

# Virtual Professional Training Community Model for Developing Digital Teacher Competencies

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**Abstract** This was a document research study. Its objectives were (1) to study the virtual professional training process to develop digital teacher competencies and (2) to synthesize digital teacher competencies. The data were analyzed by using the content analysis technique. The results of the research revealed the following. Digital Teacher Competency consisted of 6 aspects as follows: Part 1, Using digital technology; Part 2, Data information and knowledge; Part 3, Communication and collaboration; Part 4, Digital content creation; Part 5, Integrating digital pedagogy; and Part 6, Ethics using digital technology. The form of the virtual vocational training community to develop digital teacher competencies consisted of 4 parts, which were the following: 1) Input, 2) Process, 3) Output, and 4) Feedback. We were able to assess the suitability of the Virtual Professional Training Community Model for Developing Digital Teacher Competencies with 9 experts in information and communication technology in education. The evaluation results revealed that the Virtual Professional Training Community Model for Developing Digital Teacher Competencies was formed. Part 1, the suitability of the virtual professional training process to improve digital teacher competencies, was very suitable. The mean was 4.63 and the standard deviation was 0.56. Part 2, the suitability of the details of the virtual professional training process to develop digital teacher competencies, reached the most suitable level. The mean was 4.56 and the standard deviation was 0.65.

**Keywords** Virtual Professional Training, Digital Teacher Competencies

## 1. Introduction

Digital technology advancement is an important factor that plays an important role in countries' economic and social development. Recently, the world has entered the digital economy and society era, where digital technology is no longer just a tool to support work as was the case in the past. Now, technology will truly be assimilated into people's lifestyles and result in structural changes in education. Digital technology has a direct impact on teaching, research, academic management and communication. As a result, many educational institutions around the world have chosen to use digital technology and teaching to help develop the quality and potential of education and educational personnel, meaning that digital technology influences life and work. The direction of Thailand's development into a developed country with long-term stability and prosperity is defined by the Constitution of the Kingdom of Thailand, B.E. 2560, the 20-Year National Strategy Framework (2017 - 2036), the Economic Development Plan, the 12<sup>th</sup> National Society (2017 - 2021) and the concept of Thailand 4.0: Model to Drive Security, Wealth and Sustainability. The introduction of digital technology is an important tool in the

development of an economy based on the use of innovation, which has assisted the development of manpower, research, development and innovation including the basic education system in digital technology. These are the backbone of national development, which means that they must be adjusted to reflect the context of technological change in order to prevent the risk that may be caused by the use of inappropriate technology. Understanding and using digital technology is a basic digital skill that will be an important aid for civil servants in their operations, communications and collaboration with others. [1] The government policy focused on the production and development of the digital competencies of teachers includes the 20-year-long national strategy of the National Education Plan 2017-2036 and the 12<sup>th</sup> Digital Development Plan for the National Economy and Society.

The Ministry of Education has established the National Education Plan 2017-2036 as a 20 year long plan that serves as the master plan for relevant agencies to guide the development of education. The plan has specified the operational guidelines for 6 strategies, which are strategies related to digital technology, such as strategy 3, which is to develop the potential of people of all ages and to create a learning society. The goal is for students to have the skills and characteristics necessary in the 21<sup>st</sup> century. There is a system for the production of the digital competencies of teachers and educational personnel so that they meet international professional standards and are able to work more efficiently. The above strategic plan is in line with the principles of teaching and learning in the 21<sup>st</sup> century, where information technology plays an educational role.

Therefore, in the conditions described above, it is extremely important to be educated about the digital teacher competency development process. This is done in order to obtain important basic information that the agencies involved in the production and development of teachers can use and consider in the production and development of teachers so that they have the capacity to use this digital technology to keep up. It is necessary to comply with government policies, including the 20-year national strategy of the National Education Plan 2017-2036 and the 12<sup>th</sup> Digital Development Plan for the National Economy and Society.

