied the development of guidelines to enhance teachers' competency in self-development. The results revealed that there were 4 elements and 12 indicators of the guidelines; concerning the fourth element was sharing opinion and networking among professional community comprised of 1) studying the literature and related documents, 2) being member of the professional organization, and 3) being a leader to enhance competency. Moreover, it was also similar to Kathy *et al.* [11] who divided it into four key elements of innovation: collaboration, ideation, implementation and value creation.

Phase 2: Investigate the conditions, problems, and guidelines for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand. This phase was divided into two steps:

Table 2. Results of agreement and disagreement of innovative elements and innovative indicators by twelve experts.

Innovative elements and innovative indicators	Agree	Disagree
1. Innovative and productive thinking.		
1.1 Innovative creativity.	12	
1.2 Integration thinking.	11	1
1.3 Creative problem solving and productive thinking.	12	
1.4 Accountability.	12	
2. Learning management to construct innovation.		
2.1 Innovative knowledge and innovative process.	11	1
2.2 Classroom management to promote learning.	12	
3. Cooperation and teamwork.		
3.1 Interactive exchange.	11	1
3.2 Communication was created understanding.	11	1
3.3 Having a cooperative network to develop collaborative innovation.	12	
4. Continuous self-development.		
4.1 Open-minded for loving learning.	11	1
4.2 Seeking self-development opportunities.	10	2
5. Being a good role model.		
5.1 Having passion for working.	10	2
5.2 Having teachers' spirit and living according to teachers' professional conducts.	10	2

Step 2.1: Results of investigating the conditions and problems for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand, the findings in terms of its practicality / problems were shown in Table 3.

It was similar to the findings of Anusorn *et al.* [12], which revealed that innovative leadership consists of 5 components: 1) innovative vision and strategies, evaluating the innovative leadership development model of Sarasas Affiliated Schools administrators, 2) innovative thinking skills, 3) innovative organization atmosphere creation, 4) risk management and 5) innovative network creation. Innovative leadership development guideline consists of 6 steps: 1) presenting information, 2) individual processing, 3) sharing knowledge for group agreement, 4) presenting innovation for success, 5) criticizing conclusion for action and 6) evaluating the development by indicators

Step 2.2: Results of guidelines for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand were divided into two parts as shown in Table 4.

In line with Panavee and Vorachai [13], who studied the guidelines for development of teachers' core competencies, it was found that the school administrators support teachers' teamwork, build teachers' networks, organize a mentor system, implement a coaching system and have a supervision and monitoring system in place.

Phase 3: Results of developing the model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand, the researcher divided into 2 steps as follows:

Step 3.1: Construct a draft model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand consisting of six components as follows: 1) the model

principle and rationale of the model, 2) the model objectives, 3) the operational method of the model, 4) the model measurement and evaluation, 5) the model conditions for achievement, and 6) the model manual in accordance with Teera [14], the model was divided as follows: 1) objectives, 2) principles, 3) systems and mechanisms, 4) operating methods or procedures, 5) successful indicators, 6) definitions and description, and 7) conditions for achievements of model implementing and similar to Chawinnawat [15] who found that the integrated administration model for enhancing quality of world class standard schools was composed of principle, objectives, system, mechanism and operational methods.

Step 3.2: The developed model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand was verified and improved by school principals for administrators and practitioners as shown in Table 5.

6. Conclusion

According to the developed model of innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand, teachers must have a variety of processes for developing and leading to be an innovative teacher who can create their own innovation. However, if any educational organizations can develop teachers to achieve these core innovative competencies that are mentioned above, they will make the organization to have quality teachers and have an organizational culture to create innovation facing the challenges of a changing world including leading to be a modern organization affecting the efficiency, effectiveness, and success of the organization.

Table 3. Results of conditions of practicality and problems for developing innovation competencies of teachers were classified by each elements.

