EDUPSU Journal of Education, Prince of Songkla University, Pattani Campus
Vol.32 No.1 : January-April 2021, pp. 17-36

The Synthesis of the Competency Framework for Educational Technologists

Chamaiporn Inkaew
Ph.D. (Education Technology and Communications), Graduate Student.
Department of Education Technology and Communications
Faculty of Education, Chulalongkorn University
Jaitip Nasongkhla
Ed.D. (Education Technology and Communications), Associate Professor
Department of Education Technology and Communications
Faculty of Education, Chulalongkorn University

Received: January 13, 2020/ **Revised:** June 21, 2020/ **Accepted:** June 30, 2020

Abstract

The rapid transition of the technological world into the digital era affects every career to adjust their strategies of human resources management to achieve their goal set by the important tool which is the competency of personnel, and the educational technologist is one of the careers who is affected. For this reason, the competency of the educational technologists needs to be developed to build the professional security and clarity of their roles among the sustainable change of the world. The purposes of the study are to synthesize the competency framework of the educational technologist by collecting the qualitative data which is the documentary research, and the semi-structured interviews were provided by educational technology experts. The results of this synthesis have shown that competency framework of the educational technologist consisted of 6 competencies as follows: 1) professional academic knowledge 2) professional skills 3) professional characteristics 4) management 5) professional development, and 6) consultancy. The competency from the educational technology synthesis will lead to the next process of competency setting to lift the educational technologist's practice to be accepted by the society.

Keywords: Competency, Educational Technologists, Competencies of Educational Technologists

Introduction

In the 21st century, the world's rapid change became an important issue of various matters because many matters have been expressed clearly with much change from the past to the present in many countries. In Thailand, many policies support such changes for surviving in the digital world era. Thailand 4.0 was one of the government policies which aimed to prepare and create human resources, and also innovations, connection, and access to technology. The Thailand reform to Digital Thailand effectively by Economics and Digital society Plan B.E. 2016-2020 was one of its 6 policies for the development of the digital workforce that is ready to enter the economic and digital society which is also the 5th policy, the development of the digital workforce to be ready for entering the era of an economic and digital society that creates human resources, builds jobs and strengthens internally (Ministry of Information, Communication, and Technology, 2016). Such change affected the career which faced the challengeable change rapidly, thus workforce development became important factors. The reform and reskill of humans was the development of knowledge, skill, capacity, and attitude towards the operation in the technological digital world as well as the educational technology professions was one of the professions which needed to be reformed to human development in our country. The educational technologist which was a highly professional career who played an important role towards the educational management and teaching and learning management to educational personnel who has full of knowledge, capacity, skills, and expertise in educational technology of both theory and practice.

However, educational technologists played the role in the educational development of personnel, concept, method, and technology. The role and function overlapped with other careers such as job ambiguity, failure of education support, and many other factors which encountered problems that happened locally and overseas. In Thailand, the technological career development was founded by Phomwongse (1991) who developed the educational technology network, and Thammetha (2003) who developed the practical standards of educational technology in Thailand's higher education institutes for over 10 years whereas the competency development of educational technology was not specific. The same problems happened in other countries as well. From the study. It was found that there was the standard educational technology accepted internationally by the Association for Educational Communications and Technology (AECT) of the United States,

as follows: 1) Content Knowledge 2) Content Pedagogy 3) Learning Environments 4) Professional Knowledge and Skills and 5) Research (Association for Educational Communications and Technology, 2012). However, the study of educational technologists' competencies was not done directly. Therefore, "personnel development" is needed which is the key to making a difference and an advantage that drove the operation of an organization in every career to succeed and the target for survival among such changes. The competency was an increasingly popular and important tool of resource management of a leading organization and became a standard of human resources development which increased the capacity both systematically and sustainability. According to Samitikrai (2013), the necessary qualifications of personnel performance were knowledge, skill, capacity, and other qualities whereas Khammanee (2018) said that it was the combination of knowledge, attitude, and skill that connected and transferred to be in a behavioral manner.

In summary, competency is the application of knowledge, skill, and personal attitude which were effectively combined and expressed with operational behavior. Thus, to develop the competency of educational technologists, competencies need to follow The International Society for Technology in Education (ISTE). Even though the standard of AECT which the profession for educational technologists, the ISTE stated the standard of national educational technology which is used as a technology for learning and teaching of teachers, students, academics, administrators, coaches, and computer academics. Therefore, it was necessary to standardize professional development and educational technology competency to achieve professional security and clearness of educational technologists for rapid development.

From the above reasons, the researcher realized the importance of the personnel who worked in educational technology. Technology changed rapidly and the documentary study and research of educational technologist was found, how the educational technologists would be developed and were accepted in the society which had a clear role and have an efficient practical standard that affects the highest and efficient benefits for the job development and found that the competency was the way to personnel development of organizations. Additionally, the educational technologist career does not have a clear professional competency specification. Thus, the researcher would like to study the necessary competencies for educational technologists, what competencies they

should have so that the professional competency will be specified and lead to set the standard of an educational technology standard in the future.

