The study of Information and Communication Technology Knowledge of Teacher Professional Students Phetchabun Rajabhat University

Pattawut Wongsak * and Thanawat Chalermpong
Phetchabun Rajabhat University, Thailand
E-mail: pattawut.won@pcru.ac.th* and thanawat@pcru.ac.th
*Corresponding author
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Abstract

This study intends to examine the five areas in which teacher professional students at Phetchabun Rajabhat University are knowledgeable about information and communication technologies. However, the target group used in this research was purposive sampling. In this research being an applies research, the research model to be used is quantitative research. The tools used in the study are the knowledge of information and communication technology. The statistics used in data analysis are mean ($\bar{x}$), standard deviation (S.D). According to the findings, the sample group possessed solid information technology competence. In any event, the findings of a study on the technological literacy of Phetchabun Rajabhat University students majoring in teaching indicated that these students had generally strong information technology access abilities. It was discovered that pupils of instructors had the best technological understanding after classifying knowledge of access to technology into five categories, there is little utilization of creative and technological managerial abilities. From the foregoing results, it demonstrates that the information technology literacy of teaching professional students has other elements that make the skills in the very excellent and least, such as the environment of the technology users, etc.

Keywords: ICT literacy, Integrated learning, Retention

Introduction

The new national strategy, which stresses the use of science and technology in teaching and learning and includes a strategic action plan with five goals to drive it, is being used to reform education in Thailand. Is to train workers to be capable of thriving in the digital economy and society. (Action plan to guide the five-year Development Plan for the Digital Economy and Society from 2017 to 2021). The Thai government is now conscious of the urgent need to employ digital technology as a key tool in the country's transformation towards stability. prosperous and sustained, on September 30, 2015, the Cabinet decided that the nation's information and communication technology (ICT) master plan would be replaced with a development plan for the digital economy and society that would be created by the Ministry of Digital Economy and Society. By adopting contemporary, diverse digital technologies, businesses, people's lives, and government operations will be transformed, leading to economic prosperity that is competitive on the international stage and enhancing social stability in the nation. This is the goal of the government's Digital Economy and Society policy, which will be implemented in accordance with this framework. This teaching communication focuses on how to develop knowledge for students, rather than on teaching and learning in the classroom, in addition to introducing new innovations to the creation of contemporary teaching materials. Nevertheless, the emphasis will be on how to manage the knowledge of students who use ICT media, with ICT media focusing on utilizing computers as the heart in developing instructional material, other factors to consider include the number of classes and study time. (Ausubel, 1963) In addition to creating modern teaching materials that emphasize the use of ICT, teachers also need to be skilled in using this teaching method as well. In addition, Rajabhat University development plan, which focuses on students to develop innovations to enhance learning management in the 21st century and toward education 4.0, identifies the production and development of teachers as the second strategic issue (New strategy of Rajabhat University for local development according to the 20-year royal policy, 2017–2036).

The knowledge and skills necessary to use information and communication technology, including access to information, management, integration, evaluation, and creation through the application of creative design and extensive use of information technology, are therefore required of learners or youth who are a significant force in driving the nation's development. (Barman & Michacel, 1989) The emphasis on self-study in order to apply the learned information to develop new innovative media centers on how to instill knowledge into learners since teaching and learning in the present era focuses on students having learning abilities for the 21st century. According to the action plan to guide the strategic development of the 5-year Digital Economy and Society Development Plan 2017–2021 and the new national strategy that places an emphasis on the introduction of science and technology to be used in teaching and learning so that students are prepared to learn in various fields. Knowledge of such information and communication technology will aid in the creation of various learning processes that can be used to extend knowledge and also prepare students and youth to bring the knowledge gained to further the development of the nation, this will help develop manpower that is prepared for the digital economy and society era.

The researcher would like to use Denmark as an example. Denmark is a country in Europe with the highest e-Government average in the European area and the highest e-Government average out of the 193 member states of the United Nations, with a trend of increasing averages since 2018. Denmark has created a digital strategy that focuses on using electronic systems to link technology to activities and systems utilized by the national and municipal governments. Denmark has a strategy that uses a digital key called NemID to enable

residents to access more than 100 governmental services quickly and securely. A secure mailbox is used by both the public and private sectors on all platforms to facilitate communication between the government and the nation's citizens. (Senn, 2004) With the second-highest digital government average in the E-Government Index and one of Asia's most technologically proficient nations, South Korea is regarded as a pioneer in the use of e-government for public administration. The Ministry of Home Affairs and Interior published a vision and strategic plans regarding e-Government in the 21st century in 1998 with the goal of becoming a high-quality government that offered cutting-edge electronic services to the citizens of the nation. Such a scheme has set up a one-stop service agency that is prepared to push non-stop service non-stop service as well as entirely connecting information systems to serve customers anytime, anywhere in a transparent and verifiable manner.

