

## Secondary School Teachers' Competency in Information and Communication Technology

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### Abstract

The study delves on the Secondary School Teachers' Competency in Information and Communication Technology (ICT). It covers the teachers' competency in integrating ICT as to knowledge, skills, and attitude. Quantitative method was used, and descriptive research was designed and conducted to the students of four Secondary Schools of Lanuza District, Surigao del Sur, School Year 2015-2016 to determine the level of teachers' competency in ICT integration. Data from the questionnaire were treated by using the weighted mean to determine the teachers' competency in ICT as to knowledge, skills, and attitude that describe through the scale of parameter. The implementation of K to 12 programs in the Philippines made the Department of Education to facilitate ICT integration, and to equip educators in the 21<sup>st</sup> century skills. Thus, teachers with more experience in ICT were having greater confidence, and efficient and effective in job performance, either in teaching or in planning processes and the level of skills influence teachers' attitudes towards computers in supplementing and organizing the task of technology is significant to teaching-learning process.

**Key Words: Teachers' Competency, ICT integration, K to 12 Program, 21<sup>ST</sup> Century skills**

### Introduction

The study claims that teachers' competency in ICT integration have a great role in modern educational process. It is significant that teachers would become competent in embracing 21<sup>st</sup> century curriculum.

It has been cited by different authors that teachers' competency in ICT as to knowledge, skills, and attitude and their pedagogy as to competency in teaching services with ICT integration and level of implementation of ICT integration in academic subjects can improve school's academic performance (Taylor and Hogenbirk (2001), Kent and Facer (2004, Lowther, et al. (2008), and Weert andTatnall (2005). Educators must be versatile enough to adapt and to encourage the use of ICT to be more efficient in modern educational trends.

The principle of constructivist highlighted that the acquisition of knowledge is not just socially but individually constructed (Adams, 2006). The development of environment is the importance in teaching as the focus for constructing knowledge instead of transfer. The implementation of K to 12 program in Philippines started in School Year 2013-2014. The curriculum of the program was decongested as it encourages individuals to prepare

individuals to have 21<sup>st</sup> century skills. The trainings and seminars on ICT for teacher were required to enhance teaching pedagogies with ICT integration. However, some factors seen if the ICT integration is really implemented or to what extent is the level of teachers' competency in integrating ICT.

In this study, an adapted instruments were set up as one questionnaire to determine the extent teachers' competency in ICT as to knowledge (Papanastasiou & Angeli, 2008), skills (Ghavifekr, et.al., no date), and attitude (Al-Zaidiyeen and Mei , 2010).

### **Theoretical Framework**

The study anchored that teachers' competencies in ICT integration have significance in developing a positive outcomes in teaching-learning process (Osiakwari, 2002), especially in terms of academic performance that is the fundamental in enhancing the educational management.

The study claimed that spiral progression of individuals anchored in constructivism paradigm (Kharade and Thakkar, 2012). It is emphasized that in constructivism theory individual constructs his/her own knowledge through reflecting his/her experiences ( Bereiter (1994) as cited by Steve Olusegun (2015) ). As individual starts to do the task through the use of ICT integration, at first he/she would struggles different challenges, such as knowledge and skills on how to do and to end the task using ICT, but later he/she would appreciate how the things relevant to his/her job performance. In constructivism theory the constant progress of individuals towards his/her performance is the result of exploration and continuous reflection.

### **Research Design and Methods**

A descriptive research was designed to determine the claim of the study. One hundred sixty (160) students were given two (2) hours to rate the teachers' competency level in ICT as to knowledge, skills, and attitude. The respondents are randomly chosen. These respondents were not informed on the schedule of piloting the questionnaire as the intention of the researcher to gather an accurate data and to avoid bias.

## Results and Discussions

**Table 1**  
**Teachers' Competency Level as to Knowledge**

Indicators	Wt. Mean	Interpretation	Rank
Word processing (e.g., Word)	4.23	E	1
Databases (e.g., Access)	3.80	P	7
Spreadsheets (e.g., Excel)	3.81	P	6
Graphics (e.g., Paint, Photoshop)	3.76	P	8.5
Multimedia authoring software (e.g., HyperStudio)	3.71	P	12
Presentation software (e.g., PowerPoint)	3.76	P	8.5
Internet	3.92	P	2
Concept mapping (e.g., Kidspiration, Inspiration)	3.72	P	11
Email	3.82	P	5
Publishing software (e.g., Publisher)	3.64	P	13
Webpage authoring software (e.g., FrontPage)	3.75	P	10
Programming languages (e.g., Logo, C )	3.84	P	3
Modeling software (e.g., Model-It, Stella)	3.57	P	14
Microworlds/Simulations (e.g., Stagecast Creator, Interactive Physics)	3.83	P	4
<b>Average Weighted Mean</b>	<b>3.80</b>	<b>Proficient</b>	

Legend: 4.20-5.00 – Excellent (E); 3.40-4.19 –Proficient (P); 2.60-3.39 - Developing (D);  
1.80-2.59 – Emerging(Em); 1.00-1.79- Learning(L)

The table 1 shows proficient level of teachers' indicators as to knowledge in ICT. Among indicators of teachers' knowledge, word processing revealed "Excellent" in which knowledge on internet is rated closely. This implies that teachers' knowledge on Microsoft and Internet is evident. The result posits that teachers with more experience in ICT have greater self-assurance in their ability to use them effectively. Teachers' confidence also related to their perceptions of their ability to use computers in the classroom, particularly in relation to their children's perceived competence (Peralta and Costa, 2007). Publishing and modelling software required more time as it ranked least among the indicators of knowledge competency. It implies that indicator was not usually practiced in the classroom.

