Development of Information and Communications Technology Competencies for Undergraduate Students

Sangtong Boonying[1*], Pradit Songsangyos[2*]

[1*]Rajamangala University of Technology Suvarnabhumi
Thailand
e-mail: sangtong.b@rmutsb.ac.th
[2]Rajamangala University of Technology Suvarnabhumi
Thailand
e-mail: pradit.s@rmutsb.ac.th

Abstract— This study aimed at 1) Development of information technology competencies for undergraduate students according to the needs of enterprises. 2) To evaluate the ability of information technology competencies for undergraduate students according to the needs of enterprises by the experts. Data collection by a simple random sampling from 30 enterprises which employ the undergraduate students of Rajamangala University of Technology Suvarnabhumi, to inquire about the information technology competencies of the undergraduate students those relevant to the enterprises' needs. For the scope of further development of the information technology competencies of the undergraduate students, Rajamangala University of Technology Suvarnabhumi in all fields of the study. Then evaluate the information technology competencies by 5 experts.

The study show that: 1) the information technology competencies of the undergraduate students according to the needs of the enterprises including 7 Core Competencies as, Network and Internet Management; Selection of appropriated Computer and peripherals; Operating system usage; Utilities software and data storage usage; Computer and peripherals usage; Office application usage; and Network and Internet usage. 2) The suitability evaluation of the information technology competencies of the undergraduate students according to the needs of the enterprises by the experts, in the overall with the average of 4.23 and the standard deviation of 0.61. So the suitability in a high level. This can be conduct to the information technology competencies of the undergraduate students according to the needs of the enterprises..

Keywords- Competency, Information Technology, Enterprises

I. INTRODUCTION

The advantages of information technology today. As a result, government agencies and private organizations have introduced more information technology in the organization. So personnel need to have knowledge and understanding of the application of information and communication technology. In order to be able to respond effectively to the use of information systems within the organization. In 2011-2020, Thailand's Information and Communication Technology Policy is focused on the role of Information and Communication Technology for public services. Reduce inequality Facilitate access to national public resources and services with equal use of ICT to strengthen the manufacturing and industrial sectors. (Information and Communication Technology Framework). The importance of using information technology has become a necessity in every organization. And every country has turned into its own business. The National Education Act, BE 2542 (1999) and Amendments (No. 2), 2002, require the use of information technology. To have the knowledge, ability to use the appropriate technology, quality and efficiency. It appears in Section 9 that the technology for education involving teachers and learners is directly related to the state. Encourage research and development. Production and development of textbooks and other printed media. Materials, equipment and technology for education. The development of personnel, both the manufacturer and the user of technology for education. Teachers must have the opportunity to study knowledge to practice their skills in the development of teaching materials. In order to improve the ability of the students to use technology for education. This will lead to self-study throughout the life. With the rapid development of information technology, every organization has invested in bringing information technology into the organization. The need for information technology based employees to drive business within the organization. As a result of the study, Ladabutra, et al. [1] found that technological advancement was rapidly

changing. For this reason, graduates in all desirable disciplines of the establishment. It must be a person who has the knowledge, understanding and basic information technology skills that can actually work.

Rajamangala University of Technology Suvarnabhumi Is a public higher education institution under the supervision of the Office of the Higher Education Commission under the Ministry of Education. To produce graduate students in professional and technology fields for community, society, nation and international. Encourage students to develop their knowledge of information technology before graduation. To add value to all graduate students of the university. In the past, the development of information technology for graduate students. There is no core competency in graduate development. The development of information technology skills of graduates in each field of study has different approaches. Impact on the effectiveness of the difference. Lack of a clear identity in the development of information technology skills for graduates of Rajamangala University of Technology Suvarnabhumi. Therefore, this research has the concept to improve the information technology and to evaluate the suitability of information technology competencies for undergraduate students of Rajamangala University of Technology Suvarnabhumi. Reflecting the needs from the entrepreneurs. To be a core competency in the development of undergraduate students in all fields of study of the university in the future.

II. Literature Reviews

At present, higher education institutions in Thailand are focusing on developing undergraduate students in all fields to have the knowledge and skills in using information technology. The graduate students to be accepted by the employer. The study of determining the factors for the information technology competency of undergraduate students. This is consistent with the research conducted by Paopanao [2], who conducted a study on the performance of information and communication technology for learning of undergraduate students. It was found that the competencies needed to use information and communication technology for learning of skill students were: Skills in using word processing. Skills in using the spread sheet. How to use the computer properly. The use of peripherals. Skills in computer maintenance. Skills in using the web browser. Skills in using information and communication technologies to collect, store and present information in the form of multimedia. Skills in using the hardware and storage devices. Skills to define the searching keywords to find information over the Internet. Skills for using the program for designing and building websites. File transfer application skills. Skill in short communication via mobile phones. Besides the ability to use the program to capture the screen shot. Editing video in multimedia. The results of this research are consistent with [3] said that learners should have the ability to use technology and communication as a tool. Learning effectively in accordance with Nash [4] who studied computer skills of first-year students at the University of South Africa, found that the students should have the basic knowledge of computer use. Understanding the General Features of a Computer. In addition, can take advantages of Computer in appropriate contexts and skills. Students should use the internet to learn effectively. It is consistent with [5] Suan Dusit Rajabhat University students should have communication skills: Students have the skills to send emails, using the Web Board, Blog and can download and upload files over the Internet. Can communicate via social network and online media. Information and communication technology: Students should have skills in using IT equipment and basic computer programs. It can solve problems of computer maintenance and system. Preliminary network Assessment: Students should have the skills to determine the credibility and validity of the content of the information which they found on the Internet and to correctly cite the information which they found in the media. To manage files and folders systematically. Can be backed up to any device appropriately. Besides, the ability to convert files and share them with others. Information Access: Students should have the skills to searching information and use the search tools. Have skills in using keywords. Integration: Students should have the skills to apply the software properly. Social Media can be used for communication and exchange of information. They can also analyze and select information efficiently. Information technology: Students should have skills in creating multimedia materials.