Therefore, those who will be teachers in the future must play a significant role in ensuring that these students or youths have the knowledge and aptitude to understand and apply information and communication technology, as well as the ability to design imaginative works for students to apply knowledge in teaching and learning, these teachers must be professionals. (Billings, 2002) The standards of professional knowledge and experience of teacher's practitioners of the regulations of the teacher's council of Thailand on standards the profession and professional ethics say that the teacher practitioner must have standards of professional knowledge and experience. Standards for teachership, professional experience, curriculum development, learning management, psychology for teachers, educational measurement and evaluation, classroom management, educational research, innovation, and educational information technology, as well as standards for knowledge, language proficiency, and technology. Because information and communication technology literacy are an essential ability that must be employed in the teaching and learning process to teach learners of them, instructors of professional students must have a working understanding of information and communication technology. To follow the guidelines of the new national strategy, which emphasizes the use of science and technology in teaching and learning, educators should place more emphasis on encouraging students to learn on their own so they can apply the knowledge they have acquired to create new innovative media, build a body of knowledge for students, and be able to use it in other contexts. Also, in accordance with the action plan to support the five-year Digital Economy and Society Development Plan 2017–2021, which aims to create a workforce prepared for the country's continued development in the digital economy and society period. (Caine & Caine, 1991)

Thus, instruction in technology and communication literacy among teaching students is seen as vital for understanding of information and communication technology and is a talent that is crucial for both their own and their future students' learning in the modern classroom. So that those entering the teaching profession will be able to put the information they have learned to use in their own teaching and learning, helping the nation to advance and improve in quality.

Research Objectives

To study perceptions of information and communication technology among teaching profession students of Phetchabun Rajabhat University.

Methodology

The stages involved in conducting a study on training professional students' use of information technology and media literacy are as follows:

1. The target group used in the research: the target group for the study was the Phetchabun Rajabhat University teaching profession students, who studied in undergraduate years 1-4 in the academic year 2018, totaling 1372 individuals, the samples used in this study were the Phetchabun Rajabhat University teaching profession students, who studied in the first year of their bachelor's degree in the academic year 2018, totaling 286 individuals. However, the target group used in this research was purposive sampling. The individual who will teach in the future must play a significant role in the development of such students or youth in order to have the knowledge and skills to understand information and communication technology, specifically access to information, management, integration, evaluation, creation, application, design, and create results for students to apply their knowledge in teaching and learning.

2. Research instruments utilized in the study: a questionnaire on the understanding of information and communication technology among Phetchabun Rajabhat University students pursuing careers in teaching served as the study's instrument.

3. Development of research instrument: the following five steps were used in the creation of a research questionnaire on education, information technology literacy, and communication for students pursuing careers in teaching;

3.1 Research and gather data from books, articles, and research connected to information and communication technology understanding of teaching professional's students for use as educational data.

3.2 In order to build the questionnaire in line with the research on information and communication technology literacy, study data regarding data was used as the information.

3.3 Use reference materials, textbooks, and relevant research to learn how to develop questionnaires.

3.4 Use the data collected to build a questionnaire, the questions were then grouped into five categories in accordance with the understanding of information and communication technologies, including: area 1 use of information and communication technologies is accessible, area 2 information and communication technology management, area 3 integration of information and communication technology, area 4 evaluation of effective data selection, and area 5 creative design of works from information and communication technology.

It was decided on the format of the information and communication technology knowledge test for teaching professionals, which was a 3-part questionnaire with a 5-level estimate scale; Part 1: general Information of Respondents is a choice, Part 2: students who are teaching professionals' information and communication technology knowledge There are five estimating levels on the scale, the following factors can be used to assess someone's level of information and communication technology knowledge; (1) the average of 4.50 – 5.00 represents the highest level of information and communication technology knowledge, (2) the average of 3.50 – 4.49 means the knowledge of information and communication technology is high, (3) the average of 2.50 – 3.49 means information and communication technology knowledge level is medium, (4) the average of 1.50 – 2.49 means knowledge of information and communication technology is low, (5) the average of 1.00 – 1.49 means the lowest level of information and communication technology knowledge, and Part 3: other suggestions.

3.5 One measurement and evaluation expert reviewed the completed questionnaire to ensure that it was accurate and that teaching professional students' knowledge of terminology related to information and communication technology was up to date. The measurement and

evaluation experts did this by doing the following; professionals with the necessary training in measurement and evaluation have six years of teaching, measuring, and evaluating experience.

