

Research Article

A MODEL OF DEVELOPING LEARNING MANAGEMENT COMPETENCY FOR SECONDARY EDUCATION TEACHERS TOWARDS THAILAND 4.0 ERA

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Abstract

This Research and Development (R&D) was divided into three phases: regarding the investigating of the conditions, problems, and factors concerning developing learning management competency for secondary education teachers, informants were 327 school personnel, instrument used was a questionnaire, and data were analyzed by frequency, percentage, mean, and standard deviation; the creation of a model of developing learning management competency for secondary education teachers, participants were 15 experts, instruments used were connoisseurship and a model verification form, data were analyzed by mean, standard deviation and summarizing; and the result studying of implementing the model of developing learning management competency for secondary education teachers, respondents were 15 teachers, instruments used were an evaluation form and focus group discussion, data were analyzed by mean, standard deviation, and summarizing in topics and issues. The results revealed as follows: 1) the conditions were at the lowest level, problems were at the highest level, and factors were overall at a high level, 2) the model of developing learning management competency for secondary education teachers composed of 6 components and results of model verification were at the highest level both accuracy and suitability, and 3) The results of implementing the model of developing learning management competency was found that all teachers who had competencies at a high level both knowledge and process skills, the satisfaction was discussed in 9 topics, and they discussed concerning reflective thinking in 3 issues.

Keywords: Model, Learning Management, Competency, Secondary Education, Thailand 4.0 Era

Introduction

As we known that Thailand has been moving towards Thailand 4.0 era. Meanwhile, innovation, technology and creativity were driven as tools of the educational development. Preparing Thai students to form a skilled and competitive workforce was at the heart of building the country's digital economy in line with the government's Thailand 4.0. Therefore, education towards Thailand 4.0 era was not only providing knowledge to the learners but also prepared the future skills were the 21st century skills that were necessary for the world and society changes in the future. Moreover, Thailand 4.0 era let the learners to control their own learning and the knowledge discovered will be more meaningful to them. It was believed that teachers were the keys in reforming education to provide learners with 21st century skills.

In accordance with Jareonsettasin (2017), Deputy Minister of Education, gave a speech on "Education Reform and Entrance 4.0" in the "Think Beyond 4.0" education fair. He said that according to the Thailand 4.0, education was more than preparing or providing knowledge for people. It was to humanize people by instilling them with the habit of learning, morality, analytical skills, and the ability to live with others. These were the requirements of citizens in the 21st century. In addition, Thailand 4.0 also focused on modernizing and developing Thailand to have higher revenue and prosperity, in order to escape from the middle-income trap using the innovation-based concepts and trading internationally for national development. Moreover, in terms of the adjustment of the teaching and learning curriculum, the Ministry of Education was improving curriculums for implementation in the academic year 2018. As a result, students would be able to create innovations and kept up with technology and new sciences. Students would be able to learn about geography, which would be related to science and agriculture in accordance with Office of the Education Council (2017) mentioned the present economic system and society required the preparation of highly skilled and competent persons for the 21st century. The 21st century skills that students needed for their future jobs and lives were comprised of the 3Rs (Reading, (W) Riting and (A) Rithmetic) and the 7Cs (Critical Thinking and Problem Solving; Creativity and Innovation; Cross-cultural Understanding; Collaboration, Teamwork and Leadership; Communications, Information, and Media Literacy; Computing and ICT Literacy; Career and Learning Skills).

Moreover, in many countries, the teachers were asked to teach in increasingly multicultural classrooms emphasis on integrating learning to make more effective use of technologies for teaching and to engage more in accountability frameworks in correspondence with Teachers' Council of Thailand (2018, pp. 1-5) stated the objective of the Southeast Asia Teachers Competency Framework (SEA-TCF) was to serve as a guide for use in teacher professional development toward realizing 21st Century and

to define of essential teacher competencies framework as follows: 1) knowing and understanding what to teach is the ability of teachers to deepen and broaden their knowledge on what to teach, understand education trends, policies, and curricula and be updated on local, national, regional, and global developments, 2) helping students learn is the ability to know their students, use the most effective teaching and learning strategy and assess and give feedback on how students learn, 3) engaging the community is the ability to partner with parents and caregivers, involve the community to help students learn, and encourage respect and diversity, and 4) becoming a better teacher every day is the ability to know oneself and others, practice human goodness and then master the teaching practice.

