

# INFORMATION COMMUNICATION TECHNOLOGY COMPETENCY NEEDS OF STUDENT TEACHERS IN FACULTY OF EDUCATION, SUAN SUNANDHA RAJABHAT UNIVERSITY, THAILAND

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## ABSTRACT

In the 21<sup>st</sup> century, Information Communication Technology (ICT) affects the human's required skills to live, learn, and work which should be developed by schooling process. The classroom teacher must be responsible for establishing the classroom environment and preparing the learning opportunities that facilitate students' use of technology for learning. Therefore, all classroom teachers are prepared to provide their students with these opportunities. The professional development programs of the in-service teacher and the prospective teacher should provide technology-rich experience throughout all aspects of the training course. In order to have the necessary information entered into the specific program development, the targets' needs should be assessed. The survey research was designed to study the needs of student teachers at Faculty of Education, Suan Sunandha Rajabhat University in academic year of 2018. The 200 participants of study were the 5<sup>th</sup> year student teachers determined by Yamane's size sampling (significance level .05) and proportional stratified random sampling. The research instrument was 22 items of 5point Likert-type scale questionnaire with dual-response format. This article reveals the analysis results of needs assessment and Priority Needs Index (PNI).

**Keywords:** the 21<sup>st</sup> century competency, ICT competency, teacher occupational standard, student teacher development, needs assessment

## INTRODUCTION

In the 21<sup>st</sup> century, an increasingly complex, information-rich and knowledge-based society affects the human's daily life, learning, and working. In order to be successful, they must use technology effectively. Particularly with in a sound educational setting, technology can enable students to become: capable information technology users; information seekers, analyzers, and evaluators; problem solvers and decision makers; creative and effective user of productivity tools; communicators, collaborators, publisher, and producers; and informed, responsible, and contributing citizens. The key individual in helping students develop the mention capacities is the classroom teacher through the ongoing and effective utilization of technology in the schooling process [1], [2] and [3]. The teacher must be responsible for establishing the classroom environment and preparing the learning opportunities that facilitate students to use technology to learn. Therefore, it is crucial that all classroom teachers are prepared to provide their students with these opportunities. The professional development programs for in-service teachers and prospective teachers should provide technology-rich experience throughout all aspect of the training.

In Thailand, Office of the Education Council [4] defines the major feature of teaching profession that teachers must specialize in teaching content and have the teacher spiritualization. Including with the information technology ability as an appropriate tool for teaching and self-development. Moreover, the capacity of evaluation to reflect the performance of teaching and learning achievement. However, traditional educational practice has no longer provided prospective teachers with all the necessary skills for teaching students to achieve their successfulness. In order to achieve the development aimed to teacher's requirement and necessary characteristics within a limited period, it needs to have the key information entered into the research and development process of program development. This research aimed to study the desirable characteristics of the student teacher's ICT capacities for learning in the 21st century.

## PURPOSE OF STUDY

The aims of this research were:

1. To study student teachers' actual ICT competency
2. To study student teachers' expected ICT competency
3. To prioritize student teachers' needs of ICT competency

## THEORETICAL FRAMWORK

According to the reviewed literatures, especially UNESCO [1], ICT contents which teachers in the 21<sup>st</sup> century should be competence in the standard criterion or ICT Competency Standards for Teachers (or ICT-CST). That was mentioned to the curriculum framework and competency standards for the one who concerned

teaching profession development is composed of ICT literacy, ICT contents deepening, and knowledge creating through ICT competence.

1. The corresponding change in curriculum that should be entailed by technology based social development and economic productivity. Teacher should be literacy in ICT and able to use various technologies, tools and e-content as part of classroom activities to completed curriculum objectives, assessment approaches, unit/curriculum plans and didactic methods. Additionally, its supporting the teacher's own professional development both subject matter and pedagogical knowledge.

2. Knowledge deepening is related to teacher who show competence with the knowledge deepening approach include the ability to manage information, structure problem tasks, and integrated open-ended software tools and subject-specific applications with student-centered teaching approaches and collaborative projects in support of students' deep understanding of key concepts and their application to solves complex, real-world problems. Teachers should be able to apply ICT to create, monitor and assess students' achievement. Furthermore, teachers are able to access experts, and collaborated with colleagues, and other teachers making used of networks to access information and supporting their own professional development. Also the mention approach, teachers will be able to play a leadership role in knowledge sharing with colleagues and in creating and implementing a vision of their school as a learning community based on their ongoing learning and innovated instruction that enriched by ICT.

3. Knowledge Creation: teachers who show this competency have to be able to design ICT based learning resources and environments for to support students' self-direct knowledge creation, and critical thinking skills. In addition, to facilitate students' consistently learning through reflective learning and create learning communities for themselves and their colleagues.