3.6 Submit the amended questionnaire, as advised by measurement and evaluation experts, and must have the qualifications of an expert who must have experience in information technology, especially in the field of communications, to the experts for review and repair of any errors in the content, suitability of the language, and the subject matter to be assessed. All four experts offered their comments based on the information's substance and language, taking into account the language's appropriateness as well as any areas for development;

3.6.1 Information content expert there is a feature experience in teaching innovation and educational technology, having experience in teaching innovation and technology in education, and planning and developing instructional media for 3 - 5 years or more.

3.6.2 Thai for Communication, Thai for Teachers, Thai Language Learning Management, and Fundamentals of Thai Language have been taught by trained language experts with three to five years or more of teaching experience.

3.7 Determine the expert's score to determine the content consistency (Index of Consistency: IOC) between the question and the objective to be measured, which is determined using the formula;

+1 point when making sure that the item has content that corresponds to the variable you want to study.

0 points when it is not sure that the contents of the item are consistent with the variables to be studied.

-1 point when it is certain that the content of the item is inconsistent with the desired variable.

Take the outcomes from the expert's consideration to choose the question that the expert has considered that the question is compatible with the stated terminology definition, taken to discover the mean, and taken to compare the criterion larger than or equal to 0.5. (Lasuwong, 1981) The content validity study of the questionnaire with the specification of particular terms to be tested produced findings that ranged from 0.66 to 1.00, indicating that the questions are correct in their substance and can be measured in accordance with the intended purpose.

3.8 To gather data, the Phetchabun Rajabhat University teaching profession students published the original questionnaire on their understanding of media and information technology.

Results

From research on the study of information and communication technology knowledge of teacher professional students Phetchabun Rajabhat University, it was found that the knowledge of information technology and communication of the teaching profession students of Phetchabun Rajabhat University in the overall level was at a high level ($\bar{x}$ =4.10, S.D.= 0.72) divided by components into 5 aspects as follows;

Part 1: Phetchabun Rajabhat University teaching professional's students have widespread access to information and communication technologies at a high level ($\bar{x}$ = 4.06, S.D. = 0.74). In a society where people feel that accessing and exploiting digital technology and information is the cornerstone for success both economically and socially, students must understand the Internet and many means of accessing it, as well as its advantages and the drawbacks of each channel. For students to be able to use search engines to get the information

they need on the Internet, it is also critical that they understand various digital media formats, including the apps that are now in use.

Part 2: Overall management of information and communication technology was at a medium level among Phetchabun Rajabhat University teacher professional students ($\overline{x}$ = 3.94, S.D. = 0.74). In this regard, students have an understanding of information technology management that can be classified into three key management strategies: (1) information system strategy, (2) information technology strategy, and (3) management information system strategy. The organization's operational methods, i.e., the information systems that will be required, who will use them, and how they will be utilized to all forms of work, must be tied to and consistent with these three strategies. What management system is employed to distribute resources and control how they are utilized, and what information technology is employed to create a system to achieve its goals.

Part 3: Teacher professional students of Phetchabun Rajabhat University had overall integration of information and communication technology at a high level ($\overline{x}$ = 4.15, S.D.= 0.74). It was found that students have knowledge of and understanding of computing technology, which is an electronic device that can be used by generated instructions, also known as "Program" or a set of created instructions, create jobs, make information, compute, and conduct business on the Internet. It is essential to incorporate database technology as a source of data stored in the form of "Digital Code" to be developed alongside computer technology because computer technology is useless without data or programs that can be stored and retrieved quickly in large quantities to meet the needs of students. Additionally, telecommunication technology, sometimes known as telecommunication technology, is a type of communication technology that makes it simpler to link information through an operating system.

Part 4: Teaching professional students of Phetchabun Rajabhat University had an overall assessment of effective data selection at a high level ($\overline{x}$ = 4.17, S.D.= 0.73). Another important aspect of digital literacy is information literacy, which involves the ability to determine the information that kids need, literacy, techniques for finding that information online, and understanding of the evaluation and use of that information. Since libraries were the original target audience for information literacy, it is also a good fit for the current digital era, when there is a wealth of unfiltered internet information, making it crucial to be able to critically evaluate sources and material, according to an assessment of the development of learning management skills among students using information technology media.