In accordance with manual of teachers' competency evaluation (Office of the Basic Education Commission, 2010, pp. 1-2), the teacher competency development model had a conceptual framework based on the concept of David McClelland, a psychologist at Harvard University explained that competency was a characteristics of a person concerning results of job operations consisted of knowledge, skills, ability, and others' characteristics and behavioral characteristics making the personnel in the organization to work with outstanding results than others in a variety of situations which consistent with new guidelines for the development the human resource management competencies of the Office of the Civil Service Commission by supporting government agencies to manage human resources according to the standard for success framework in order for achievement to the success in government agencies. Therefore, the Office of the Basic Education Commission conducted a workshop to determine the competency development of teachers' needs and provide workshops to create tests for teachers and educational personnel's competency evaluation according to the project of raising the teachers' quality throughout the system: activities to develop a quality teacher development system. As regards of the functional competency in terms of curriculum and learning management (Office of the Basic Education Commission, 2010, pp. 8-9) consisting of the ability to create and develop the curriculum, design learning lessons with consistency and systematically, child-centered learning management, used and developed the learning media, innovations and technology, measure and evaluate students' learning with the highest efficiency and effectiveness.

As the studying, there were many indicators of learning management competency for teachers according to the definition of educational agencies as follows: National Institute for Development of Teachers, Faculty Staff and Educational Personnel (NIDTEP) (2000) had identified indicators in learning management competencies, namely 1) the ability to create and develop curriculum, 2) the ability in the teaching contents, 3) the ability in organizing the learning process that focuses on learners, 4) the ability

to use and development of the learning media, innovation, and technology for learning management, and 5) the ability to measure and evaluate learning in consistent with the Office of the Teacher Civil Service and Educational Personnel Commission (OTEPC) (2007) had identified the learning management competency, consisting of 1) the ability to create and develop the curriculum, 2) the ability of the teaching contents, 3) the ability of the learning management that focused on child-centered, 4) the ability to use and develop of the learning media, innovation, and technology for learning management, and 5) the ability of measurement and evaluation of learning. Moreover, the Office of the Basic Education Commission (2008) defined the learning management must consist of the relevant indicators: 1) creating and developing curriculum, 2) ability to design learning 3) learning management that focused on child-centered, 4) use and development of the learning media, innovation, and technology for learning management, and 5) measurement and evaluation of learning in correspondence with the Secretariat Office of the Teachers Council of Thailand (2013) mentioned concerning learning management that teachers must have competencies as follows: 1) to be able to create lesson plans and prepare lesson plans and applying to teach for the real results, and 2) to be able to create classroom management atmosphere for learners' learning.

As the importance mentioned above, I as a leader of the sixth class level in terms of academic, I was assigned to develop teachers' competencies in learning management, I as a leader of the sixth class level in terms of academic, I was assigned to develop teachers' competencies, so I have to create a model for the development of learning management competency of teachers to use for enhancing teachers' competency. It was believed that the teacher development was considered to be one ways for the development results of learners within the class, the researcher used the results of synthesis indicators of learning management competency for teachers according to the definition of educational agencies for this research which were concluded in 4 aspects: 1) creating and developing curriculum, 2) learning management that focused on child-centered, 3) using and development of the learning media, innovation, and technology for learning management, and 4) measurement and evaluation of learning.

Research Objectives

1. To study the conditions, problems, and factors concerning the development of learning management competency of teachers under the secondary education towards Thailand 4.0 era.
2. To create a model for the development of learning management competency of teachers under the secondary education towards Thailand 4.0 era.

3. To study the results of implementing the model for the development of learning management competency of teachers under the secondary education towards Thailand 4.0 era.

Research Methodology

The mixed method consisting of qualitative and quantitative approaches was used in this study. This study was conducted in three phases as follows:

The first phase was to investigate the conditions, problems, and factors concerning developing learning management competency for secondary education teachers, informants were school personnel consisted of school administrators, deputy director of academic affairs and personnel administration, head of curriculum and teaching department, head of personnel department, and teachers of 42 schools under the Secondary Educational Service Area Office 34 selecting by randomly sampling and using Krejcie and Morgan table, for a total of 327 informants, instruments used were a rating scale questionnaire divided into three parts, the first part was the general information of participants using checklist questions were analyzed by using frequency and percentage, presenting as table with description; the second part was a five-rating scales questionnaire with reliability at 0.98, the third part was an open ended questions, data were analyzed using frequency and summarizing.

The second phase was to create a model of developing learning management competency for secondary education teachers, participants in connoisseurship were 15 experts, instruments used was connoisseurship (Eisner, 1976) and a model verification form, and data were analyzed by mean and standard deviation and summarizing the recommendations.

