Computer Literacy Among CTU-TC Faculty Members

Julieta B. Gecain

Associate Professor, Cebu Technological University- Tuburan

Abstract

This study aimed to assess and enhance the computer competency of instructors at Cebu Technological University – Tuburan Campus. It specifically examined the respondents' demographic profile, including age, gender, and marital status, and evaluated their general computer skills in areas such as computer operation, communication ,and internet use, word processing, spreadsheets, and graphics. A descriptive research design was employed using a survey method, with questionnaires as the primary data-gathering instrument. Statistical tools such as frequency and percentage were used to analyze the data.

Findings revealed that the majority of instructors demonstrated high levels of proficiency in various computer applications. Most notably, they rated as "Excellent" in Facebook, MS Word, MS PowerPoint, and MS Excel; "Very Good" in basic computer operations and other productivity tools; and "Good" to "Fair" in platforms like Twitter and blogging. The overall computer competency of the respondents was categorized as "Very Good."

The results highlight the importance of targeted training programs in improving instructors' digital literacy. The study concluded that hands-on training and continuous skill enhancement significantly boost instructors' confidence and capability in integrating technology into their teaching. It is recommended that the university implement interactive and competitive learning activities to further develop computer-related skills among faculty members.

Keywords: Computer Literacy, Faculty Members, Faculty Development, Technology Integration, Professional Training, Educational Technology

1. INTRODUCTION

Today, computers play a big role in education especially in developing countries like the Philippines. Computer has a capability for administrative and managerial users, namely: easing enrollment procedures, preparing transcript of records and others, as well as for student purposes. Moreover, it has given a way to the development of multi-media which is creating an exciting and very real interactive learning environment.

Computer competency is defined as the demonstrated ability to use information technology. It includes the ability to use computer applications in education and in the workplace as well as the ability to use the Internet and other information technology resources safely. It can also refer to the comfort level someone has with using computer programs and other applications that are associate with computers. In this fast developing world, people understand that computers are really important; as we are now in the world where information technology is simply essential.

Given the importance of teachers" computer competencies to the successful infusion of computers into the curriculum, the purpose of the study was therefore to design a comprehensive framework for understanding computer competence of teachers, and use this framework to study teachers" current computer competence in all the related areas.

Computer technology has opened wide opportunities for teachers to integrate computers in teaching learning process. Computers greatly facilitates teaching-learning process for various curricular subjects especially language, mathematics and science. Computer technology is also being increasingly applied in non-instructional (record keeping, grade averaging, communication, and others) and pre-instructional (developing materials, researching instructional content and others) uses. Various educationists have interrelated computer use with constructivist, collaborative, and inquiry-based learning and also, with pedagogical change.

Studies carried out around the world in various industrialized as well as information-based countries have affirmed time and again that computer technology on its own shall never be able to substitute teachers and teachers shall always remain the principal actors who will facilitate harnessing the true potential of computer technology in education. Hence, it is important for teachers to become computer literate, and be prepared to use information technology in schools. Being prepared to adopt and use technology and knowing how that technology can support student learning must become integral skills in every teacher's professional repertoire.

Various initiatives, mandates, recommendations put-froth by different government organizations, policies, have definitely served as catalysts to motivate school teachers in this direction. Various developing countries are currently following in the footsteps of the developed countries in promoting use of technology in education. In India, in association with the Global e-Schools and Communities Initiative (GeSCI), the Ministry of Human Resource Development (MHRD) has formulated India's National Policy on Information and Communication Technology (ICT) in School Education in order to devise, catalyze, support, and sustain ICT activities and processes to improve access, quality and efficiency of ICT tools and resources to all students and teachers. It promotes networking, research, evaluation and experimentation in ICT tools and practices to utilize the potentials of ICT in school education. Moreover, under Public Private Partnership model in education, various technology firms such as, Intel India, Microsoft Partners in Learning, Oracle Education Foundation are partnering with governments, educators, and local content and curriculum providers to create sustainable educational programs to train teachers and prepare students to succeed in the global economy.

To better prepare pre-service candidates for teaching in the information age, the International Society for Technology in Education (ISTE) has defined National Educational Technology Standards (NETS) (2002) to guide technology integration into teacher education programs. These include dividing the teachers" application of technology in instruction into six categories: technology related - understanding, designing of experiences, implementation of curriculum plans, assessment strategies, enhancement of productivity, legal-ethical issues.