Research Objective

The purpose of this research was to synthesize the competency framework of educational technologists.

Scope of Research

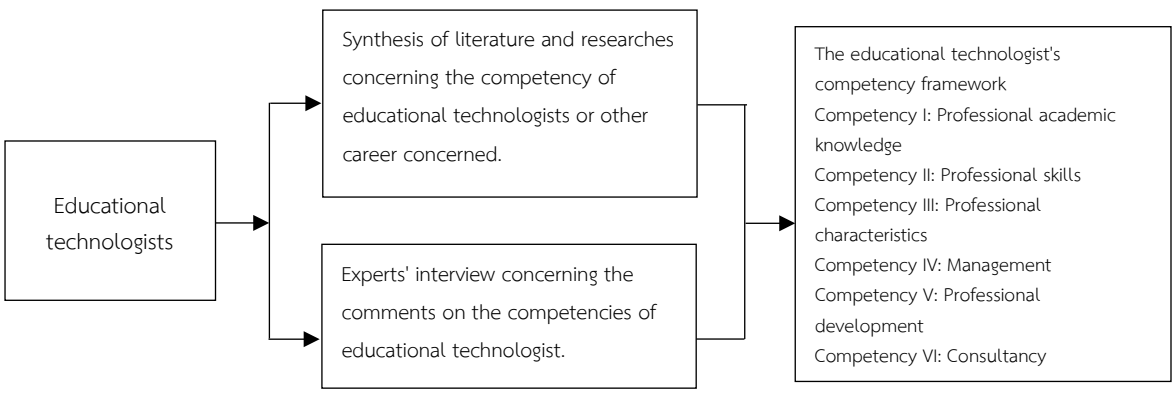
The research studies the literature review concerning the competency of educational technologists and relevant career or concerns during the Year 2009-2019.

Research framework

The research presents a conceptual framework consisting of target groups synthesizing documents and interviews with target audiences to provide a competency framework for educational technologists as shown in figure 1 below (İzmirli & Kurt, 2009; Hartley, Kinshuk, Koper, Okamoto & Spector, 2010; Human Resources Bureau, Department of medical service, Ministry of Public Health, 2012; Fox & Sumner, 2014; Achcaoucaou, Forgas-Coll, & Palau-Saumell, 2014; Office of BMA officer committee, 2015; Rizhaupt & Martin, 2014; Iqdami & Branch, 2016; Kang & Ritzhaupt, 2015; Impagliazzo, Sabin, Alrumaih, & Viola, 2016; Phankhong, 2016; Li & Zhang, 2016; Foulger, Graziano, Schmidt-Crawford, & Slykhuis, 2017; UNESCO, 2018; Ally, 2019).

Figure 1

Conceptual framework



Research Methodology

This research study involves two phases of data collection: phase one was documentation research and phase two was a semi-structured interview with educational technology experts as the information provider.

The research procedure

The research is conducted through the following steps:

1. The researcher studied the literature and research concerned with the competency of educational technologist and other relevant careers of the educational technologist in various local and overseas organizations from 15 journals: 1) MedEdPublish 2) TechTrends 3) Education Sciences 4) Educational Technology Research and Development 5) Educational Technology & Society 6) Procedia-Social and Behavioral Sciences 7) Journal of Educational Technology Systems 8) American Journal of Distance Education 9) Springer International Publishing 10) International Conference on Computer Science & Education (ICCSE) 11) IEEE Global Engineering Education Conference 12) Springer 13) International Review of Research in Open and Distributed Learning. To consider the competency of relevant career, the researcher studied the documents from the Ministry of Health and Office of Committee of BMA Civil Officers.

2. The researcher synthesized the educational technologist's competency by separating the issues of competency from literature and research projects and then analyze the content which the researcher set as criteria by selecting the academic literature and research of the academic's references of competency or relevant careers such as teaching technologists, learning technologists, information technology, computer, teacher, audio-visual technician and staffs, also, the competency of educational technologists' expertise such as multimedia, technology, and computer education. The researcher sets the data outline of analysis and categorization of words or text relevant to the competency of educational technologists to set their framework.

3. The researcher interviewed 3 educational technology experts by using a semi-structured interview form that passed 3 expert quality testing tools, which received Item objective congruence (IOC) higher than 0.60. There were 3 experts in educational technology, which are obtained by the purposive selection, with qualifications are as follows: 1) who has experiences in educational technology for at least 15 years 2) who has an academic position as a professor or associate professor 3) who has knowledge or experiences in competency development

and 4) who is an academic person and has research works or academic textbooks in educational technology or related field. Afterward, the data obtained from the interviews were collected and further obtained a mean of the suitability score of the competency framework.

4. The researcher applied the support and recommendation from experts' opinions, then synthesized and developed the competency frame of educational technologist for complete language, content, and detail.

