Curriculum of Teachers' Competencies for Future Skills in Learning Management of Technology

Chaloemchai Charoenkiatkan[1], Natthawat Khositditsayanan[2]*, Benchaporn Wannupatam[1], Wilaiwan Sirimeka[3], Wiparat Imram[3], Kanlaya Paungmali[3], Chatsaphon Chanwongduen[1]

[1]Department of Curriculum and Instruction, Faculty of Education, Buriram Rajabhat University, Buriram Province, Thailand
[2]Department of Music Education, Faculty of Education, Buriram Rajabhat University, Buriram Province, Thailand
[3]Department of Early Childhood Education, Faculty of Education, Buriram Rajabhat University, Buriram Province, Thailand
Corresponding author: Natthawat Khositditsayanan, E-mail: nattawat@bru.ac.th

ARTICLE INFO

ABSTRACT

In the current study, we investigated (1) the effects of the curriculum of teachers' competencies for future skills in learning management of technology and (2) teachers' satisfaction with the curriculum of teachers' competencies for future skills in learning management of technology. The target group consisted of 50 teachers under the Buriram Primary Education Service Area Office 2. B.E. 2567 who participated in the training voluntarily. The research instruments were used in this research were (1) pretest and post-test, satisfaction assessment form. The statistical methods for data analysis were mean, standard deviation and *t*-test. The findings revealed that the differences in knowledge and understanding of teachers' competencies in learning management of technology skills before and after using the curriculum showed that the average scores after training were significantly higher than before training at the.05 level (t = -13.088*, p =.000)., and overall, the target group in the curriculum had a satisfaction evaluation score at a high level ($\bar{x}$ = 4.47, SD = 0.48) with an average of 3.51 or higher, indicating that the sample group in the curriculum had a high level of satisfaction with this curriculum.

Key words: Curriculum, Teachers' Competencies, Future Skills, Learning Management, Technology

INTRODUCTION

Statement of the Problem

Nowadays, the world attaches great importance to investment in information and communication technology (Information and Communication Technology: ICT) to be used as a tool for national development, both economically and socially to envision the differences between ICT countries and other countries called the Digital Divide. At the same time, countries around the world aim to create a new society to be a society that uses knowledge as the base (Knowledge Based Society) until the picture of the difference between a complete society with knowledge and an inferior society; such a difference is called Knowledge Divide (Office of the Permanent Secretary, Ministry of Higher Education, Science, Research and Innovation, 2022). Today, various technologies have played a role in the lifestyle and work of everyone in the context of the school. Technology has played a role in teachers in learning management for learners, especially in the 21st century, when information technology communication has changed dramatically, resulting in teachers having to change their teaching style to keep up with the changes that have occurred. Together with students in the new century, teachers must have the technology skills used to promote their learning and livelihoods

very well, manage learning for learners and the teachers must have have expertise in technology to use, study, manage, learn to learn, and teach more efficiently. The teachers must have knowledge and understanding of technology and be a technological creator or bring technology to use as a teaching medium very well (Petchaporn, 2020).

The Office of Knowledge Management and Development (2020) stated that the skills and abilities for digital literacy can be divided into four main parts: use, understand, create, and access digital technology effectively. Each part has the following details: 1) Use refers to the technical fluency necessary to use computers and the internet. Skills and abilities related to "use" range from basic techniques, such as using computer programs like word processors, web browsers, email, and other communication tools, to more advanced techniques for accessing and using knowledge, such as information retrieval programs or search engines and online databases, as well as emerging technologies like cloud computing. 2) Understanding is a set of skills that helps learners comprehend contexts and evaluate digital technology media, enabling them to make decisions about what they do and encounter online. It is considered an important and necessary skill that should be taught to learners as soon as they enter the online world. Understanding also includes being aware of