III. Research Methodology

This study uses both qualitative and quantitative methods as follows.

1. The Research Process divided into 3 phases.

Phase 1: Synthesis of Competencies as following:

Step 1. Content analysis from related papers both in the country and abroad, including competency, information and communication technology skills. Characteristics of undergraduate students in the 21st century. This is a framework for developing information technology competencies for undergraduate students.

Step 2: Distributed a questionnaire to ask about the information technology features of the desirable employees of the enterprises. Then 30 enterprises were selected by simple random sampling. In order to meet the needs of the enterprises, it is the framework for developing the information technology competencies for undergraduate students.

Step 3. Develop the information technology competency for undergraduate students.

Phase 2 Expert Group Meeting was conducted as the following:

Step 1. The selection of experts from the faculty members of Rajamangala University of Technology Suvarnabhumi. There were 17 experts in information technology of faculty members from six faculties, and

staffs from the Office of Academic Resources and Information Technology.

Step 2. Expert Group Meeting to receive feedback and improve the information technology competency for undergraduate students developed by the research team. To be a core competency for all Entrepreneurship.

Step 3. The researcher improved the draft of IT competency for undergraduate students. Follow the advice of experts from six faculties, delivered to each expert for review and summarized. Information Technology for undergraduate students, Rajamangala University of Technology Suvarnabhumi.

Phase 3 The researcher conducted the assessment as following:

Step 1. Select 5 qualified person who is the manager of the department from the Entrepreneurship randomly.

Step 2. Distributed the Information Technology competency for the undergraduate students of Rajamangala University of Technology Suvarnabhumi to the experts for evaluation.

Step 3. Collect the evaluation results from all experts and analyze the results of the assessment. Finally, write a research report and submit the findings to each faculty.

IV. RESULTS

4.1 Results of the Study of ICT competencies for undergraduate students of the Entrepreneurship

Based on the study of ICT competencies for undergraduate students of the Entrepreneurship, it was found that the users had the needs for undergraduate students with information technology competencies. Sort by descending order as follows. Operating system level is at the highest level (mean = 4.55), Selection of computer Equipment (mean = 4.48), Network Management and Communication over the Internet skills (mean = 4.42), Network and Internet Usage skills (mean = 4.34), usage of utilities and recording devices skills (mean = 4.34), skills in using office applications (mean = 4.21), and the computer skills and equipment used (mean = 4.13), respectively

4.2 Results of development of ICT competencies for undergraduate students

The study found that the ICT competencies for undergraduate students consisted of 7 core competencies as follows

1. Network Management and Communication over the Internet
2. Selection of computer Equipment
3. Operating System Usage
4. Utilization of utilities and recording devices
5. Use of computer and peripheral devices
6. Office Skills
7. Network and Internet Usage

4.3 The results of the evaluation of the ICT competencies for undergraduate students from the experts

The study found that the experts agree with the information technology competency of the Rajamangala University of Technology Suvarnabhumi. The overall average score was 4.23, indicating the highest level of agreement. When considering the competencies. It was found that most experts agree with the competency of office applications. The average was 4.60, followed by the performance of network and internet. The average score was 4.40. Subsequently, the experts agreed with the competency of computer equipment. Utilization of utilities and recording devices. Competency of computer and peripheral devices. The average was 4.20. Experts agree on networking competency, Internet communication, and operating system competency. The average is 4.00, but the level of opinion is still at the highest level. Reflect that ICT competencies for undergraduate students can be used as a core competencies for the undergraduate students of Rajamangala University of Technology Suvarnabhumi.

V. CONCLUSIONS AND RECOMMENDATIONS

The study found that the ICT competencies for undergraduate students consisted of 7 core competencies as follows: 1) Network Management and Communication over the Internet 2) Selection of computer Equipment. 3) Operating System Usage 4) Utilization of utilities and recording devices. 5) Use of computer and peripheral devices. 6) Office Skills 7) Network and Internet Usage. When the competencies was assessment by experts, it was found that the experts agree with the ICT competencies for undergraduate students. The average score was 4.23. It was concluded that the experts agree with the highest level of competencies. Reflect that It can be used as a core competencies for undergraduate students of Rajamangala University of Technology Suvarnabhumi and other universities. These are the skills for undergraduate students in every field of study of all universities. In order to be successful and enter into the labour market effectively.

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