5. The researcher analyzed the data by data collection and concerning research about the competency of educational technologist and interviewed and then conducted content analysis from relevant literature, data analysis, data interpretation and data categorization the factors for the framework development and then data from experts' interview would be analyzed basically by average point of suitable evaluation according to the experts' comments on the competency framework of educational technologist.

Research Finding

From the documentary synthesis and researches relevant to the competency of educational technologist, the researcher presented 2 parts of research results as follows:

1. The results of documentary synthesis and research, the researcher collected the relevant content concerning the competency and other careers relevant to the educational technologist and the research concluded the synthesis following table 1.

Table 1

Showed the competency synthesis of the educational technologist or relevant careers concerned with both local and other countries

Competency	Issues
Competency I: Professional academic knowledge	- Educational knowledge i.e. learning psychology, adult and childhood study, teaching and learning design, technology integration (İzmirli & Kurt, 2009).
	- Having knowledge of learning theory concerning high technology curriculum. Appropriate teaching with the educational context of the high technology curriculum. Having knowledge of teaching and learning system design and apply for every context (Hartley, Kinshuk, Koper, Okamoto & Spector, 2010).
	- Having knowledge of information technology and communications concerning education, knowledge of curriculum and evaluation, and teaching knowledge (UNESCO, 2018).
	- Having knowledge of learning technologists (Fox & Sumner, 2014).

Competency	Issues
	- Having knowledge of information technology (Achcaoucaou, Forgas-Coll, & Palau-Saumell, 2014).
	- Having knowledge of software and usage of office software. Having knowledge of graphic, web, audio, video, writing program, and language script. Having knowledge of software of curriculum management, hardware, and network. Having knowledge of theory and instruction method, teaching and learning design (Rizhaupt & Martin, 2014; Iqdami & Branch, 2016).
	- Having knowledge and understanding of the role of learning technologist (Fox & Sumner, 2014).
	- Having knowledge of information technology (Achcaoucaou, Forgas- Coll, & Palau-Saumell, 2014).
	- Having knowledge of learning and teaching design and software production (Kang & Ritzhaupt, 2015).
	- Having a basic knowledge of information technology. Having knowledge of design for users. - Having a basic knowledge of the software (Impagliazzo, Sabin, Alrumaih, & Viola, 2016).
	- Having a basic knowledge of ICT regarding the steps of computer use. Know how to use hardware, software, and technology suitably. - Be able to use the internet to data access and data including the basic principle of data communication and network and internet (Phankhong, 2016).
Competency I: Professional academic knowledge	- Having basic knowledge concerned with field and teachers' education. - Computer technology for teachers (Li & Zhang, 2016).
	- Having knowledge of teaching, teaching techniques to support learners to be qualified for learning in the digital era. Having digital knowledge of education. - Having knowledge of technology integration to develop the learners in the digital world. Having knowledge of culture, local practice to select the suitable technology for learners (Ally, 2019).
Competency II: Professional skills	- Having the skill of technology use concerning hardware, software, and virtual reality environment (İzmirli & Kurt, 2009).
	- Having the skill of software usage, technology for operation in various situations. - Having the skill of process, problem solution, and step explanation (Hartley, Kinshuk, Koper, Okamoto & Spector, 2010).
	- Having the skill of information technology usage and basic and complex communication. Having the skill of complicated problem solutions (UNESCO, 2018).
	- Having the skill of multimedia production, teaching, and technique. - Having the skill of complex work and set the job priority. - Having the skill of working with technology and evaluation. - Having soft skills (Rizhaupt & Martin, 2014; Iqdami & Branch, 2016).
	-Having the skill of project management of learning technology career. Having the technical skill of learning technology career. Having teaching skills (Fox & Sumner, 2014).
	-To be an expert in information technology and communication. - Having creative idea (Achcaoucaou, Forgas - Coll & Palau-Saumell, 2014).
	- Having emotional skills such as teamwork, writing, and verbal communication. - Having technical skill of educational technologist (Kang & Ritzhaupt, 2015).
	- Having knowledge of learning and class management ability (Li & Zhang, 2016).