The third phase was to study the results of implementing the model of developing learning management competency for secondary education teachers, respondents were 15 teachers who applied to be developed in the project of the learning management competency, instruments used were evaluation forms consisted of an evaluation form of learning management competency, a focus group discussion for inquiring teachers' satisfaction and reflective thinking after participating the model of developing learning management competency for secondary education teachers, data were analyzed by mean and standard deviation and summarizing the teachers' satisfaction and reflective thinking.

All the questionnaires were reviewed, adjusted, and confirmed in their construct validity by experts and reliability was 0.98 (Cronbach's alpha for each item was in the range from 0.80 to 1.00). The experts' recommendations were used to construct a cumulative questionnaire.

Results and Discussion

1. Results of studying conditions, problems, and factors concerning developing learning management competency for secondary education teachers towards Thailand 4.0 era synthesized from educators: Jaroensettasin (2016); Phonakorn (2016); Sinlarat (2017); and Junnoi (2017) collecting data from 327 informants were divided into two tables as follows:

1.1 Results of studying conditions and problems were shown in table 1.

Table 1: Mean and standard deviation of the conditions and problems.

No.	Lists	Conditions				Problems			
		\bar{X}	S.D.	Level	Rank	\bar{X}	S.D.	Level	Rank
1. Teachers' development									
1.1	Analyze the requirement for developing	2.09	0.91	low	1	3.68	0.77	High	4
1.2	Design a development plan	1.81	0.8	low	4	4.03	0.78	High	1
1.3	Conduct the development	1.93	0.76	low	3	3.89	0.66	High	2
1.4	Evaluate the development	2.06	0.88	low	2	3.84	0.82	High	3
Total average		1.97	0.84	low		3.86	0.76	High	
2. Learning management competency									
2.1	Create and develop curriculum	1.77	0.81	low	2	3.99	0.89	High	3
2.2	Child-Centered	1.75	0.8	low	3	4.03	0.74	High	2
2.3	Use and develop learning media, innovation, and information technology	1.79	0.75	low	1	4.04	0.74	High	1
2.4	Measure and evaluate learning outcomes	1.66	0.87	low	4	4.03	0.65	High	2
Total average		1.74	0.81	low		4.02	0.76	High	
3. Concept of Thailand 4.0 Era									
3.1	Create innovation	1.88	0.81	low	1	3.92	0.67	High	2
3.2	Have high critical thinking	1.81	0.73	low	2	3.81	0.75	High	3
3.3	Have teamwork	1.66	0.79	low	4	4.05	0.75	High	1
3.4	Teachers as facilitators	1.71	0.7	low	3	3.92	0.71	High	2
Total average		1.77	0.76	low		3.93	0.72	High	
Overall		1.83	0.8	low		3.94	0.74	High	

From table 1 was the findings of the level of conditions concerning developing learning management competency for secondary education teachers towards Thailand 4.0 era: three main aspects were overall at a low level ($\bar{X} = 1.83$, S.D. = 0.80) when considering the individual aspect arranged from the highest average scores to the lowest average scores, it was found that teachers' development was at a low level ($\bar{X} = 1.97$, S.D. = 0.84), followed by concept of Thailand 4.0 Era was at a low level ($\bar{X} = 1.77$, S.D. = 0.76), and learning management competency was at a low level ($\bar{X} = 1.74$, S.D. = 0.81), respectively.

In terms of problems concerning developing learning management competency for secondary education teachers towards Thailand 4.0 era: three main aspects were overall at a high level ($\bar{X} = 3.94$, S.D. = 0.74), when considering the individual aspect arranged from the highest average scores to the lowest average scores, it was found that learning management competency was at a high level ($\bar{X} = 4.02$, S.D. = 0.76), followed by concept of Thailand 4.0 Era was at a high level ($\bar{X} = 3.86$, S.D. = 0.76), and teachers' development was at a high level ($\bar{X} = 3.86$, S.D. = 0.76), respectively.