## 2. Research Objectives

The researcher has set the research objectives as follows:

1. To study the virtual professional training process to develop digital teacher competencies, and
2. To synthesize digital teacher competencies.

## 3. Research Methods

The research methodology is divided into 2 phases according to the research objectives.

Phase 1: Synthesis of digital teacher competencies.

It studies the data related to the synthesis of the digital competencies of teachers. The researcher studied the research papers, conducted content analysis, and synthesized the relevant research from 2008 to 2019.

Phase 2: Study the virtual professional training process to develop digital teacher competencies.

It studies the design of the virtual professional training process. It combines the concepts of applying TPACK (Technological Pedagogical Content Knowledge) and digital teacher competencies.

Phase 3: Assessing the suitability of the Virtual Professional Training Community Model for Developing Digital Teacher Competencies.

It assesses the suitability by using 9 experts in information and communication technology, information technology and educational communication.

## 4. Research Results

### Phase 1: The results of the synthesis of digital teacher competencies

From the documents, the studies and research on digital teacher competencies were synthesized. The synthesis of the digital teacher competencies in all 6 areas are shown in Table 1.

**Table 1.** Digital Teacher Competency Synthesis

Aspect 1: Use digital technology (8) (7) (6) (5) (4) (3) (1)		
Digital teacher knowledge (9)	Digital teacher skills	Digital teacher features (1)
<ol style="list-style-type: none"> <li>1. Understand the components of computer systems</li> <li>2. Understand computer networks</li> <li>3. Understand websites and obtain knowledge</li> <li>4. Understand how to use Microsoft Word processor.</li> <li>5. Understand how to use Microsoft spreadsheet.</li> <li>6. Understand how to use Microsoft PowerPoint.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use a computer</li> <li>2. Use information search</li> <li>3. Use Microsoft Office applications</li> </ol>	<ol style="list-style-type: none"> <li>1. Focus on goals, think critically, and solve problems.</li> <li>2. Open to new experiences, originality, and self-learning</li> <li>3. Have morality and ethics</li> </ol>
Aspect 2: Data information and knowledge (1) (8) (6) (3)		
Digital teacher knowledge (10)	Digital teacher skills (10)	Digital teacher features (10)
<ol style="list-style-type: none"> <li>1. Understand the meaning and importance of information</li> <li>2. Understand the role of information</li> <li>3. Know the types of information Search Engines.</li> <li>4. Use Search Engine techniques</li> <li>5. Know the benefits of information</li> <li>6. Understand the characteristics of data communication.</li> <li>7. Understand the importance of data communication</li> <li>8. Understand the components of data communication</li> </ol>	<ol style="list-style-type: none"> <li>1. Use information.</li> <li>2. Evaluating data.</li> <li>3. Data management.</li> </ol>	<ol style="list-style-type: none"> <li>1. Focus on goals, think critically, and solve problems.</li> <li>2. Open to new experiences, originality, and self-learning</li> </ol>
Aspect 3: Communication and collaboration (1) (8) (7) (6) (3)		
Digital teacher knowledge (11)	Digital teacher skills	Digital teacher features (1)
<ol style="list-style-type: none"> <li>1. Understand communication systems via wireless networks</li> <li>2. Understand the components of the communication process</li> <li>3. Understand the nature of communication</li> <li>4. Apply Microsoft Teams</li> <li>5. Apply collaboration tools</li> </ol>	<ol style="list-style-type: none"> <li>1. Interaction</li> <li>2. Information sharing</li> <li>3. Collaboration</li> </ol>	<ol style="list-style-type: none"> <li>1. Communicate and collaborate with others</li> </ol>
Aspect 4: Digital content creation (12) (8) (3)		
Digital teacher knowledge (11)	Digital teacher skills	Digital teacher features (1)
<ol style="list-style-type: none"> <li>1. Have knowledge of the subject matter taught.</li> <li>2. Track the progress of the subjects taught</li> <li>3. Increase ability by sharing knowledge with teachers who teach in the same subject.</li> </ol>	<ol style="list-style-type: none"> <li>1. Content development</li> <li>2. Content improvements</li> </ol>	<ol style="list-style-type: none"> <li>1. Open to new experiences, originality, and self-learning</li> </ol>
Aspect 5: Integrating digital pedagogy (12) (7) (6) (5) (15) (14) (3)		
Digital teacher knowledge (13) (16)	Digital teacher skills (16)	Digital teacher features (1) (1) (1)
<ol style="list-style-type: none"> <li>1. Understand the meaning of teaching design</li> <li>2. Understand the components of teaching and learning</li> <li>3. Transferring knowledge is in accordance with the theories, principles, styles and teaching methods.</li> <li>4. Applying new teaching techniques and methods that are appropriate for the teaching content</li> </ol>	<ol style="list-style-type: none"> <li>1. Teaching design</li> <li>2. Use of teaching techniques and methods</li> <li>3. Content integration</li> <li>4. Knowledge transfer</li> </ol>	<ol style="list-style-type: none"> <li>1. Dare to make decisions and take risks.</li> <li>2. Focus on goals, analyze, and solve problems</li> <li>3. have a spirit of being a teacher</li> <li>4. Be a good role model</li> </ol>
Aspect 6: Ethics of using digital technology (1) (15) (14) (12) (4)		
Digital teacher knowledge (1) (16)	Digital teacher skills	Digital teacher features (1)
<ol style="list-style-type: none"> <li>1. Understand the meaning of the ethics of digital technology.</li> <li>2. Understand the principles of the ethics of using digital technology.</li> <li>3. Understand copyright infringement</li> <li>4. Understand the penalties</li> <li>5. Understand free software</li> <li>6. Understand the use of antivirus programs</li> <li>7. Understand the importance of protecting identity information.</li> </ol>	<ol style="list-style-type: none"> <li>1. Safe when using digital technology</li> <li>2. Know etiquette and rules</li> <li>3. Realize copyrights</li> </ol>	<ol style="list-style-type: none"> <li>1. Have morality and ethics</li> </ol>