Competency	Issues
	- Having the skill of medical media (Human Resources Bureau, Department of medical service, Ministry of Public Health, 2012).
	- Having the skill of proactive operation and creative thinking of audiovisual staff, academician, photographer, and medical educational technologist (Office of Committee of BMA Civil Servant, 2015).
	- Having the skill of application network, Cloud computing system, internet of Things: IoT, mobile application, technology platform, and technology integration, virtual reality system, web system, and mobile application. - Having Soft skills (Impagliazzo, Sabin, Alrumaih, & Viola, 2016).
	- Manage IT learning by learner center. - Use ICT as the manual to learning support (Phankhong, 2016).
	- To be able to design both learning and teaching by using technology for teaching and learning development and support the multi-cultures learners. -Use the various teaching methods to prepare the trainee teacher with effective technology.
Competency II: Professional skills	-Use the effective strategy of online learning and teaching and/or blended learning environment including online application tool. - Having the skill of basic problem solution by learning and teaching technology (Foulger, Graziano, Schmidt-Crawford, & Slykhuis, 2017).
	- Having the skill of digital technology usage which combines with a curriculum completely. - Using integrated technology and virtual reality technology for learners. - Using supporting technology for learners which require special needs and meet with the learners' requirement. - Developing the digital learning resource for learners to be able to enter technology that supports their learning. - Selecting the evaluation strategy and recommend the learners consistently to improve the learners' efficiency. - Communicating by various digital technology suitable for learners and general people (Ally, 2019).
Competency III: Professional characteristics	- Having social skills such as teamwork, internal and external organizational communication (İzmirli & Kurt, 2009).
	- To socialize by participating and comment exchange within group/ organization. - Being Group dynamic to encourage the cooperation to contrast problem solution (Hartley, Kinshuk, Koper, Okamoto & Spector, 2010).
	- To be able to work in a team. Understand the intellectual property used in jobs (Rizhaupt & Martin, 2014; Iqdami & Branch, 2016)
	- Do the activities stating the unity. - Work with many communities of local academicians and different professions (Fox & Sumner, 2014).
	-Having self-realization, self-control, and work motivation to reach the target effectively (Achcaoucaou, Forgas-Coll & Palau-Saumell, 2014).
	- To be able to work together with both the same team and different teams and different professions (Kang & Ritzhaupt, 2015).
	-To be able to practice following the information technology universal profession. - To be responsible for society (Impagliazzo, Sabin, Alrumaih, & Viola, 2016).

Competency	Issues
	- Having motivation of professional work, feel successful and satisfy with their professions and psychological characteristics, self-confidence, and self-responsibility (Li & Zhang, 2016).
	- Using technology for legal study ethically and social responsibility (Foulger, Graziano, Schmidt-Crawford, & Slykhuis, 2017).
	- To be a sample of personal good and can support learners and quality education management. - Being a long-life learner. Accepting the innovation. - To be flexible and self-adjustment in the digital era (Ally, 2019)
	- Having the ethics of IT, legal, computers, and ICT usage which was not against the ethics and laws, self-disciplinary, legal respect, and no legal violation (Phankhong, 2016).
	- To be able to adjust the jobs of audiovisual staff (Office of BMA officer committee, 2015).
Competency III: Professional characteristics	- Having curiousness and knowledge transferring of the profession and being royalty to their government organization to develop their organization effectively and also having good relationships within an organization (Human Resources Management, Department of Medical Service, Ministry of Health, 2012).
Competency IV: Management	- To be able to use software tool, understand the software structure which could solve the problems, and explain the working process by the suitable method and context (Hartley, Kinshuk, Koper, Okamoto & Spector, 2010).
	- To be able to organize and manage the standard classroom, group separation and build learning society and long-life learning and also share the technology to its same professional member (UNESCO, 2018).
	- Having the management skills (Rizhaupt & Martin, 2014; Iqdami & Branch, 2016).
	- To be able to manage workload according to role and activities including information data management according to the role and context of learning technology. (Fox & Sumner, 2014)
	- To be able to manage the workload of educational technologists. (Kang & Ritzhaupt, 2015)
	- To be able to manage the information technology system (Impagliazzo, Sabin, Alrumaih, & Viola, 2016).
	- To be able to manage the computer and network and technology according to the job description (Office of Human Resources Management, Department of Medical Service, Ministry of Health, 2012).
	- Manage classroom with ICT by personnel competency development concerning class management, class leadership, and effective communication. -Manage teaching and learning professionally and classroom technical administration (Phankong, 2016).
Competency V: Professional development	- To be able to do the research relevant design and influence to advance learning technology and connect the education characters with advance learning technology (Hartley, Kinshuk, Koper, Okamoto & Spector, 2010).
	- To develop themselves to professional, understand the digital and use it and advise other people. - To be a prototype person of learning new information technology and select to apply in their learning and teaching professionally (UNESCO, 2018). - To be able to use learning technology in the organization and workplace. - Having the professional leader characteristics. - To be able to work in many communities of both professions, academicians, and researchers (Fox & Sumner, 2014).