The UNESCO implemented Beijing workshop (2003) on Teacher Training in ICT Integration discussed guidelines for developing Competency Based Standards for Teacher Education Curriculum which comprised of core competencies related to pedagogy (new ways of doing things with ICT; new theories of learning; pedagogical skills: selection, presentation and assessment), technology (related concepts and operations; social, health, legal and ethical issues) and technology-pedagogy integration (ethical, legal use

of technology to design effective learning experiences; manage students" learning; improve professional skills; support interaction in learning/social communities).

In Morton's study (1996), a marked dichotomy was found between faculty members with differing amounts of computer knowledge. He found "Low tech" teachers engaged in more traditional pedagogical practices and found it more difficult to assimilate computers into their teaching style. "High tech" teachers, by contrast, integrated computers into their pedagogical practices readily. Beigel (1996) identified some computer competencies for educators as (1) evaluating and matching appropriate software to a learner's skills and abilities, (2) helping students use the computer as a personal productivity tool, (3) assessing individual needs, and (4) integrating technology into multiple environments.

Technology competency must not be understood solely in terms of hardware and software. Technology competencies help teachers access, gather, present and communicate, and manipulate the information that is available on software and internet resources, in the form of text, images, sound, and others.

2. LITERATURE REVIEW/ THEORETICAL BACKGROUND

Nowadays, every teacher relies on computers for making lesson plans, preparing examinations, recording and computing grades, and others. Teachers have to immerse themselves in the age of information revolution since society is surrounded by the rapid changes, media, knowledge workers, technology and research and development (CICT, 2006). Actually Sec. Lapuz (2008) stated that teachers must be equipped with 21st century skills that can empower all Filipinos to become competitive in today's digital age.

While there may be general willingness to apply the tools of technology in the different learning areas, one of the major handicaps among teachers is having low level proficiency in terms of computer applications (Andrada, 2003). Although some teachers have knowledge in using computers, their skills are outdated (Philippine Star, 2010). In line with this, Mau (200) in his case study about the basic information technology training for teachers in Hong Kong revealed that the continuous long term learning should be arranged so that teachers can update their knowledge. More importantly, teachers must be challenged to go away from their familiar methods and approaches and instead adopt themselves according to the educational technologies appropriate for this generation (Haddad, 2002).

During recent years a large number of initiatives, coming from both the research community and educational policy authorities, have been directed towards the preparation of teachers in order to enable them to integrate ICT in their everyday educational practice. Various programs have been established in the European Union (EU) countries (European Commission, 2002, 2004), USA (PT3, 1999), Australia (Queensland Government, 2004), the UK (Ofsted, 2002) and so on, aiming at enhancing teachers' skills in the pedagogical application of ICT in instructional and learning processes. Designing and implementing successful ICT teacher preparation programs is considered to be the key factor to fundamental, wide-ranging educational reforms (Vosniadou & Kollias, 2001; Watson, 2001; UNESCO, 2002). Until now, most teacher training programs have been designed to raise teachers' ICT knowledge and skill levels, and foster positive attitudes towards ICT as a teaching and learning tool (Cox et al., 1999; Kumar & Kumar, 2003; Galanouli et al., 2004).

It is widely recognized that teachers' educational beliefs are strong indicators of their planning, instructional decisions and classroom practices (Bandura, 1986; Pajares, 1992). As Van Driel et al. (2001) argued, most reform efforts in the past have often been unsuccessful because of their top-down approach, which failed to take teachers' existing knowledge, beliefs and attitudes into account. Therefore, a thorough

analysis of teachers' conceptions of ICT in education can provide insights into the prerequisites for their successful preparation. Searching for efficient ways to prepare teachers to adopt ICT as an integral part of their everyday teaching strategies has been a major priority for most countries across the world (Lang, 2000; Knezek & Christensen, 2002; Davis, 2003; Dexter & Riedel, 2003; Niemi, 2003; Pearson, 2003; Becta, 2004b; Hennessy et al., 2005).