The findings indicated that conditions concerning developing learning management competency for secondary education teachers towards Thailand 4.0 era in all aspects were overall at a low level in consistent with problems were overall at a high level. It may be because the schools under the Secondary Educational Service Area Office 34 lacked the analysis of the requirement for developing, lacked using and developing learning media, innovation, and information technology, and lacked teamwork. It was similar to the study of Hanwong (2017, p. 105) who studied the activity arrangement enhancing teachers' professional competency, the findings from examination over the condition, problems and the needs of the teachers concerning professional competency reveal that the teachers' implementation as the consequence of the training is limited compared to the overall value of the training. Moreover, Klayluck et al. (2013, pp. 136-137) studied the model of teamwork competency development for educational personnel working in the Office of Primary Education Service Areas, it was found that teamwork competencies development of educational personnel in the office of primary education service areas was highly needed in 5 domains; common objectives, creative communication, participation, trust, and respect. The most required methods for development of teamwork competencies were workshop, training, and counterpart.

It was not similar to Onnuam et al. (2016, p. 293) developed a model for enhancing primary teachers' competencies under the Offices of Primary Educational Areas, it was found that the present status

and ways of enhancing teachers' competencies in the school under the offices of Primary Educational Service Areas consisted of the policy to enhance the competencies of the teachers under the Ministry of Education, the competencies required by the teachers, activities to develop the teachers' competencies, and methods and processes of enhancing the teachers' competencies by the Office of Education Service Areas.

1.2 Results of studying factors were shown in table 2.

Table 2: Mean and standard deviation of the factors.

No.	List	Factors			
		\bar{X}	S.D.	Level	Rank
Factors concerning teachers' development					
1.	Administration and director supporting	4.14	0.63	High	3
2.	The promotion of teachers participating the training	4.21	0.67	High	2
3.	Personnel cooperation	4.04	0.68	High	5
4.	Teaching experiences	4.32	0.75	High	1
5.	Budget	4.11	0.78	High	4
		4.22	0.70	High	

From table 2 was the findings of the level of factors concerning developing learning management competency for secondary education teachers towards Thailand 4.0 era: five aspects were overall at a high level ($\bar{X} = 4.22$, S.D. = 0.70), when considering the individual aspect arranged from the highest average scores to the lowest average scores, it was found that teaching experiences was at a high level ($\bar{X} = 4.32$, S.D. = 0.75), followed by the promotion of teachers participating the training was at a high level ($\bar{X} = 4.21$, S.D. = 0.67), administration and director supporting was at a high level ($\bar{X} = 4.14$, S.D. = 0.63), budget was at a high level ($\bar{X} = 4.11$, S.D. = 0.78), and personnel cooperation was at a high level ($\bar{X} = 4.04$, S.D. = 0.68), respectively.

The finding revealed that factors concerning developing learning management competency for secondary education teachers towards Thailand 4.0 era were overall at a high level, teaching experiences was the most important, it maybe because it would directly affect to learners' learning in consistent with the study of Chamchantharawong et al. (2017, p. 270) studied factors affecting the functional competency of teacher of graduate diploma students in teaching profession at Chiangrai College, the research findings were found that 1) the level of factors affecting the functional competency

of teacher of graduate diploma students in teaching profession at Chiangrai College was overall high ($\bar{X} = 4.04$, S.D. = 0.43). In accordance with Thipkrongtham et al. (2017, p. 99) studied factors affecting learning organization in the 21st century for Benjaburapha Subarea teachers under the Jurisdiction of the Secondary Educational Service Area Office 2, it was found that insofar as concerns the relationships between factors and learning organization in the 21st century for teachers, the following results were found: The factors of age, teaching experience, professional development, student readiness, and promotion of learning organization for teachers by administrators were correlated with learning organization in the 21st century for teachers at the statistically significant level of .05.

2. Results of creating a model of developing learning management competency for secondary education teachers towards Thailand 4.0 era by 15 experts from conducting connoisseurship composed of 1) model objectives, 2) model basic theories and principles, 3) model operations, 4) model guidelines for evaluating the success, 5) conditions for model achievements, and 6) user manual of model and results of verifying were shown in table 3.

Table 3: Mean and standard deviation of verifying the model components.

Model Components	Accuracy			Suitability		
	\bar{X}	S.D.	Level	\bar{X}	S.D.	Level
1. Model objectives	4.73	0.46	Highest	4.87	0.35	Highest
2. Model basic theories and principles	4.67	0.49	Highest	4.73	0.46	Highest
3. Model operations	4.53	0.52	Highest	4.60	0.51	Highest
4. Model guidelines for evaluating the success	4.60	0.51	Highest	4.73	0.46	Highest
5. Conditions for model achievements	4.80	0.41	Highest	4.87	0.35	Highest
6. User manual of model	4.53	0.52	Highest	4.60	0.51	Highest
Total average	4.64	0.48	Highest	4.73	0.44	Highest

From table 3 was the results of creating and verifying the model of developing learning management competency for secondary education teachers towards Thailand 4.0 era, it was found that the average scores of accuracy was at the highest level ($\bar{X} = 4.64$, S.D. = 0.48) and the suitability at the highest level ($\bar{X} = 4.73$, S.D. = 0.44).