From Table 1, it can be found that there are 6 aspects of digital teacher competencies as follows. Aspect 1, the use of digital technology, consists of 1) using computers, 2) using the internet, and 3) using programs. Aspect 2, Data

information and knowledge, consists of 1) browsing and searching for information, 2) evaluating data, and 3) data management. Aspect 3, communication and collaboration, consists of 1) interactivity, 2) information sharing, and 3)









courses, 1.2 Objectives, 1.3 The characteristics of the trained teachers, 1.4 Speaker features, 1.5 The training plan and evaluation, and 1.6 The virtual training environment. 2) The process consists of the following steps: 2.1 using technology, 2.2 searching for information, 2.3 Exchanging knowledge, 2.4 the learning management design, 2.5 creating digital lessons, and 2.6 presenting teaching methods. 3) The assessment consists of 3 assessments, which are 3.1 The Digital Teacher Knowledge Test, 3.2 The Digital Teacher Skill Assessment Form, and 3.3 The Digital Teacher Characteristics Evaluation Form. 4) Feedback consists of 2 parts, namely, 4.1 the inputs that are the training evaluation results, and 4.2 the evaluation process of the training from the participants. The evaluation of the 9 experts found that part 1, the suitability of the details of the virtual professional training process to improve digital teacher competencies, is at the most suitable level with a mean of 4.63 and a standard deviation of 0.56. Part 2, the suitability of the main and substeps of the virtual professional training process to develop the digital teacher competencies, is the most suitable level, with a mean of 4.56 and a standard deviation of 0.65, which is in the range 0 to 1, and thus it can be considered reliable information. Therefore, it can be concluded that the experts have relatively similar opinions, which are suitable at the highest level, with experts advising the following points. For the 6-step virtual professional training process to develop digital teachers' competencies, ICT should be used as the main tool of the 6-step learning process and to identify the tools used so that it can be used effectively for those interested in the process. In Step 1, the technology used should be a technology that is suitable for the digital technology age and digital age students. Step 6 presents methods for teaching unrelated topics. The researcher further explained this by taking into account the safety, manners and practices of using digital technology and copyright awareness. The next step in the research will be to use the VPT-DTC model format to train online for teachers taught in science and technology.