The result shown in table 1 support the claim that teachers' competency as to knowledge is in the proficient level, it is because mostly of the indicators were applied by teachers in his/her daily tasks. Similarly, research has shown that teachers' understanding of content knowledge and applying technology to support students' learning and attainment are joined to increase in knowledge level, confidence and attitudes towards technology (Plair, 2008).

**Table 2**  
**Teachers' Competency Level as to Skills**

Indicators	Wt. Mean	Interpretation	Rank
He/She knows computers and its functions	4.20	E	1
He/She repairs his/her own computer	3.56	P	13
He/She installs software on his/her own	3.72	P	8
He/She searches teaching aids from the internet	3.81	P	3.5
He/She uses the computer to prepare lesson plans	3.81	P	3.5
He/She can create teaching aids with the computer	3.80	P	5
He/She can construct a learning website	3.82	P	2
He/She prepares notes for his/her students with the Internet	3.58	P	12
He/She finds questions for his/her students from the Internet	3.74	P	7
He/She always use the computer in classroom	3.47	P	14
He/She always look for the latest additional information through the Internet	3.67	P	9
He/She uses the Internet in the computer lab with his/her students	3.64	P	11
He/She teaches the students on how to find information on the Internet	3.66	P	10
He/She uses the Internet for personal use	3.75	P	6
<b>Average Weighted Mean</b>	<b>3.73</b>	<b>Proficient</b>	

Legend: 4.20-5.00 – Excellent (E); 3.40-4.19 – Proficient (P); 2.60-3.39 - Developing (D); 1.80-2.59 -Emerging(Em);1.00-1.79 - Learning(L)

Table 2 shows proficient level of teachers' competency level on skills in integrating ICT in classroom. Among indicators, teachers' skill on "computers and its functions" is in excellent level. Whereas, always using the computer in classroom is evidently on the last rank.

This implies in the claim of constructivist that integrating ICT develops individual skill in modern technology as it is always practice by individuals. The level of skills implies that the constant practice of teachers in organizing task in software (Plair, 2008) and the application of new technology tools help him/her to reflect that there is a significance of it in achieving the tasks.

**Table 3**  
**Teachers' Competency Level as to Attitude**

Indicators	Wt. Mean	Interpretation	Rank
Computers would help her/him organizework	4.28	E	1
Using computer would make subject matter more interesting	3.93	P	2
Computers save time and effort	3.83	P	3
Using computers is enjoyable	3.71	P	12.5
Computers make him/her much more productive	3.68	P	14
Teaching with computers offers real advantages	3.72	P	11
Computers have proved to be effective learning tools	3.71	P	12.5
Computers can enhance students' learning	3.77	P	5
He/She would rather do things by hand than with a computer	3.73	P	9
Computers will improve education	3.82	P	4
Computer do not scare him/her at all	3.73	P	9
He/She does not like talking with others about computers	3.56	P	15
He/She likes to use computers in teaching	3.76	P	6.5
Computers are a fast means of getting information	3.73	P	9
He/She would like to learn more about computers	3.76	P	6.5
<b>Average Weighted Mean</b>	<b>3.78</b>	<b>Proficient</b>	

Legend: 4.20-5.00 – Excellent (E); 3.40-4.19 – Proficient (P); 2.60-3.39 - Developing (D); 1.80-2.59 -Emerging(Em);1.00-1.79 - Learning(L)

Table 3 reveals the proficient level of teachers as to attitude. Indicators stress that computer helps organizing work and more useful in motivating the class in presenting subject matter were rated closer. Furthermore, it implies that though teachers consider ICT helps them organize work and lessen their burden in the class they found it less effective as to production.

The results indicated in the constructivism theory that the attitude of individual controls his/her own learning and it is accompanied by reflecting the importance of it. Thus, the attitudes of teachers towards technology have strong influence to their adoption and integration of computers. Teachers are optimistic in embracing modern trends in educational technology because it gives insight to them the importance of it into teaching and learning processes (Keengwe and Onchwari , 2008).

## Conclusion

The implementation of K to 12 program and equipping learners with 21st century encourage the Department of Education to capacitate teachers with ICT competencies. Teachers' competency in ICT as to knowledge, skills, and attitude showed in level of "proficient". Thus, these competencies have strongly influence that teachers constantly develop in ICT through self-actualization, and this influence is always accompanied by self-reflection.

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