how network technology impacts learners' behavior and perspectives and how it affects their beliefs and feelings about the world around them. Understanding also prepares learners for the knowledge-based economy, where they develop information management skills to search for, evaluate, and use information effectively for communication, coordination, collaboration, and problem-solving. 3) Create is the ability to produce content and communicate effectively through various digital technology media. Creating with digital technology media is more than just knowing how to use word processing programs or write emails; it also includes the ability to adapt what learners create for different and diverse contexts and audiences. The ability to create and communicate using rich media such as images, videos, and audio, as well as the ability to engage with Web 2.0 effectively and responsibly, such as blogs, photo and video sharing, and other forms of social media. And 4) Access refers to the ability to access and utilize digital technology and information as a foundation for development and economic growth. Learners need to understand the internet and how to access it through various channels, including the advantages and disadvantages of each channel, so they can effectively use search engines to find the information they need. Additionally, it is necessary to understand various types of digital media technology and their current applications. Given that information and communication technology is rapidly transforming the world, resulting in a massive, fast, and continuous flow of information, if society is not prepared to be aware of and appropriately "select" and "apply" the available information, especially children and youth who lack the discernment to select and apply, it may have long-term negative impacts on society. Therefore, it is increasingly essential for individuals to have lifelong learning skills to keep up with changes and adapt to various contexts (Pheerapan, 2020). That is important for the development of an individual's learning is education, which needs to adapt to changes. It can prepare children and youth to grow into the nation's population, equipping them with good immunity and the ability to discern and apply the information they receive in a beneficial and appropriate manner.

Thailand therefore has a strategy for developing people towards a sustainable lifelong learning society. For example, in the 13th National Economic and Social Development Plan, which emphasizes the continuous development of people in Thai society in terms of education, work, and daily life. It promotes the provision of quality, flexible, and diverse education and learning (National Economic and Social Development Board, Office of the Prime Minister, 2022). Moreover, it emphasizes the continuous use of media and information technology to promote learners' education. As a result, Thailand has implemented numerous policies prioritizing the integration of media and information technology in the education sector. For instance, the Ministry of Education has introduced measures to enhance readiness in information and communication technology (Ministry of Education, 2022). To be used in various educational approaches, such as providing computer systems and equipment for teaching in educational institutions, including classroom computers, laboratory computers, whether desktop or portable, and developing electronic media in various online formats such as websites, e-books, and applications to enhance the learning management for students to achieve the highest efficiency according to each student's potential.

Given the importance and necessity of developing technology skills management competencies for teachers to lead to the effective development of learners, the research team has proceeded to develop the Curriculum of Teachers' Competencies for Future Skills in Learning Management of Technology and will continue to implement it for teachers.

Research Objectives

1. To examine the effects of the Curriculum of Teachers' Competencies for Future Skills in Learning Management of Technology.
2. To examine teachers' satisfaction with the Curriculum of Teachers' Competencies for Future Skills in Learning Management of Technology.

METHOD

Target Group

The target group for the Curriculum of Teachers' Competencies for Future Skills in Learning Management of Technology consists of 50 teachers under the Buriram Primary Education Service Area Office 2. B.E. 2567 by requesting volunteer teachers to participate in the training voluntarily.

Conduct Training

Training was conducted in three stages as reported in the following sub-sections:

Pre-training

1. Contact the target group of 50 teachers to request volunteers to participate in the training.
2. Contact the instructors to request their assistance and invite them to be speakers in the course, and schedule the date, time, and location for the training activities.
3. Prepare media, materials, equipment, documents, and other items related to the training implementation.

Training

1. Conduct the training opening ceremony.
2. Workshop participants test before training.
3. The researchers and the team of instructors conducted training according to the Curriculum of Teachers' Competencies for Future Skills in Learning Management of Technology.

Post-training

1. Conduct post-training assessments.
2. Inquire about satisfaction with the teacher competency development training activities in managing learning technology skills.

3. Analyze and present the data obtained from pre- and post-training tests and satisfaction surveys.

The duration of the training was 2 days from 9:00 AM to 4:00 PM.

Data Analysis

The data were analyzed descriptively using mean and standard deviation, and inferentially using *t*-test.