Teachers' attitudes towards ICT in education have a significant influence on ICT adoption and implementation behaviors in the classroom. Teachers in general agree that computers constitute a valuable tool and they are positive about students' attainment of ICT knowledge and skills. In many cases, they perceive ICT as a new subject matter in education rather than a new way of teaching and interaction between learners and knowledge (Williams et al., 2000). It appears that, even though they recognize the importance of introducing ICT in education, teachers tend to be less positive about its extensive use in the classroom and far less convinced about its potential to improve teaching (Cox et al., 1999; Zhao & Cziko, 2001; Russell et al., 2003).

Although teachers show great interest in and motivation to learn about ICT, their use of ICT tools is limited and focused on a narrow range of applications, mainly for personal purposes. Most of them continue to use computers for low-level supplemental tasks such as word processing (lesson plans, worksheets, assessment tests, registration of grades, etc.) or getting information from the Internet (Becker, 2000; Williams et al., 2000; Russell et al., 2003; Ofsted, 2004; Waite, 2004). Relatively few teachers routinely use ICT for instructional purposes and even fewer are integrating ICT into subject teaching in a way that motivates pupils, enriches learning and stimulates higher-level thinking and reasoning (Becta, 2004a).

A series of independent studies indicate that both teachers' personal theories and perceptions about teaching and learning processes and their level of competence with ICT play a major role in how they implement ICT and how they motivate themselves to use ICT tools in the classroom (Gobbo & Girardi, 2001; Niederhauser & Stoddart, 2001; Sime & Priestly, 2005). It seems that teachers' pedagogical cultures shape their representations of ICT use in the classroom (Ruthven et al., 2004), and they are likely to adopt practices with computers that reflect their beliefs about teaching and learning (Drenoyianni & Selwood, 1998). It has been shown that teachers with the most constructivist teaching philosophies regarded the role of computers in their instruction as very important (Ravitz et al., 2000; Becker, 2001). Higgins and Moseley (2001) argued that the most effective teachers not only had a positive attitude towards ICT but had good ICT skills and used computers as a part of a stimulating environment favoring pupils' inquiry and collaboration.

Research also indicates that many teachers have positive attitudes toward technology but they do not consider themselves qualified to effectively integrate ICT into their instruction (Ropp, 1999). Lack of adequate training and experience is considered one of the main reasons why teachers have negative attitudes toward computers and do not use technology in their teaching (Yildirim, 2000). On the other hand, most findings suggest that teachers with ICT knowledge have a more positive attitude toward the potential of computers in education (Cox et al., 1999; Yildirim, 2000). According to a study by Shapka and Ferrari (2003), it appears that teachers training to teach at secondary level had higher self-efficacy than elementary teachers and were less likely to predict that they would give up or avoid a challenging task. The impact of effective teacher training on ICT can be measured in terms of changes in attitudes on the part of teachers (Yildirim, 2000; Kumar & Kumar, 2003; Galanouli et al., 2004) and of students as well (Christensen, 1998).

In addition to these experiences, the researcher adopted Harris (2005) argument focusing on how teachers use technology for the purposes of learning and teaching without an agenda for educational reform. In this approach, the researcher supported the notion that teachers are capable of considering and selecting appropriate ways to use technology to enhance teaching and learning. In other words, teachers should contribute to the discussion of what technology uses are valuable for teaching and learning; value should not be solely attributed to only a constructivist pedagogical approach.

Recent calls for educational reform in teacher education stress the need for innovative teacher education restructuring to ensure that preservice teachers not only understand how to use a computer but also how to design high quality technology-enhanced lessons (Brush et al., 2003; Dawson, Pringle, & Adams, 2003; Ertmer, 2003; International Society for Technology in Education, 2002; National Council for Accreditation of Teacher Education, 1997; Thomas, 1999; Thompson, Schmidt, & Davis, 2003; Watson, 2001; Wilson, 2003). International Society for Technology in Education (2002) has taken a critical step in showing the way to technology integration by providing a set of standards describing technology competencies for in service and pre-service teachers. Peck, Augustine, and Popp (2003) argue, however, that teacher educators need detailed and explicit guidance in order to be able to redesign their method courses effectively. A preferred approach for restructuring teacher education courses with technology has been to infuse technology in method courses (e.g., Davis & Falba, 2002; Guy & Li, 2002), because method courses provide a meaningful context within which the integration of technology can be pedagogically situated in the teaching of subject matter. Thus, as Ertmer (2003) states, we need to become more specific and explicit about the types of technology-supported lessons that teacher educators design, and, in particular, which technology is being infused or integrated to support learning.