Competency	Issues
	- To develop the ability to communicate effectively and continuously (Achcaoucaou, Forgas - Coll& Palau-Saumell, 2014).
	- To be a leader and effective interpersonal communication (Kang & Ritzhaupt, 2015).
	- Having self-evaluation during their performance to develop their job's quality (Li & Kurt, 2016).
	- To be part of leadership and supporter of technology use. - To be part of professional developer and network activities to improve the integrated teaching technology (Foulger, Graziano, Schmidt-Crawford, & Slykhuis, 2017)
Competency V: Professional development	- Having personnel development of communication, digit analysis, information technology, systematic problem solution, interpersonal relation and responsibility, and continuous self-development. To be able to organize the activities to develop the learners' skills (Phangkong, 2016).
Competency VI: Consultancy	-To be able to give advice teaching. (İzmirli & Kurt, 2009)
	- To be able to give technical advice or suitable work method and arrangement of training plan of using a tool, technology, and various software. (Hartley, Kinshuk, Koper, Okamoto & Spector, 2010)
	- To be able to use and advise other persons concerning information technology and communication, digital knowledge (UNESCO, 2018).
	-To be able to support multimedia jobs for other people (Rizhaupt & Martin, 2014; Iqdami & Branch, 2016).
	- To be able to combine educational technology activities and projects (Fox & Sumner, 2014).
	-To have the ability of customer service of organizations, agencies concerning educational technology (Kang & Ritzhaupt, 2015).
	-To be able to give the information technology service (Impagliazzo, Sabin, Alrumaih, & Viola, 2016).
	- To be able to give media service and medical media production of each position. - To be able to advise, support, and train the information technology according to the job description of computer technician (Office of Human Resources Management, Department of Medical Service, Ministry of Health, 2012).

From the above documentary synthesis result and relevant research concerning the competency of educational technologist, 6 competencies were concluded as follows:

Competency I: The professional academic knowledge was meant to the necessary academic relevant to the theory of educational technology process, the knowledge of professions concerning printing technology, audiovisual computer and integrated technology, design knowledge, and educational knowledge which transferred the professional educational technology.

Competency II: The professional skills were meant to the ability of presentation of the expertise in media production, printing technology, audiovisual equipment, computer and the creative integrated technology including soft

skills to succeed in educational technology operation.

Competency III: The professional characteristics were meant to the idea presented in the form of behavior indicating the personality of professional education technology operation such as professional ethics, learning curiousness, motivation, and teamwork of education technologist.

Competency IV: The management was meant to the procedure of well working plan in educational technology operation and systematic administration plan, usage management and performance evaluation in the management of projects and resources, the publication of results and information.

Competency V: The professional development was meant to the action presenting the learning activities of educational technologist's performance in improvement and development initiation by applying knowledge, skills, and attitudes, self -evaluation, professional leadership, and research development to job development of professional technology.

Competency VI: Consultancy was meant to action presenting behavior characteristics of educational technologist to advise, coordinate, facilitate and serve concerning the educational technology jobs.

From the documentary synthesis and concerned research of 6 competencies of the educational technologists, the researcher represented the competency framework of an educational technologist as shown in figure 2.

Figure 2

Competency framework for educational technologists

From the competency framework of educational technologist which is comprised of 6 competencies of which 3 basic competencies are as follows: competency I: professional academic knowledge, competency II: professional skills and competency III: professional characteristics. In the pie graph, there were 3 parts separated into 3 fundamental competencies whereas the other 3 competencies were competency IV: management, competency V: professional development on the outer edge of the graph. The educational technologist must have 3 basic competencies: knowledge, skill, and attitude. Competency IV and competency V were the base to the competency VI: consultancy shown on the top of the pie chart. 2) From an in-depth interview from educational technology experts asking their comments regarding 6 competencies of educational technologists, the comments were concluded that as shown in table 2, the evaluation scores from experts' evaluation comments showed the criteria as follows:

+1 = Such competencies should be a more important competency for educational technologist

0 = Unsure that the competency is important for educational technologist

-1= Such competencies should not be an important competency for educational technologists.

Table 2

Shows the results of suitable evaluation according to the experts' comments about the competencies of educational technologist.

Competency	Experts' comments			Average	Suggestions
	1st expert	2nd expert	3rd expert		
Competency I Professional academic knowledge	+1	+1	+1	1.0	The 2nd expert commented that the design of media and study and learning had better include in the knowledge competency.
Competency II Professional skills	+1	0	+1	0.67	The 2nd expert should state inner competency especially soft skills and fundamental professional skill of educational technology in the competency as well.

Table 2 (continued)

Competency	Experts' comments			Average	Suggestions
	1st expert	2nd expert	3rd expert		
Competency III Professional characteristics	+1	0	+1	0.67	All experts suggested that it had better find the specific self-characteristics of educational technologists.
Competency IV Management	+1	+1	+1	1.0	
Competency V Professional development	+1	+1	+1	1.0	The 3rd expert suggested that the educational technologist should know the principle of administration to develop better leadership.
Competency VI Consultant	0	+1	+1	0.67	The 1st expert suggested that the advice and service can be combined in one competency.

The evaluation result of suitability according to experts' comments based on the interview in table 2, shows that all 3 experts commented to the competency framework of educational technologist which the research synthesized, has an acceptable average. Each expert commented differently additional as follows: regarding competency, I: professional academic knowledge, the 2nd expert commented that both media and teaching and learning design should be the knowledge competency and did not separate and suggested competency II in professional skills which should state the inner competency especially soft skills and also the profession's basic skills of competency in educational technology. Also, regarding competency V: professional development, the 3rd expert commented that the technologist should know and understand the administration principle of leadership, and regarding competency VI: consultancy, the 1st expert commented that the consultancy and service should be together.