As well as the international countries, in Thailand, there have been some educational researches implied that the ICT competency of teaching profession, such as Ubonrat Harinvon [5] affirmed teachers' ICT competency by 20 experts and educators that consisted of four aspects: (1) basic utilization of information technology tools, (2) conscious and correct information technology usage in social, and ethical and human safety, (3) apply information technology in teaching and learning and (4) integrate information technology for personal professional development. Also Phesachcha et al. [6] studied the teacher leadership on ICT in the 21<sup>st</sup> century learning management, and revealed that teachers must be able to show their ability in (1) information literacy (2) basic ICT usage and (3) technology literacy related to ICT application in classroom activities, learning environment and learning monitor and assessment.

According to the reviewed literatures, this study defines teachers' ICT competency as two following aspects:

The ICT competency for supporting classroom activities and learning environments aimed to develop students' 21<sup>st</sup> century skills: a conclusion can be defined that teachers have to be able to integrate the use of complex ICT as subject matter, instructional resources and facilitator of classroom activities and presentation especially in student-center approaches, active-based learning, problem-based and project-based situation, self-direct and collaborative learning. In addition, ICT should be applied to monitor students learning progress and assessment.

The other is ICT competency for self-development to be professional in duty concern. Teachers must be able to apply their ICT knowledge and skills to retrieve the necessary subject matter content and pedagogical knowledge for supporting their own professional instruction. In order to increase an efficient tracing information which being tacit knowledge and explicit knowledge, teachers have to literate in ICT as much as they can access through a website and a suitable ICT-based community or a virtual community. Also they have to show their academic leadership role in knowledge and experiences sharing with colleagues and others through the community [7].

## RESEARCH METHODOLOGY

This research method was designed by means of perception needs assessment scoped to the priority needs of ICT competency. Participants of study were 200 5<sup>th</sup> year student teachers at Faculty of Education, Suan Sunandha Rajabhat University in academic year of 2018 determined by Yamane's size sampling (significance level .05) and probability random sampled by proportional stratified random sampling. Research Instrument was 5-point Likert-type rating scale questionnaire with dual-response format. The 22 items of the questionnaire were divided into two aspects: ICT competency as an essential tool to support classroom activities and learning environments for developing students' 21<sup>st</sup> century skills. The other as a necessary tool for teacher to development themselves their professional instruction. The instrument was validated its construct by 3 experts' concessions then Index of Item Objective Congruency (IOC) was analyzed which showed more than 0.67. In addition, the internal construct reliabilities of the two aspects and in total were analyzed through Cronbach's alpha coefficient that implied their high internal consistency which were 0.926, 0.856 and 0.932 respectively.

The surveyed data was analyzed through descriptive statistics: mean, standard deviation. The Priority Needs Index (PNI) was calculated via formula developed by Lane, Crofton & Hall (1983) [8] as shown in Figure 1.

$$PNI = I ( I-D)$$

Figure 1 Equation of Priority Needs Index (PNI)  
 Remark: *I* = mean of expected competency  
*D* = mean of actual competency

## RESULTS

The collected data of study was from 200 participants or 100% of the sample size. The participants were 43 men (21.5%) and 157 women (78.5%). The two aspects of ICT competency were separately analyzed by the participants' actual competency and expected competency. The analyzed results are shown in Table 1 and Table 2.

Table 1 Needs of the actual ICT competency and the expected one for facilitating classroom activities and learning environments, including its Priority Needs Index (PNI)

No.	Items of ICT Competency	Actual Competency		Expected Competency		PNI
		$\bar{X}$	SD	$\bar{X}$	SD	
1	Coaching how to self-direct learning by using the ICT	3.38	.92	4.06	.76	2.761
2	Managing information system, database and learning resources in the school for to support students' learning	3.48	.94	4.11	.84	2.589
3	Using of multimedia and ICT for constructing the resource system of data and information technology for students to learn	3.48	.91	4.08	.82	2.448
4	Managing learning activities based on students' needs by using ICT and based on multimedia content	3.46	.97	4.06	.79	2.436
5	Using computer application program in analysis and processing of learning	3.55	.94	4.12	.81	2.348
6	Developing the ability to use ICT for learning to students	3.49	.88	4.05	.78	2.268
7	Managing database of information and learning resources related to community and local authorities to support learning	3.57	.88	4.11	.75	2.219
8	Managing teaching and learning activities integrated contents through ICT	3.47	.89	4.02	.82	2.211
9	Using various medias and ICTs to support teaching and learning	3.48	.96	4.02	.78	2.171
10	Inculcating values and skills as the innovative developer	3.55	.90	4.08	.79	2.162
11	Managing learning activities to develop students' ability in retrieving information from internet and self-direct learning	3.62	.87	4.09	.75	1.922
12	Using multimedia and ICT for communication, interact and facilitate learning	3.49	.87	3.97	.81	1.906
13	Constructing and developing media and Computer Assistant Instruction (CAI), e.g. e-book, visualization, figure, and VTR	3.62	.89	3.97	.82	1.399
Total		3.51	.61	4.06	.53	2.233