Regarding this, the results of creating and verifying the model accuracy and suitability were the highest level, it was showed that the model was very complete for implementing of developing learning management competency in accordance with Prasertphon et al. (2013, p. 44) studied a model

for developing learning management competency of new teachers at general education private schools, the findings of this study were concluded in five components: 1) objectives of the development, 2) guidelines of the development, 3) learning management competency, 4) principles of learning management competency, and 5) conditions for the achievements and the evaluation of the feasibility of the model for learning management competency of new teachers at general education private schools as a whole was at a high level. In accordance with Onnuam et al. (2016, p. 293) who developed a model for enhancing primary teachers' competencies under the Offices of Primary Educational Areas, it was found that the constructed model for enhancing the development of teachers' competencies consisted of the knowledge, attitude, and skills, totaling thirteen competencies. Moreover, the evaluation of the utility of the constructed model as a whole and as individual factors by the directors of the Office of Educational Service Areas yielded a high level of feasibility of using the model. Additionally, Klayluck et al. (2013, pp. 136-137) studied the model of teamwork competency development for educational personnel working in the Office of Primary Education Service Areas, it was found that the model for development of teamwork competencies of educational personnel in the office of primary education areas was the teamwork development curriculum composed of 6 parts: Principles and Rationale; Program Objectives; Program Structure; Training Activities; and Measure and Evaluation of the Training and the experts agreed that the model for development of teamwork competencies of educational personnel in primary education area offices was highly appropriate, concurrent, feasible, and correct.

3. The results of implementing the model of developing learning management competency were divided into 3 parts as follows:

Part 1: Results of evaluation of learning management competency for secondary education teachers towards Thailand 4.0 era in terms of knowledge and process skills by collecting data from 15 teachers who applied to be developed in the project of the learning management competency as shown in table 4.

Table 4: Mean and standard deviation of teachers' knowledge and process skills.

Number of teachers who applied to be developed	Learning management competency for secondary education teachers towards Thailand 4.0 era				
	Scores		\bar{X}	S.D.	Level
	Knowledge	Process skills			
00001	4	4.5	4.25	0.35	High
00002	3	4.5	3.75	1.06	High
00003	4	4.5	4.25	0.35	High
00004	4	4.5	4.25	0.35	High
00005	4	4	4.00	0.00	High
00006	4	4	4.00	0.00	High
00007	4	5	4.50	0.71	High
00008	5	4	4.50	0.71	High
00009	4	4	4.00	0.00	High
00010	4	4.5	4.25	0.35	High
00011	4	4	4.00	0.00	High
00012	5	4.5	4.75	0.35	Highest
00013	4	4	4.00	0.00	High
00014	4	5	4.50	0.71	High
00015	4	4	4.00	0.00	High
Total	4.07	4.33	4.20	0.33	High

From table 4 was the results of learning management competency for secondary education teachers towards Thailand 4.0 era, it was found that the average scores of knowledge and process skills were at the high level ($\bar{X} = 4.20$, S.D. = 0.33)

Similarly, the study of Pamichparinchai (2017, p. 124), who studied the learning management competency for 21st Century of student teachers in educational project for the development of teachers at the wilderness on the Thai-Myanmar border area, Tak province., the students' competency revealed at high level in six competencies; competency in learning design, competency in Child-Center learning activity organization, competency in learning skills development of new generation learners, competency in development of environment and new generation learning sources, competency in learning network development, and competency in learning evaluation and assessment. By the way, the competency in development of using media, innovation and educational technology revealed at medium level.

It was quite different from the studying of Ananiadou and Claro (2009, p. 12), in many countries the introduction in the curriculum or standards of 21st century skills and competencies took place in the context of a more general reform, or even more radical innovations such as the development of the first national curriculum in Australia or the introduction of the Maori language curriculum in New Zealand. In Norway, the 2006 curriculum reform, known as the Knowledge Promotion, had as its goal to help all pupils develop fundamental skills that will enable them to participate fully in our knowledge society. In Poland a new national core curriculum was introduced in 2009 partly to respond to the rapid changes in sciences, technology and culture and to the rising number of students wishing to attend tertiary education. In Mexico, one of the reasons reforms were introduced in 2006 and 2008 in secondary and primary education respectively was the need to update the curricula and pedagogical methods in light of recent educational research findings and so as to develop competencies for the better integration of students to contemporary society.