The findings of the study suggest that preparing technology-competent teachers in teacher education programs is a challenging and difficult issue that needs to be systematically planned and carefully implemented. It seems that teacher educators need to do a better job with what Shulman (1987) calls pedagogical reasoning. The term pedagogical reasoning refers to the process of transforming subject matter into forms that are pedagogically powerful as well as identifying and selecting strategies for representing key ideas in the lesson (Shulman, 1987). The source of pedagogical reasoning is pedagogical content knowledge (PCK), which is a special amalgam of different components of teachers knowledge, such as subject matter knowledge, pedagogical knowledge, knowledge of students, and understanding of the social, political, cultural, and physical environment (Shulman, 1986). Shulman (1986, 1987) described PCK as the ways content, pedagogy, and knowledge of learners are blended into an understanding of how particular topics to be taught are represented and adapted to learners characteristics, interests, and abilities. Specifically, PCK relates to the transformation of several types of knowledge, includes an understanding of what makes the learning of specific concepts easy or difficult, and embodies the aspects of content most germane to its teachability (Shulman, 1986). Thus, PCK encompasses an understanding of students preconceptions and learning difficulties, and includes the most useful forms of representation, the most powerful analogies, illustrations, examples, explanations, demonstrations, and other ways of representing and formulating the subject in forms that are comprehensible to learners. With the advent of computers in schools, teacher educators are responsible for adequately preparing student teachers to teach with technology. Thus, student teachers pedagogical reasoning has to be expanded to include knowledge about how subject matter can be transformed and taught with technology tools. This expanded view of pedagogical reasoning can be described as the ways knowledge about tools and their affordances,

pedagogy, content, learners, and context are synthesized into an understanding of how particular topics can be taught with technology in ways that signify the added value of technology.

Teachers, who are going to prepare themselves and their students for the information age, are to get accustomed to ICT supported school culture as soon as possible (Leh, 1998). Teachers can acquire new information rapidly and transfer them to their students by means of educational technologies (İşman, 2002). According to many researches, computers are not used precisely by most of the teachers even if they are easily accessed (Hunt, Bohlin, 1993; Marcinkiewice, 1993; OTA, 1995). Lack of information and inadequate education are the most important two problems for usage of computers in education (Andris, 1996). Many teachers in USA are not educated adequately for the aim of using computers in the classrooms (Hardy, 1998; Henry, 1993; Jordan & Follman, 1992; Lyons & Carlson, 1995; Okinaka, 1992; OTA, 1995). Teachers need more time and support of school management in order to integrate technology into education and prepare new teaching plans, advanced applications and new lectures (Becker, 1994; Honey & Henriquez, 1993; Honey & Moeller, 1990; Loucks & Hall, 1987; Hunt & Bohlin, 1993; OTA, 1995; Sheinguld & Hadley, 1990; Wiske, 1987).

The effectiveness of the computers throughout the teaching process has contributed to its use in teaching physics. The use of computer supported physics classes will cease to make physics to be considered as the most difficult lesson to be understood by students who are preparing for the university majoring in mathematics. The computer supported material for teaching electrostatics in Physics has resulted in facilitating students' success (Saka & Yılmaz, 2005). The current condition of computer supported education in private teaching institutions, to which we send our children paying large amount of money, is besides the possibilities and the views of physics teachers a topic to be researched. There are many studies about the use instructional technologies at the primary and tertiary level. However, no studies were conducted regarding the use of technology in private teaching institutions.

By and large, these studies in Computer Competency for instructors in Cebu Technological University – Tuburan Campus have presented pertinent discussions as to the importance of computer competence on the teachers. It has been shown that teachers are influential in their students' motivation towards their own learning competencies about computers. Finally, teachers are excited about potential that technology offers for improving their learning and expanding student's worlds.

3. STATEMENT OF THE PROBLEM

This study aimed to assess the teachers' computer competency developing the skills and knowledge and to give them a hint on how to use the computer easily be understood by the teachers.