According to table 1, the analyzed results show the different needs of ICT actual competency and expected one, and Priority Needs Index (PNI), in particular teachers' competency of classroom activities and learning environments management. The three highest prioritized needs indicated by PNI namely: coaching how to self-direct learning by using the ICT (PNI= 2.761), Management of information system, database and learning resources in the school to support students' learning (PNI= 2.589), and using multimedia and ICT for

constructing the resource system of data and information technology for students' learning (PNI=2.448). Oppositely, the three lowest prioritized needs indicates, namely: constructing and developing media and Computer Assistant Instruction (CAI), e.g. e-book, visualization, figure, and VTR ( PNI=1.399), using multimedia and ICT for communication, interact and facilitate learning (PNI=1.906) and Managing learning activities to develop students' ability in retrieving information from internet and self-direct learning (PNI=1.922).

Table 2 Needs of the actual ICT competency and the expected one for teachers themselves professional development, including its PNI

No.	Items of ICT Competency	Actual competency		Expected competency		PNI
		$\bar{X}$	SD	$\bar{X}$	SD	
1	Disseminating research results and teaching knowledge through the internet network	3.52	.79	4.19	.67	2.807
2	Using media and ICT by means of strengthen multicultural worldview and logged on to the universal	3.45	.85	4.11	.72	2.713
3	Using resources and ICT to search modern knowledge for teaching	3.53	.86	4.16	.74	2.621
4	Participating a community network or an online educational social media to exchange knowledge and/or professional contents	3.49	.85	4.12	.77	2.596
5	Using the primary database to store and distribute educational information	3.49	.81	4.11	.78	2.548
6	Using modern information technology and media as means of the professional learning and knowledge exchange between co-workers and colleagues	3.65	.92	4.24	.72	2.502
7	Using professional learning community (PLC) as a way of knowledge sharing between colleagues, and professional practitioners	3.62	.83	4.21	.69	2.484
8	Using online social media as a channel of communication and professional knowledge exchange between practitioners and/or colleagues	3.53	.79	4.10	.76	2.337
9	Using Internet resources for to retrieve, download and store the search for self-learning	3.56	.83	4.09	.78	2.168
Total		3.54	.57	4.15	.45	2.532

Table 2 indicates the ICT competency needs for teachers to develop themselves and their professional which the three highest prioritized needs, namely: Disseminating research results and teaching knowledge through the internet network (PNI=2.807), using media and ICT by means of strengthen multicultural worldview and logged on to the universal (PNI=2.713), and using resources and ICT to search modern knowledge for teaching (PNI= 2.621). Differently, the lowest prioritized needs, namely: using Internet resources for to retrieve, download and store the search for self-learning (PNI=2.168), using online social media as a channel of communication and professional knowledge exchange between practitioners and/or colleagues (PNI=2.337), and using professional learning community (PLC) as a way of knowledge sharing between colleagues, and professional practitioners (PNI=2.484).

Moreover, the total PNI of teachers' ICT competency needs in managing classroom activities and learning environments (in Table 1) are lower than the total PNI of ICT competency needs for teachers to develop themselves professional (in Table 2)

## CONCLUSION AND DISCUSSION

The results of study obviously implied student teachers' needs of ICT as instructional tool to enhance learning and classroom environment which three highest ones were coaching how to use ICT for self-direct learning, managing information system, database and learning resources, and using for multimedia and ICT for constructing the resource system of data and information technology for students to learn. These needs were conformed instruction based on student-centered approaches as mentioned by [1] and [5]. It was consistent with [9] that the classroom climate which uses technology as part of learning and teaching process to promote and develop an efficient education management.

The other aspect was self-development expertise which three highest needs related to disseminating research results and teaching knowledge through the internet network, using media and ICT by means of strengthen multicultural worldview and logged on to the universal, together with using resources and ICT to search modern knowledge for teaching. The mentioned finding was concordance to [10] who suggested that an approach for developing teacher spirituality in order to enhance the teaching professionalism, student teachers should be encouraged the awareness of being teacher, the knowledge construction through instructional practicing relevant to 21<sup>st</sup> century skills. Furthermore, the student teachers must be able to track the progress of the teaching profession which is dynamic.

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