Part 2: Results of satisfaction concerning learning management competency for secondary education teachers towards Thailand 4.0 era by summarizing data from focus group discussion with 15 teachers who applied to be developed in the learning management competency after participating the model for developing of learning management competency of teachers and data were summarized into 9 topics as follows: 1) learners were developed to learn in the current situation after the teachers were developed according to the development of learning management competency, 2) activities in each aspect of the model were interesting, appropriate and consistent with the development of teachers' learning competencies, 3) the learning media and equipment in each activity of the model were suitability and modern, 4) the place for organizing the activities was appropriate, 5) resource person who educated knowledge had good techniques and a variety of activities to make it easier to understand, 6) the duration of organizing activities was appropriate, 7) the model implementation enabled teachers to have higher learning management capabilities, 8) evaluation form for learning management competency of secondary teachers in the Thai era 4.0 was appropriate and could be measured according to the purpose of development on each aspect, and 9) administrators could apply the model to benefit the development of learning management competency and affect the learners' development.

It can be concluded that teachers were satisfaction with process of the development of learning management competency in consistent with Kittisuwannakul et al. (2017) studied the needs of competency for primary private school teachers, the results showed that in case of 472 teacher samples, all of them needed to develop their competency. They had the highest mean of needs of competency

for Primary Private School Teachers in Child-Center Learning Design for learning in 21st century element. In case of 59 director samples, all of them needed to develop their teacher competency. Similarly, the study of Somprach et al. (2012, p. 1052), who studied teacher development program to enhance learning competency for small primary schools in Thailand, results revealed that majority of the teachers (83.30%) satisfied with the development process. Teachers have upgraded their knowledge, skills and competencies in learning management. Findings from supervision outcomes showed teachers' performances are 'very good'. Related to teachers' assessment and feedbacks from the four aspects, namely support, promotion, syllabus analysis and organization also indicate as at high rank. It was also similar to Nuanyaem et al. (2017, pp. 71-72) studied the development of teachers workshop through the quality cycle on the reading literacy scale model for teachers under the Office of the Basic Education Commission, the results of satisfactory evaluation in the teacher development model by doing workshops through the quality cycle on the topic of reading literacy scale creation found that the satisfactory rating in utility, possibility, suitability and validity were overall at the high level.

Part 3: Results of evaluation of reflective thinking concerning learning management competency for secondary education teachers towards Thailand 4.0 era by summarizing data from focus group discussion with 15 teachers who applied to be developed in the project of the learning management competency after participating the model for developing of learning management competency of teachers and data were summarized into 3 issues as follows:

- 1) Problems from the implementation of the model were as follows: the duration of participation for the model for developing of learning management competency of teachers was quite little and the limited of budget to pay for the quality of resource person.
- 2) Cause of problems were as follows: teaching duty and others were quite a lot and the small-sized school had limited budget for development teachers.
- 3) Guidelines and methods of the problem solution were as follows: there should be the determination teachers' free time for developing of learning management competency of teachers, ask for the budget from the parents' agency and others both internal and external agencies, and select activities to be suitable with the school context and general subject for all teachers.

It is different from Maotuak et al. (2015, p. 14) studied the use of reflective thinking to develop the science teachers' competency in the instruction to promote students' scientific literacy, the findings revealed that 1) the science teachers' competency in the instruction to promote students'

scientific literacy after the use of reflective thinking was higher and 2) the students who studied with the sample teachers had a higher scientific literacy at the .01 level of statistical significance.

Conclusions and Recommendation

Concerning the results of implementing the model of developing learning management competency for secondary education teachers, it can be concluded that school administrators can use the model for developing of learning management competency of teachers as part of the planning of the annual school project and the school administrators have guidelines for providing and supporting the development of teachers in personnel management and academic administration according to the model development of learning management competency of teachers under the secondary education towards Thailand 4.0 era. In terms of teachers, they are all educated knowledge and process skills in various activities within the model development of learning management competency of teachers under the secondary education towards Thailand 4.0 era, are able to be developed their own learning management competency towards Thailand 4.0 era.

It might be because of the teachers who was developed in learning management competency towards Thailand 4.0 era, enabling the learners' development of to be consistent with the current situation, students can had knowledge and process skills in advance, could be used to solve problems, and used in everyday life.

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