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## REFERENCES

- [1] Civil Service Commission, Guidelines for digital skills development of government officials and government personnel to transform into a digital government, Online available from [https://www.ocsc.go.th/sites/default/files/attachment/page/process\\_devskill\\_digital.pdf](https://www.ocsc.go.th/sites/default/files/attachment/page/process_devskill_digital.pdf)
- [2] The Secretariat of the Council of Education, National Education Plan 2017-2036, Online available from <http://backoffice.onec.go.th/uploaded/Outstand/2017-EdPlan60-79.pdf>
- [3] European Commission, Digital competence: the vital 21st-century skill for teachers and students, Online available from <http://www.ec.europa.eu/jrc/sites/jrcsh/files/DIGCOMP-FINAL-%20UPDATED%2002-06-2016.pdf>
- [4] Digital Government Development Agency (Public organization), Digital Literacy, Online available from [https://e-learning.dga.or.th/xlms\\_ega/resource/tincan/eeb89595-2659-490f-b401-7634b6774cf6/index.html](https://e-learning.dga.or.th/xlms_ega/resource/tincan/eeb89595-2659-490f-b401-7634b6774cf6/index.html)
- [5] UNESCO, Estándares de competencia en TIC para docentes, Online available from <http://www.eduteka.org/EstandaresDocentesUNESCO.php>
- [6] Ministerio de Educación Nacional Competencias TIC para el desarrollo profesional docente, Online available from <http://goo.gl/WbqS9L>
- [7] Fraser, J., Atkins, L., & Richard, H. DigiLit leicester. Supporting teachers, promoting digital literacy, transforming learning, Leicester City Council, 2013.
- [8] INTEF, Marco Común de Competencia Digital Docente, Online available from <http://educalab.es/documents/10180/12809/MarcoComunCompeDigiDoceV2.pdf>
- [9] Panita Wannapiroon. Information technology and educational innovation. Textbook Production Center, King Mongkut's University of Technology North Bangkok, Thailand, 2016.
- [10] Nutthapat Kaewrattanapat. Information Technology for Communication and Learning. Textbook Production Center, Suan Sunandha Rajabhat University, Thailand, 2018.
- [11] Teachers Council of Thailand Regulations on Professional Standards (Issue 4) 2019. Government Gazette. Volume 136, special section 68 Ngor, 20 March 2019, pages 18-20. Ministry of Education, 2019.
- [12] Enlaces, Competencias y estándares TIC para la profesión docente. Centro de Educación y Tecnología (Enlaces). Ministerio de Educación, Gobierno de Chile, 2011.
- [13] Prachyanan Nilsuk and Jira Jitsupa. Information and Communication Technology Administration for Education, Textbook Production Center, King Mongkut's University of Technology North Bangkok, Thailand, 2017.
- [14] Enlaces. Estándares TIC para la Formación Inicial Docente. Una propuesta en el contexto Chileno. Ministerio de Educación, Gobierno de Chile, 2008
- [15] Redecker, C., & Punie, Y. European framework for the digital competence of educators: DigCompEdu. In Ch. Redecker, & Y Punie (Ed.), European framework for the digital competence of educators. Publications Office of the European Union, Luxembourg, 2017.
- [16] Pallop Piriyasurawong. Learning strategy in information and communication technology for education, Textbook Production Center, King Mongkut's University of Technology North Bangkok, Thailand, 2017.