RESULTS

Teachers' Knowledge and Understanding before and after using the Curriculum

Evaluation results of teachers' knowledge and understanding before and after using the Curriculum of Teachers' Competencies for Future Skills in Learning Management of Technology. There were 50 teachers who participated in the training. They took a pre – test, which was a 40 item multiple choice test with a duration of 30 minutes. The training was then conducted according to the schedule outlined in the curriculum. Upon completion of the training, a post-test was administered using the same test set. The average scores were then compared to determine the difference in teachers' knowledge and understanding. Details were shown in Table 1 as follows.

From Table 1, it was found that the differences in knowledge and understanding of teachers' competencies in learning management of technology skills before and after using the curriculum showed that the average scores after training were significantly higher than before training at the.05 level ($t = -13.088^*$, Sig =.000). The results of the evaluation of satisfaction are shown in Table 2.

From Table 2, it was found that overall, the target group in the curriculum had a satisfaction evaluation score at a high level ($\bar{x}= 4.47$, SD = 0.48) with an average of 3.51 or higher, indicating that the sample group in the curriculum had a high level of satisfaction with this curriculum.

DISCUSSION

The results of using the curriculum of teachers' competencies for future skills in learning management of technology show that teachers' knowledge and understanding of technology skills management before and after using the training curriculum had a statistically significant increase at the.05 level. This may be due to the training process enhancing teachers' knowledge and understanding. The diverse training activities and the small number of teacher groups allowed for more participation in designing and writing learning management plans, practical implementation, presentation, and mutual critique of learning management plans, along

Table 1. Comparison of teachers' knowledge and understanding before and after using curriculum.

Teachers' Competencies for Future Skills in Learning Management	Total Score	Pretest		Post-test		t	Sig. (2-tailed)
		$\bar{x}$	SD	$\bar{x}$	SD		
Technology Skills	30	14.70	3.08	20.16	2.78	-13.088*	.000

*p < 0.05

Table 2. Evaluation of satisfaction with the curriculum in the area of managing technology skills. (n=50)

Item	Evaluation List	$\bar{x}$	SD	Level of Satisfaction
1	Public relations for participating in the workshop	4.42	0.58	high
2	Convenience in registering for the workshop	4.64	0.64	highest
3	Sequence of steps and procedures for conducting the practical workshop	4.24	0.77	high
4	Comfort during the workshop	4.53	0.64	highest
5	Appropriate format for conducting the workshop	4.24	0.83	high
6	Documents, media, or slides used in the workshop	4.51	0.65	highest
7	Appropriate duration for conducting the workshop	3.82	0.91	high
8	Knowledge, abilities, skills, and attitudes of the instructors in the workshop	4.51	0.61	highest
9	Providing opportunities for workshop participants to ask questions and share their opinions	4.64	0.59	highest
10	Conducting the workshop with an emphasis on active learning	4.44	0.67	high
11	Measurement and evaluation of the workshop	4.44	0.61	high
12	Speaker's answers to the questions were on point and clear	4.51	0.65	highest
13	Suitability of the building, facilities, and environment used for conducting practical workshop	4.58	0.61	highest
14	Snacks, beverages and lunch during the workshop	4.73	0.56	highest
15	Guidelines for applying the knowledge gained from this workshop to enhance teachers' competencies in managing technology skills in learning	4.62	0.56	highest
	Average	4.47	0.48	high

with additional suggestions from instructors. This aligns with Hemtasin (2019) who stated that developing teachers' competencies in learning management effectively requires a practical training curriculum to ensure that trained teachers acquire knowledge, skills, positive attitudes, and the ability to manage related matters according to set goals. Previous research has indicated that training aims to enhance knowledge and concepts in practice to improve understanding, and to apply these in work to enhance skills, practice proficiency, and change attitudes, fostering positive feelings towards the organization, supervisors, colleagues, and responsibilities (Bangmo, 2016).