No.	Innovative elements	Conditions of practicality	Problems
1.	Innovative and productive thinking.	1. The knowledge of creative thinking and process leading to create innovations was provided for teachers. 2. Teachers sought new knowledge and use different ideas leading to create innovations. 3. Teachers had tried to create innovations or new things for solving classroom learning management problems.	1. Teachers' innovations that had published were not really new innovations. 2. Some teachers had misunderstandings concerning innovations that must be difficult. 3. The created innovations could not solve classroom learning management problems. 4. Teachers were unable to properly connect integrative thinking leading to the creation of appropriate innovations.
2.	Learning management to construct innovation.	1. Teachers created innovative teaching by focusing on activities and thinking processes that encouraged learners to think, do, and also use digital technology. 2. Teachers focused on making learning media with digital technology to promote learning.	1. Teachers still used very few questions to encourage learners to think. 2. Some teachers identified answers before encouraging learners to think. 3. Teachers should be educated in order to create more educational innovations clearly. 4. Schools must support teachers as the schools' innovators to build professional teachers.
3.	Cooperation and teamwork.	1. The schools had built a co-working space for the interaction of teachers' different individuals. 2. A variety of communicative forms were developed leading to a mutual understanding network within the schools.	1. Communication of understanding within the large schools is sometimes difficult for building the cooperation and teamwork. 2. Communication within the group sometimes make a misunderstanding for a cooperative network to develop collaborative innovation.
4.	Continuous self-development	1. Teachers continually develop themselves according to teacher development regulations. 2. Most schools give teachers the opportunity for further study and school visit. 3. Teachers are supervised on teaching and learning through lesson study model in PLC group.	1. The teacher has not applied the developed knowledge to actually use it or share with their colleagues as they should be.
5.	Being a good role model.	1. Schools stimulated and inspired teachers for working to drive the schools under the system dynamics thinking. 2. Teachers practices themselves according to the teacher's professional conducts and are responsible for their duties.	1. Appreciation, award, and feat were set by the schools which may not meet the needs of some teachers. 2. Lack of promotion / practical review in order to emphasize on the role of teachers within the framework of teachers professional conducts.

7. Recommendations

1. Educational institutions under the Foundation of the Church of Christ in Thailand should collaboratively stipulate the curriculum for developing innovative competencies in accordance with the same as the direction innovation competencies of teachers

2. The responsible persons for overseeing educational institutions under the Foundation of the Church of Christ in Thailand should promote the knowledge transferring within and among the schools or encouraging to build professional learning communities

among schools in order to share knowledge and experiences of the schools with the different contexts because the creation of innovation must be based on a wide range of knowledge and experiences.

8. Recommendation for Further Research

1. There should be the additional study concerning the learning process of the teachers to encourage teachers to provide active learning activities for the students to have learning by doing and can carry

Table 4. Results of two guidelines for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand.

Part 1: The developing process consisted of five aspects as follows:	Part 2: The developing method to achieve greater efficiency and effective performances of their teaching duties could be achieved eight different methods:
1.1) studying the conditions and problems for developing innovation competencies,	2.1) training,
1.2) target determination and objectives,	2.2) self-study,
1.3) preparation of a development project and designing the methods for developing innovation competencies,	2.3) field trips,
1.4) operations for developing innovation competencies, and	2.4) online system development,
1.5) development evaluation and the impact after implementing model	2.5) job coaching,
	2.6) learning from experts,
	2.7) learning from mentors, and
	2.8) professional learning community.

Table 5. Results of verifying and improving components and sub-components of the draft model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand.

Model components	Model Sub-components
1. Model principle and rationale of the model consisted of 4 sub-components.	1.1 Prepare teachers to produce learners to be innovators in accordance with the 20-Year National Strategy Development Plan / Thailand 4.0 policy 1.2 Active Learning Management / 21st. Century 1.3 Creating learners to become self-knowledge creators. 1.4 Support for learning networks among schools.
2. Model objectives consisted of 2 sub-components.	2.1 Development of innovation competencies of teachers. 2.2 Development of a professional learning community (PLC) network among schools under the Foundation of the Church of Christ in Thailand.
3. The operational method of the model consisted of 4 sub-components.	3.1 Teachers' development plan (Plan). 3.2 The operations of teachers' development (Do). 3.3 Follow-up teacher development results (Check). 3.4 Application of the results for further improvement of teacher development (Act).
4. Model condition of achievement consisted of 5 sub-components.	4.1 Must have an understanding with schools administrators concerning a model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand. 4.2 Schools administrators realize on the importance of implementing the model by following the teacher a manual for implementing model, support, and assist to set up time, budget, and the necessary technology. 4.3 Academic administrators recognize the importance of teachers' development, supervision, and follow-up continuously. 4.4 Set goals for the development of each competency topics to produce tangible results. 4.5 Teachers must apply the development knowledge to design the classroom learning management.
5. Model manual consisted of 8 sub-components.	5.1 Purposes of the manual. 5.2 Introduction. 5.3 Background knowledge of teachers innovation competencies. 5.4 A model for developing innovation competencies of teachers in schools under the Foundation of the Church of Christ in Thailand. 5.5 Roles of administrators and teachers. 5.6 The operational procedures. 5.7 Evaluation of model implementation. 5.8 References.

on summarizing their own knowledge, if so, then the teachers will have more guidelines into practice.

2. The model should be used for implementing to the other educational institutions except the schools under the Foundation of the Church of Christ in Thailand in order to study the results of the development of innovative competencies of teachers in the different contexts from this purposive group.

3. This development model should be applied to

develop other teachers' competencies under the Office of The Basic Education Commission.

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