Part 5: Teacher professional students of Phetchabun Rajabhat University had a high overall level of creative design of information and communication technology ($\overline{x}$ = 4.18, S.D.= 0.67). It goes beyond merely knowing how to use a word processor and send emails when students are proficient in using a variety of digital media tools to generate content and communicate effectively. This involves producing using digital media. Nevertheless, it also calls for the ability to adapt what students produce for a variety of contexts and target audiences, the ability to create and communicate using rich media, such as images, video, and audio, as well as the ability to effectively and responsibly engage in Web 2.0 features like blogs, image and video sharing, and other social media platforms.

In this regard, the recommendations of Phetchabun Rajabhat University teaching professional students regarding their knowledge of information technology and communication reflect that "Digital literacy" refers to the ability to bring tools, equipment, and technology that are currently available digital devices, such as computers, phones, tablets, computer programs, and online media, and make the most of it. Whether in communication, operations, and cooperation, or utilized to enhance work processes or work systems in the organization to be cutting-edge and productive.

Discussions

In light of this, the findings of a study on the technology literacy of Phetchabun Rajabhat University teaching professionals revealed that, when knowledge of technology access is divided into five areas, teaching professionals have generally strong information technology access abilities. It was shown that teacher professional students had the finest technological knowledge in terms of utilizing creative faculties and little in terms of managing technology. According to the aforementioned findings, additional factors, such as the environment in which technology users operate, etc., influence the information technology literacy of teaching professional students to either the highest or lowest degree. Therefore, the researcher can discuss the results as follows;

Findings 1: Access to the use of information and communication technology, students must comprehend the internet and have access to it through a variety of channels if they are to acquire and utilize digital technology and information as a basis for development and economic success. It is also required to comprehend the many forms of digital media and how they are used today in order to effectively utilize the “Search Engine” to locate the requested information from the Internet, as well as the advantages and disadvantages of each channel. This is in line with the research of Panjatawee (2017) on Factors Affecting the Adoption of Information System A Case Study of the Institute of Physical Education Chiang Mai Campus, the goals were to research factors influencing how well people utilize information systems and to develop a formula for predicting how well people at the Institute of Physical Education, Chiang Mai Campus, will use information systems. There were three factors identified as influencing the acceptance of information system use by staff at the Chiang Mai Campus of the Institutes of Physical Education: the support of supervisors for information technology, the expectation of information technology efficiency, and the perception of information technology benefits, at the statistical significance level of 0.05. General status factors, attitude factors toward information system use, perceived ease of use of information systems, and the ability to form predictive equations and accept the use of information systems as standardized scores were the factors that did not have an impact on acceptance of information system use.

Findings 2 : Information and communication technology management, planning, acquiring, gathering, storing, managing, and communicating information to users for the purpose of effective utilization while utilizing information technology as a tool is known as information management, to enhance Improve the organization's managerial and operational skills, foster innovation, boost its competitiveness, and make efforts to become a learning organization. This is consistent with the research of Thitikornprapapong (2015), who researched the information technology management affecting to internet using the learning processes of teachers in school under Phetchaburi Primary Educational Service Area Office 2. The research results showed that; the information technology management in school, as a whole and each aspect, were at a high level, the infrastructure was at highest ranked, followed by the promotion to using information technology, the human resource development, and the management, respectively.

Findings 3: Integration of information and communication technology, by connecting communication technology, computer technology, and database technology, information technology integration for public administration plays a crucial role in the transformation of information service models. Students learn how to facilitate communication with service recipients or stakeholders through the integration of information and communication technology. This includes communication and collaboration between information systems inside and outside the organization, which is a crucial tool for gaining access to the agency's

services and achieving management and service provision goals. This is consistent with the research of Bunruangjak (2016) who researched on integration information technology to administrate, the research results showed that; integration information technology to administration is an important for transforming. Methods of public data service with technology connecting, computer technology, and database technology are connecting with user or stakeholder including connecting with internal and external information technology system. These are important tools to reach government services for management and services achievement. In addition, improving of government working efficiency, and improving of information technology services for developing economy and society are important tools to reach government services. These are close and will cooperate from government, private, and people. With the expectation, Thai Government System will change to new administration, process, and efficiency.

Findings 4: Assessment of effective data selection, information evaluation is the process of determining whether material from a search is valuable, credible from an academic standpoint, and chosen from a variety of information sources, including libraries and the Internet, by assessing the information, it is possible to gain important information and apply the information effectively. Unused information, such as information that does not satisfy demands, the content of which is outdated, or material that is academically unreliable, may all be evaluated. This, however, is consistent research with Chatan (2019), which claims that information assessment principles evaluate the credibility and modernity of information, taking into account whether or not it is credible information and how reliable it is, the credibility assessment has details to take into account, such as; while evaluating the reliability of sources for information and communication technology, one should take into account how the sources were gathered, institutional sources are the most trustworthy sources of information and communication technology.