The focus of research on the production and development of quality teachers is on developing teacher training curricula. Teacher trainees are provided with knowledge and understanding of educational curricula, such as the basic education curriculum of ASEAN member countries. Training activities are designed to cover four main areas: (1) Understanding the ASEAN Community, (2) The impact and trends of Thai education from joining the ASEAN Community, (3) Details of the basic education curriculum of ASEAN member countries, and (4) Learning management through ASEAN integration. As a result of implementing the curriculum, teacher trainees have increased knowledge of the basic education curriculum in ASEAN member countries and have a very positive attitude towards ASEAN integration (Office of the Secretary of the Education Council, 2017). Teachers have a high level of competence in designing learning management for technology skills and can integrate technology into learning management to develop students, with 79% at a high level and 21% at the highest level. This may be due to teachers' understanding and ability to apply knowledge gained from workshops to design learning management plans that integrate technology. This starts with setting learning objectives, designing learning activities, determining learning media, and measuring and evaluating outcomes, all in accordance with the components of a learning management plan. Teachers who participated in the training have a high level of competence in designing and writing learning management plans, with 79% at a high level and 21% at the highest level. This indicates that teachers recognize and understand the importance of developing students and preparing them for future society by emphasizing their skills in the 21st century, especially technology skills, which both teachers and students should possess. Laohjaratsang (2016) stated that when Gen Net/Tweenies learners require 8 essential characteristics for effective learning in the 21st century environment, teachers also need to possess 8 skills to create, deliver, and impart knowledge and skills to learners. These teachers are referred to as C-Teachers, such as C-Computer (ICT), which means teachers have skills in using computers to integrate with classroom teaching.

The important reason teachers need to have skills in applying computers as a tool in designing learning activities is not only to indirectly equip learners with ICT skills but also to effectively promote learners' thinking process skills through well-designed learning activities. Additionally, previous research is available on the development of a curriculum, its

implementation, stakeholders' satisfaction, and their perceptions on the ability of training courses to enhance competency in designing learning management for primary school teachers to foster students' higher-order thinking skills. For example, Si-Khiao et al. (2022) revealed that the trainees improved in their competencies in knowledge, ability, and attitudes in designing learning management exceeding the 70% threshold. Furthermore, teachers demonstrated a high level of ability to organize future skills learning activities and integrate them into learning management activities to develop students, with 28% at the highest level and 25% at a high level. Teachers' evaluation results on the competency in designing and using media for future skills learning management were at a high level (50%) and the highest level (34%). The evaluation results on the competency in measuring and assessing future skills learning activities showed that teachers were at the highest level (32%) and a high level (20%). This is because the learning activities organized by the teachers, which were derived from the training process according to the curriculum, enabled them to understand and design learning management plans. What needs to be done to ensure students develop according to the designed plan is to organize learning activities. Additionally, they can use media to develop future skills and measure and assess these skills, indicating that the training process is of high quality. Bangmo (2016) stated that the training process should consist of five steps:

1. Identifying the need for training, which involves studying the problems or needs of the organization to promote knowledge and understanding among individuals through job analysis to determine the objectives, content, and methods of training.

2. Developing the training curriculum, which should be tailored to address the organization's problems. The components of the curriculum include the course title, objectives, content, learning experiences, and evaluation methods.

3. Designing the training project, which involves planning what to train, when, and for whom, and writing a detailed project plan to serve as a guideline for implementation.

4. Implementing the training, which involves conducting the approved project. The project management should be divided into three phases: the preparation phase before training, the training phase, and the post-training phase.

5. Evaluating the training outcomes, which involves measuring and assessing whether the training was conducted as planned and whether the objectives were achieved, as well as identifying any problems or obstacles.

Evaluation may use various methods such as a single assessment at the end of the training or evaluations at the midpoint and end of the training in line with the research findings of Ariyadech (2019), who conducted a study on the development of a training curriculum for learning management to enhance the analytical thinking skills of primary school mathematics teachers. It was found that the training curriculum had an effectiveness rating of 89.38/86.00, exceeding the set standard of 80/80. The comparison of pre-training and post-training test scores of the participants revealed that

the post-training scores were significantly higher than the pre-training scores at the.05 level. Additionally, the participants expressed a high level of satisfaction with the training curriculum in all aspects. The implementation of the training curriculum showed that the overall teaching performance of the trained teachers was at the highest level.