Specifically, the researchers sought answers to the following questions:

1. What is the profile of the teachers in terms of:

1.1   Age;

1.2   Gender; and

1.3   Marital Status

2. What are the computer competencies of teacher respondents in terms of:

2.1   General Computer Operations;

2.2   Communication and Internet;

2.3   Word Processing;

2.4   Spreadsheets; and

2.5   Graphics?

3. Is there a significant difference in the computer competencies of the respondents when grouped according to their profile variables?

4. SCOPE OF THE STUDY

This study focused on assessing the computer competency of instructors at Cebu Technological University – Tuburan Campus. It specifically examined the instructors' demographic profiles, including age, gender, and marital status, and their competency levels in various areas of computer use. These areas included general computer operations, communication and internet usage, word processing, spreadsheets, and graphics.

The study utilized a descriptive survey method, employing a structured questionnaire as the main data-gathering instrument. The competencies evaluated included proficiency in applications such as MS Word, MS PowerPoint, MS Excel, Facebook, Twitter, Google Sheets, and blogging platforms, as well as understanding of input/output devices and graphical tools.

The research was limited to the instructors currently employed at CTU-TC during the period of the study. It did not include students or faculty from other campuses. The findings aimed to provide insights into the instructors' current skill levels and served as a basis for recommending targeted training and enhancement programs to improve their digital literacy.

5. OBJECTIVES OF THE STUDY

This study aimed to assess and enhance the computer competency of instructors at Cebu Technological University – Tuburan Campus. Specifically, it sought to determine the demographic profile of the respondents in terms of age, gender, and marital status. It also aimed to evaluate their level of competency in various areas of computer use, including basic computer operations, communication and internet use, word processing using MS Word, spreadsheet management through MS Excel, presentation tools like MS PowerPoint, graphics, and other productivity tools. Additionally, the study examined their proficiency in social media and online platforms such as Facebook, Twitter, and blogging. It further aimed to analyze the overall level of computer competency among instructors and identify areas of strength and those needing improvement. Lastly, the study intended to propose strategies or programs that could help enhance instructors' computer skills and promote the effective integration of technology into their teaching practices.

6. RESEARCH METHODOLOGY

This study will use quantitative method. A standardized survey questionnaire was also used as the main instrument in gathering data.

7. INTERPRETATION AND FINDINGS

Table 1. Shows the profile of respondents in terms of age and gender

Table 1.

Age and Gender

(n=40)

Age	f	%
15-20	2	5

21-25	1	2.5
26-30	11	27.5
31-35	9	22.5
36-40	9	22.5
41-45	6	15
46-50	2	5
Total	40	100
Gender	**f**	**%**
Male	18	45
Female	22	55
Total	40	100

This table reveals the age and gender of the respondents. The 15-20 years old had 2 frequency and 5 percent; 21-25 years old had 1 frequency and 2.5 percent, 26-30 years old had 11 frequency and 27.5 percent, 31-35 years old and 36-40 years old had both 9 frequency and 22.5 percent, 41-45 years old had 6 frequency and 15 percent, 46-50 years old had 2 frequency and 5 percent.

As to the gender, the male had 18 frequency and 45 percent while the female had 22 frequency and 55 percent.

This implies that Cebu Technological University – Tuburan Campus had many instructors applying the computer competency by different age brackets and both male and female.

Table 2 highlights the marital status of respondents.

Table 2

Marital Status

(n=40)

Marital Status	**f**	**%**
Single	16	40
Married	24	60
Total	40	100

This table shows the marital status of respondents. In single had 16 frequency and 40 percent; and in married had 24 frequency and 60 percent.

The result implies that the married usually focusing on computer competency in order for them to have efficient and advanced idea about computer because computer competency does not only change the way teachers teach, but the way the students learn as well.

Table 3 pertains to the computer competencies of respondents.