Discussions

From the documentary synthesis and concerned research of educational technologist of local and overseas, the researcher discussed two points; the overall competency synthesis of educational technologist and the discussion from the synthesis resulted

in each of the competencies are as follows:

The first part of the discussion was the overall synthesis result of competency of the educational technologist or a similar profession locally and overseas. It was found that there was a less specific document or research which developed the competency of educational technologist, but only concerned professions or only one competency such as the basic competency of teaching technologist of İzmirli & Kurt (2009), multimedia competency of Rizhaupt & Martin (2014) and studied by Iqdami & Branch (2016) as well as computer technology competency of teachers by Li & Zhang (2016) which most educational technologist in other countries will play the role of teachers as well. Furthermore, Hartley, Kinshuk, Koper, Okamoto & Spector (2010) studied the education and training of educational technologists by Advanced Learning Technology to develop their competency and competency of information technology of Impagliazzo, Sabin, Alrumaih, & Viola (2016). Although it was not the right point with competency development, there was a parallel study of what competencies educational technologists needed to continue working in the future after they graduated.

The study of educational technologist' competency in Thailand found that the government agencies specified the educational technologist's competency, including Department of Medical Service, Ministry of Health and BMA civil servant fixed the job description of educational technologists or relevant jobs such as audiovisual academician, audiovisual staffs, computer academician, computer system staff, photographers, medical educational technologist which each position had specific competency and each agency had the main competency. Most of the agencies used the main competency of the Office of the Civil Service (2010) according to the agencies' requirement as follows: 1) achievement motivation 2) mind service 3) expertise 4) Integrity 5) teamwork which showed that the less study to develop specific competency of educational technologist, therefore the researcher would likely to develop it.

In the second part of the discussion: the researcher presented the discussion following details of 6 competencies:

Competency one: The professional academic knowledge meant that the necessary academic which is relevant to the theory of educational technology process, the knowledge of professions concerning printing technology, audiovisual, computer and integrated technology, knowledge design, and educational knowledge to transfer the professional educational technology. Knowledge competency was the basic important

competency of every profession. According to the rapid change of technology, the educational technologist needed to learn new knowledge and update the change especially the technical knowledge in the digital era. Ally (2019) stated that educational digital knowledge to develop and update the teaching and learning including information technology and communication due to rapid technological change. Per Phankhong (2016), educational technologists who had to work and support the educational personnel needed the basic knowledge of information technology and communication, computer and internet network. According to Tristan-Lopez & Ylicaliturri-Salcedo's idea (2014) which evaluated the competency knowledge of ICT of curriculum framework in many countries such as ICT knowledge, digital knowledge, information knowledge, computer knowledge, technology knowledge, and advanced ICT. For this reason, how the educational technologist did not improve their knowledge competency and self idea whereas their environment concerned was changing and according to Li & Zhang (2016) studied the present situation of competency concerning computer technology competency of teachers. Hartley, Kinshuk, Koper, Okamoto & Spector (2010) studied the research about education and educational technology training by using Advanced Learning Technology to develop the interdisciplinary work widely which included the knowledge competency frame of theory and research design of advanced technology, education knowledge including teaching and learning knowledge. Such a study showed the education preparation to inspect the personnel's adjustment and increase their competency and also to update the technology change in the technology changing world.

Competency two: Professional skills which were also one of the important competencies of educational technologists. It was the ability of media production, computer technology, creative thinking of the educational technologist including basic professional skills of mass communication, photo, radio, television, and graphic, following the 2nd expert's idea who said that "basic professional skill was important and necessary in professional skill competency development even though the technology always changed and new technology happened all the times. However, the technology of the present world changed rapidly and affected the organization which needed the skills of personnel to increase efficiency and effective work and met the expected target as well. For this reason, the competency development framework was set to update the technological world which was entering the digital era. Ally (2019)

argues that educational technologists need learning resources development, increase in digital media utilization suitable with the learners level. This is in line with the idea of Rizhaupt & Martin (2014) and Iqdami & Branch (2016) which survey and check the multimedia competency of educational technologists about professional skills i.e. multimedia production skill, teaching skill, technical skill, and working complicated skills and also following the idea of Fox & Sumner (2014) which analyzed the educational technologist roles to study and survey the activities and skills which developed the necessary competency skills and necessary experience in different work criteria. All were necessary for professional development in the profession. Presently, the trend of organization gave the importance of soft skills in working which the research of Kang & Ritzhaupt (2015) stated the soft skills developed the educational technologist for their success and effected the professional skill adjustment.