Lukmo (2020) studied the teamwork of teachers in the 11th Educational Network Group, Kaeng Keng-Nong Tan Nam, under the Ubon Ratchathani Primary Educational Service Area Office 2. The objective was to examine the level of teamwork among teachers in the 11th Educational Network Group, Kaeng Keng-Nong Tan Nam, and to compare the teamwork of teachers in this group. The sample consisted of 108 teachers from the 11th Educational Network Group, Kaeng Keng-Nong Tan Nam. The research findings revealed that (1) the overall teamwork of teachers was at a high level, with all aspects also at a high level. The aspect with the highest level of teamwork was the role of members, while the aspect with the lowest level was team norms, and that (2) The comparison of teamwork among teachers in the 11th Educational Network Group, Kaeng Keng-Nong Tan Nam, with different teaching experiences showed no significant differences in overall and specific aspects of teamwork.

Aawaran (2014) conducted a study on the development of teachers in managing analytical thinking learning at Phan Nam Thip Witthaya School, Secondary Educational Service Area Office 27. It was found that (1) the study on the problems and needs in developing teachers in managing analytical thinking learning revealed that the management of analytical thinking learning by each teacher was not as successful as it should be because the teachers had limited knowledge and understanding of managing analytical thinking learning and skills in managing analytical thinking learning. They had attended training on managing analytical thinking learning but had never seriously written learning management plans or managed analytical thinking learning. There was a lack of budget support, documents, and personnel to assist in managing analytical thinking learning. All teachers expressed a desire to manage analytical thinking learning and wanted workshops to enhance their understanding and ability to manage analytical thinking learning. They needed support in terms of documents and personnel, supervision, assistance, and practical training until they could manage analytical thinking learning. All teachers also desired to manage analytical thinking learning through practical training with experts in managing analytical thinking learning, who would provide knowledge and continuous supervision until all teachers could manage analytical thinking learning. (2) The results of the development of teachers' knowledge and understanding of managing analytical thinking learning showed that everyone had knowledge and understanding of managing analytical thinking learning according to the Marzano framework. (3) Teachers can organize learning activities in analytical thinking according to Marzano's framework, which is reflected in the comparison of students' academic performance in the analytical thinking learning activities organized by the research group. Overall, it was found that the post-test scores of the students were higher

than their pre-test scores. Additionally, the analysis of students' opinions on the teachers' management of learning in analytical thinking was generally at a high level.

The satisfaction of teachers with the curriculum of teachers' competencies for future skills in learning management of technology. The target group in the trial of the training curriculum had a satisfaction rating at a high level ($\bar{x} = 4.47$, SD = 0.48). It shows that teachers enjoy the activities in the training program, feel fun and happy during the training, like what they do, and are cheerful while engaging in the activities. The design of the training activities focuses on the process, with clear training materials that can be effectively utilized. The training is conducted on holidays, not affecting teaching and learning. Prididilok (2006) defines satisfaction as a feeling of liking or being pleased with various components and incentives, where practitioners' external or physical needs, such as comfort in the venue and working on tasks they are skilled at, or internal or psychological needs, such as friendship, acceptance, and trust from colleagues, are met. Additionally, this training program was developed based on teachers' development needs. Therefore, when the activities and training processes align with their interests and include hands-on activities in individual, small group, and large group formats, it fosters mutual learning and collaboration among schools within the same educational district and between educational districts in Buriram Province, creating a network for professional development in line with Wiwitsiri (1994), who mentioned that the components of satisfaction include learning that aligns with the needs, desires, and interests of the learners, learning that corresponds with the learners' prior experiences, and learners knowing the purpose of their studies and seeing the benefits, making it valuable and meaningful to them. Learners have the opportunity to engage in hands-on activities, which greatly enhances their learning and understanding, along with receiving encouragement and support from the instructors, who use good and appropriate techniques and methods. Furthermore, the results of this satisfaction assessment are consistent with the research findings (Chaoanukul, 2022; Jakkachum, 2016; Ariyadech, 2019; Si-Khiao et al., 2022), which found that teachers were highly satisfied with the training curriculum.