Findings 5: Designing works from information and communication technology creatively, using communication and information to inform the design of a piece technology used artistically is a choice made to improve one's quality of life for both the individual and others around them, it should also be safe, appropriate for local conditions, and environmentally friendly. In this sense, creating works from information and communication technology creatively is a process of transferring ideas about how to solve issues or satisfy wants, resulting in the production of prototypes of items that assist, convenient in everyday life, or describe a technique as a framework for problem-solving and reporting to offer a method that includes taking action to address a need or address an issue in order to accomplish a certain goal. This is consistent with the research of Jongpattanakorn (2019) who studied information systems design for an information technology project in a special problem course, this research was aimed to study and design information systems for instructional purposes which were used as a case study in an information technology project. The sample group was 17 students who studied special problem course. Methods of data collection were questionnaire and working-software. Key performance indicators in this study included 17 information systems, usability of the systems, the systems accuracy and completeness. The instruments comprised time for developing the systems, document, and results of the systems performance evaluation. Data were analyzed in terms of percentage and mean. The result of this research showed that 15 from 17 information systems making up 88.24% could be delivered on time.

As a result, it is clear that educators need to prepare their students for a world in which digital learning content will displace traditional learning materials and play an important role in education. General textbooks will no longer be used in place of course materials that are based on basic theory because the latter are subject to sudden changes. Digital learning content will replace it since it can be readily modified afterwards, similar to computer and science content. Digital learning content will enable people who are interested in a variety of areas to

get knowledge from the subject matter, without having to visit an educational institution, as the usual book manufacturing process takes a long time. The creation and innovation of new forms, which will make the material more accessible and engaging, is also important for the future of digital learning content. It will not simply depend on readers. Additionally, when more newspapers, journals, magazines, and other print publications are created in a digital format in the future, the learning content digitalization will result in a change in the print market. (Reungsri & Dhedchawanagon, 2021)

Conclusion and suggestions

Digital literacy, also known as information technology and media literacy, is the ability to utilize modern digital tools, devices, and technologies, such as computers, phones, tablets, computer programs, and online media, to the fullest extent possible for communication, performance, and collaboration, is utilized to create more contemporary and effective work procedures or systems inside the company. It is also a fundamental digital skill that will assist everyone in operations, communication, and collaboration with others in a way that allows them to “work less but get more impact”, and it will assist government organizations in creating value (value co-creation), and operational value (scale economies), as they move towards Thailand 4.0. It is also a tool to assist everyone in learning and growing so they may find suitable employment possibilities and further their careers in government (learn and growth). According to the research on information technology management's findings, the management aspect was average and at the lowest level. As a result, the researcher advised those involved in the study's management to plan and design information technology systems and to communicate in a way that will meet the needs of all students using technology. Additionally, information technology management should be managed, promoting the use of information technology, and personnel development affecting the use of the Internet in organizing the learning process of students in educational institutions, so management of these five areas should be promoted even higher, and those in charge of education management should reorganize basics to be more successful because students will have a better and more effective learning process if educational institutions operate on information technology and effectively communicate in university.

New knowledge and the effects on society and communities

The technological proficiency of Phetchabun Rajabhat University vocational students will inevitably lead to future applications in the placement of full-time instructors in schools where the school and community will need to work together. On the topic of community education technology and resource-combining community education innovation, instructors can use the knowledge they have acquired to manage learning for students and for the community. (Khantakhet, 2015) At the local and societal levels, science and technology are combined with the knowledge and human capital of the neighborhood and community for the development of the operating system and self-management of the community for the community and community members from individual level families with various types of associations, as well as community-based groups of interests with common issues to practice and learn. In order to produce economic results, create opportunities, and increase the capacity to achieve goals in line with the sufficiency economy philosophy and new solutions for Thai and global society, one must act in a way that promotes the general welfare of the community, effectively address the problems that individuals and communities face, and address problems in a way that addresses them. (Klinkaset, 2010)

The community transforms into a learning and social action unit to dynamically control change by limiting opportunities for future generations while also being consistent and in accordance with community and local ready situations. Communities should be able to control their own growth in line with that of external societies, including social and cultural movements, communication, and information, in addition to fostering a strong sense of community. In order to strengthen communities and promote civic virtue, as well as to increase opportunities for initiative-taking, contribute to society's general well-being, and bring about the changes that people in society are increasingly desiring, social and structural reforms are required. (Benjatheprasamee, 2017)

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