Competency three: The professional characteristics meant to the idea presented in the form of behavior indicating the personality of professional education technology operation such as professional ethics, learning curiousness, motivation and teamwork of education technologist. Presently, they were the important competency which stated the ethics, morals, and action from the human mind following the idea of Li & Zhang (2016) which studied the competency of teachers' educational computer technology competency. It stated 2 main ideas: 1) motivation included the feeling of success, career satisfaction, and 2) psychological characteristics included self-confidence, responsibility, and attitude. Furthermore, the ideas corresponded the standard of education technology of the Association for Educational Communications and Technology (2012) about ethics, moral and general competency of civil servants of Office of Human Resources Management, Department of Medical Service, Ministry of Health (2012) in the position of educational technologists which stated the royalty of organization, good relations, and adjustment. It realized that even though the world technology was developed, the most important was the human mind which needed the strength of ethics and morals. According to Narong Phankhong (2016), is it is essential to have ethics and legal knowledge, the right ethics of information technology and communication, self-disciplinary, regulation respect, and no copyright violation.

Competency four: The management meant the procedure of well working plan in educational technology operation and systematic administration plan, usage

management and performance evaluation in the management of projects and resources, the publication of results and information. Since there were many educational technology works but it was lack of system management, thus there were not the highest benefits following the research of Fox & Sumner (2014) which studied the role of educational technologists who should have the management competency, data management, and Impagliazzo et al. (2016) studied the necessary competency of ICT system administration and applied the competency for software management. Furthermore, according to the concept of the Association for Educational Communications and Technology (2012), educational technology can manage technology resources suitably to build the knowledge community in a flexible and varied environment. Phankhong (2016) showed that there should manage classrooms with information technology and communication to improve the learning and teaching and also find the new channel due to the changing of education in the digital era to develop the learners' efficiency.

Competency five: The professional development meant to the action presenting the learning activities of educational technologist's performance in improvement and development initiation by applying knowledge, skills, and attitudes, self-evaluation, professional leadership, and research development to job development of professional technology and per the concept of Fox & Sumner (2014) and Kang & Ritzhaupt (2015) presented the competency of leadership and communications, whereas the concept of Li & Zhang (2016) stated the reflection of teachers' competency in the technology education by self-reflection from their performance. Including the concept of Phankhong (2016), there should self-develop and continuous learning such as communication, digit analysis, information technology, and communication and in compliance with the standard four of the Association for Educational Communications and Technology (2012) referred to knowledge and professional skills with the identification of self-reflection as well according to the above reasons and details of the educational technologist's competency development.

Competency six: Consultancy meant to the action presenting behavior characteristics of educational technologist to advise, coordinate, facilitate and serve concerning the educational technology jobs which corresponded the idea of İzmirli & Kurt (2009) which studied the competency of teaching technologist in advice and service which was the same idea as Impagliazzo, Sabin,

Alrumaih, & Viola(2016) and Kang & Ritzhaupt (2015). Furthermore, the coordination to support jobs according to the idea of Fox & Sumner (2014) and Cenkner, Sonnenberg, von Hauff, Wong (2017) who studied the competency framework about the role of medical educational technology expert. Also, the idea of Ally (2019) supported the facilitation of learning both realness and virtual reality of learners, consultant, and trainer in the digital era which supported the continuous development and met the need of learners' learning.

In conclusion, the results of the synthesis of competency framework of educational technologists according to the development process mentioned above can be utilized in actual practice and will benefit the whole profession to being more accepted by society. Due to higher professional standards, it creates credibility, builds confidence and security in the careers of educated technologists. Clarion of position and responsibility does not overlap with the opposition as well as enabling curriculum management that can be carried out effectively by following the standard of developed competency and indicators. Also, the framework enables educational organizations to prepare their graduate students for the public and private sector effectively.

Recommendations

The research just studied the synthesis of the competency framework of educational technologist based on the documentary and researches concerned which the result will lead to the following research studies as follows:

1. Research studies about the competency guidelines and competency indicators of Educational technologists.

2. The application of professional competencies and competency indicators of educational technologists as a framework for selecting educational technology personnel to work for stakeholders or organizations in the public and private sectors.

Acknowledgments

This research was supported by a Ph.D. Scholarship from The Office of the Higher Education Commission, Thailand, and a grant from The 90th Anniversary of the Chulalongkorn University Fund (Ratchadaphiseksomphot Endowment Fund).

References

Achcaoucaou, F., Forgas-Coll, S., & Palau-Saumell, R. (2014). Exploring the Use of an ICT-Based Tool for assessing Competencies in Postgraduate Students. In M. Peris-Ortiz, F. J. Garrigós -Simón, & I. Gil Pechuán (Eds.), *Innovation and Teaching Technologies: New Directions in Research, Practice, and Policy* (pp. 87-97). Cham: Springer International Publishing.