CONCLUSION

Recommendations for Applying Research Findings

- The education service area office should continuously monitor the development of teachers' competencies in managing technology skills learning based on research findings.
- The research findings indicate that the evaluation of teachers' instruction during practical training and through serious supervision and follow-up, along with encouraging and constructive feedback, has resulted in teachers being able to teach technology skills at the highest level.
- The model and guidelines for developing teacher competencies this time have generated the need for teachers' attention and awareness in learning management to

equip students with the necessary skills for the future, specifically technological skills. Teachers and stake-holders should implement these practices to make them more concrete and clearer.

Recommendations for Future Research

- It should study the development of teacher competencies in managing future skills learning, such as technological skills, with teachers in other educational levels, such as early childhood education and secondary education, etc.
- It should study the model of teacher development through participatory processes.
- It should study the development of teachers' competencies in managing learning for other future skills.
- It should be continuous to study and monitoring of students' technological skill development should be conducted.

REFERENCES

Aawaran, S. (2014). Development of teachers in managing learning for analytical thinking at Phan Nam Thip Wittaya School, Secondary Educational Service Area Office 27. *Journal of Graduate Studies, Pichittharath College*, *9*(2), 71 – 80.

Ariyadech, C. (2019). Development of a training curriculum for learning management to enhance analytical thinking skills of Mathematics teachers at the primary education level. *Mahasarakham University Journal*, *13*(3), 149 – 157.

Bangmo, S. (2016). *Development of teaching and learning to promote critical thinking in the 21st Century*. Chulalongkorn University Press.

Chaoanukul, S. (2022). *Development of teacher potential in using information technology media for learning management*. Independent study, Master of Education Program in Educational Administration, Surathani Rajabhat University.

Hemtasin, S. (2019). *Educational science and education for sustainable development*. Faculty of Education, Thaksin University. https://www.edu.tsu.ac.th/major/eva/files/journal/education_for_develop_to_last.pdf

Jakkachum, C. (2016). The development of training courses based on the concept of blended learning to enhance teachers' competencies in using information and communication technology in learning management. *Yala Rajabhat University Journal*, *11*(2), 129 – 143.

Laohjaratsang, T. (2016). *Teaching materials for the course 088-791 Research seminar on curriculum and instructional technology*. Department of Educational Technology, Faculty of Education, Chiang Mai University.

Lukmo, T. (2020). Teamwork of teachers in the educational network group 11, Kaeng Keng-Nong Tan Nam, under the Office of Ubon Ratchathani Primary Education Service Area 2. *Journal of Educational Innovation and Research*, *4*(3), 290 – 304.

Ministry of Education. (2022). *National Education Plan*. Ministry of Education Publishing House, Bangkok.

Office of the Secretary of the Education Council. (2017). *National Education Plan B.E. 2560-2579 (*2nd ed.). Office of the Secretary of the Education Council, Bangkok.

Office of Knowledge Management and Development. (2020). *Public organization*. Office of Knowledge Management and Development (Public Organization).

Office of the Permanent Secretary, Ministry of Higher Education, Science, Research and Innovation. (2022). *Annual Report 2022*. https://www.mhesi.go.th/images/thatchanon/1._ปีงบประมาณ_66/1.เอกสารสิ่งพิมพ์ในกระทรวง/MHESI_AR_2022_Ebook.pdf

Petchaporn, K. (2020). *Learning management science*. Faculty of Education, Suan Sunandha Rajabhat University, Bangkok.

Pheerapan, N. (2020). *Development of tools to enhance information technology and communication skills for teachers according to 21st-Century learning concepts*. https://researchcafe.org/communications-technology-competencies-for-thai-teachers-in-the-21st-century/

Prididilok, K. (2006). *Philosophy of Education*. Prasert Printing.

Si-Khiao, D. & et al. (2022). *Development of teaching supervision processes based on feedback concepts to enhance the growth mindset in the teaching management of Teacher Education students* [Doctoral dissertation in Education). Chulalongkorn University, Bangkok.

Wiwitsiri, C. (1994). *Adult learning psychology*. Srinakharinwirot University Prasanmit