Table 3

General Computer Competencies

(n=40)

General Computer Operation	**5 E**	**4 VG**	**3 G**	**2 F**	**1 P**	**TWP**	**TWM**	**Response level**
Input devices	10	19	10	1	0	158	3.95	Very Good

Output devices	7	23	9	1	0	156	3.9	Very Good
Processing	11	18	8	3	0	157	3.93	Very Good
Communication And Internet								
Facebook	28	9	3	0	0	185	4.63	Excellent
Twitter	8	8	13	8	3	130	3.25	Good
Blogging	5	1	15	1	5	81	2.03	Fair
Word processing								
MS Word	31	6	2	1	0	187	4.68	Excellent
MS Power Point	26	9	3	2	0	179	4.48	Excellent

Spreadsheets								
MS Excel	20	14	3	3	0	171	4.28	Excellent
Google sheets	14	9	11	2	4	147	3.68	Very Good
Graphics								
Pie graph	12	12	9	6	1	148	3.7	Good
Organizational Chart	13	15	6	5	1	154	3.85	Very Good

Legend:

Excellent	(E)	4.21 – 5.00
Very Good	(VG)	3.41 – 4.20
Good	(G)	2.61 – 3.40
Fair	(F)	1.81 – 2.60
Poor	(P)	1.00 – 1.80

As the revealed in this table, the general computer competencies had a general computer operation (input devices, output devices and processing); communication and internet (facebook, twitter and blogging); word processing (MS Word and MS Power Point); spreadsheets (MS Excel and Google sheets); and graphics (pie graph and organizational chart). The input devices had a total weighted mean of 3.95 and signifying the response level of VERY GOOD; output devices had a total weighted mean of 3.9 and signifying the response level of VERY GOOD; processing had a total weighted mean of 3.93 and signifying the response level of VERY GOOD.

Facebook had a total weighted mean of 4.63 and signifying the response level of EXCELLENT; twitter had a total weighted mean of 3.25 and signifying the response level of GOOD; blogging had a total weighted mean of 2.03 and signifying the response level of FAIR; MS word had a total weighted mean of 4.68 and signifying the response level of EXCELLENT; MS power point had a total weighted mean of 4.48 and signifying the response level of EXCELLENT; MS excel had a total weighted mean of 4.28 and signifying the response level of EXCELLENT; Google sheets had a total weighted mean of 3.68 and signifying the response level of VERY GOOD; pie graph had a total weighted mean of 3.7 and signifying the response level of VERY GOOD; and organizational chart had a total weighted mean of 3.85 and signifying the response level of VERY GOOD.

This implies that the Cebu Technological University – Tuburan Campus presents the good performance in computer competency day by day of respondents

8. FINDING OF THE STUDY

On the profile of the respondents, it was found out that the respondents were 15-20 years old had 2 frequency and 5 percent; 21-25 years old had 1 frequency and 2.5 percent, 26-30 years old had 11 frequency and 27.5 percent, 31-35 years old and 36-40 years old had both 9 frequency and 22.5 percent, 41-45 years old had 6 frequency and 15 percent, 46-50 years old had 2 frequency and 5 percent.

Regarding the general computer competencies of respondents in their response level such as input devices was VERY GOOD; output devices was an VERY GOOD; processing was VERY GOOD; Facebook was EXCELLENT; twitter was GOOD; blogging was FAIR; MS Word was EXCELLENT; MS Power point was EXCELLENT; MS Excel was EXCELLENT; Google sheets was VERY GOOD; pie graph was GOOD and organizational was VERY GOOD.

9. RECOMMENDATIONS

It is hereby recommended that this study give instructors hands-on experiences as they are learning, and involving many modalities/language skills as possible and create a competition in which instructors on different teams have to think of as many computer-related terms as they can within a certain amount of time at Cebu Technological University – Tuburan Campus.

10. CONCLUSION

Based on the findings from the gathered data, the overall performance of respondents in computer competency were VERY GOOD. Thus, the following data were collected shows that the respondent at Cebu Technological University – Tuburan Campus had a passion in applying the computer competency to develop and enhance their skills and knowledge.

The intent of administering any computer competency testing is to assist instructor in becoming successful learners. The results were very encouraging as we saw increased basic computer skills in one semester with instructor feeling better prepared to be successful. Furthermore, giving trainings to the respondents had helped them to improve their performance to utmost level. This shown that a possessing basic computer skill is a critical part of academic success that can be an effective tool, particularly for developmental instructors, to address some of the instructors' deficiencies. Acquiring basic computer skills gives these underprepared instructors the encouragement to continue their education.