Ally, M. (2019). Competency Profile of the Digital and Online Teacher in Future Education. *International Review of Research in Open and Distributed Learning*, *20*(2). doi: https://doi.org/10.19173/irrodl.v20i2.4206

Association for Educational Communications and Technology. (2012, July 16). *AECT Standards, 2012 version*. Retrieved from https://c.ymcdn.com/sites/aect.siteym.com/resource/resmgr/AECT_Documents/AECTstandards2012.pdf

Cenkner M, Sonnenberg L, von Hauff P, Wong C. (2017). Integrating the educational Technology expert in medical education: A role-based competency framework, *MedEdPublish*, *6*(2), 1-19. doi :https://doi.org/10.15694/mep.2017.000079

Foulger, T.S., Graziano, K.J., Schmidt-Crawford, D. & Slykhuis, D.A. (2017). Teacher Educator Technology Competencies. *Journal of Technology and Teacher Education*, *25*(4), 413-448.

Fox, O., & Sumner, N. (2014). Analyzing the Roles, Activities, and Skills of Learning technologists: A Case Study From City University London. *American Journal of Distance Education*, *28*(2), 92-102. doi:10.1080/08923647.2014.897465

Hartley, R., Kinshuk, Koper, R., Okamoto, T., & Spector, J. M. (2010). The education and training of learning technologists: A competencies approach. *Journal of Educational Technology & Society*, *13*(2), 206-216.

Impagliazzo, J., Sabin, M., Alrumaih, H., & Viola, B. (2016, April). An information technology competency model and curriculum. In *2016 IEEE Global Engineering Education Conference (EDUCON)* (pp. 892-895). IEEE.

Iqdami, M. N., & Branch, R. M. (2016). Examining Multimedia Competencies for Educational Technologists in Higher Education. *TechTrends*, *60*(4), 365-373. doi: 10.1007/s11528-016-0064-1

İzmirli, Ö. Ş., & Kurt, A. A. (2009). Basic competencies of instructional technologists. *Procedia-Social and Behavioral Sciences*, *1*(1), 998-1002. doi: http://dx.doi.org/10.1016/j.sbspro.2009.01.178.

Kang, Y., &Ritzhaupt, A. D. (2015). A job announcement analysis of educational technology professional positions: Knowledge, skills, and abilities. *Journal of Educational Technology Systems*, *43*(3), 231-256.

Khammanee, T. (2018). *Teaching Knowledge: Body of knowledge for learning efficient Process.* (22nd printing). Bangkok: Chulalongkorn University.

Li, F., & Zhang, M. (2016). Based on computer technology of educational competency research for preschool teachers. In *the 2016 11th International Conference on Computer Science & Education (ICCSE)* (pp. 704-707). IEEE.

Office of the Civil Service BMA Committee. (2015). *Competencies of permanent BMA civil servant group*. Retrieved from http://office.bangkok.go.th/csc/images/Files/Completency/completency_groupN.pdf

Office of the Civil Servants (2010). *The manual of specifications of knowledge, skills and Competencies of positions*. Retrieved from https://www.ocsc.go.th/sites/default/files/document/25531130-khuumuuekaarkamhndkhwaamruukhwaamsaamaarth-thaksa-aelasmrrthnasamhrabtamaehnng-ISBN-9786165480703-ephyaephr-2553.pdf

Office of Human Resources Administration, Department of Medical Service, Ministry of Health. (2012). *Competencies of general civil staffs of Department of Medical Service B.E. 2012*. Retrieved from http://203.157.39.7/hrm/2012/capacity/2_c1.pdf

Phankhong, N. (2016). *The indicator Development of Competencies of information and communication technology of Rajabhat Universities' lecturers*. [Doctoral dissertation, King Mongkut's University of Technology North Bangkok] Bangkok.

Phomwongse, C. (1991). Framework and role of educational technology. *Journal of Sukhothaithamathiraj*. *4*(2), 2-9.

Ritzhaupt, A. D., & Martin, F. (2014). Development and validation of the educational technologist multimedia competency survey. *Educational Technology Research and Development*, *62*(1), 13-33. doi:10.1007/s11423-013-9325-2

Smitikrai, C. (2013). *Recruitment, selection and evaluation performance of staff*s (4th Printing). Bangkok: Chulalongkorn University Press.

Thammetha, T. (2003). *The development of performance standard of educational technology work in Higher Education of Thailand*. [Doctoral dissertation, Chulalongkorn University] Bangkok.

The Ministry of Information, Communication, and Technology (2016). *Digital Development for National Economic and Social*. Retrieved from http://www.mdes.go.th/assets/portals/1/files/590613_4Digital_Economy_Plan-Book.pdf

Tristán-López, A., & Ylizaliturri-Salcedo, M. A. (2014). Evaluation of ICT competencies. *In Handbook of research on educational communications and technology* (pp. 323-336). Springer, New York, NY.

UNESCO. (2018). *UNESCO ICT Competency Standards for Teachers Version 3.0.* Retrieved From https://www.gcedclearinghouse.org/sites/default/files/resources/190056eng.pdf