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Original Paper

Competencies of College Freshmen in the Use of Computer Technology in a University

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Abstract

Competence in the use of computer technology is the result of many factors that can shape instructional technology activities to meet students' needs in the walls of the academy. This study assessed the competencies of BSIT first-year students in the use of computer technology in the three campuses of Cebu Technological University, Cebu, Philippines. The researcher employed a descriptive method utilizing a standardized tool from the Technical Education Skills Development Authority (TESDA) to gather data related to students' competencies in the use of computer technology. The study revealed that there is a significant relationship between the family factor and their level of computer competency. The study concluded that students were competent in the use of computer technology. The researcher recommends that parents and members of the family household take an active part in the development of the computer learning competencies of students.

Keywords

Computer Education, competencies, descriptive study, Philippines

1. Introduction

The Filipinos should have the processing skills to access these continual sources, and one way here is to do it with the use of a computer. With the capacity to manipulate the said technological equipment, they must be competent to do hardware servicing and software operations since this is linked to all areas of development. These competencies act an ever-increasing role in management and conduct of any procedural tasks.

Some if not many have the notion that effectiveness in learning computer technology is a stark reality to attain since it encompasses a vast array of factors, intricacies, and concepts to comprehend. Significantly, it also involves a lot of contributory factors and elements to consider in order to achieve success and enhancement. One supporting attribute for learning the subject is the family.

The family is one of nature's masterpieces. It is a gathering of firmly related people living under one rooftop; it is a comfort, frequently a need, in some cases a joy; now and again the turn around; some of the time a delight; at times the switch; yet who previously lifted it as splendid, a relatively religious perfect? The family is the most essential of every single societal organization. Every human grouping then has its distinct family system. A stable family unit is necessary because unlike many other species, human babies require an extended period of parental attention and socialization in order to survive and become functioning members of their society.

The family is the littlest political establishment, and Bertrand additionally characterized it as a socially endorsed gathering of people joined by connection, marriage or selection, who share a typical environment by and large and collaborate as per very much characterized social jobs that keep up and ensure its individuals and sustain the general public. Aside from the family fulfilling economic, educational, religious, political, and recreational activities, its resources also affect the children's ability to pursue specific opportunities such as higher education and special skills.

2. Literature Review

The study is anchored on principles of Chickering's Seven Vectors of Student Development Theory, which recognizes three kinds of capability that understudies create, including scholarly, manual aptitudes, and relational skills (Maekawa Kodama et al., 2002). Scholarly fitness particularly alludes to the capacity to comprehend, break down, and combine (Mackey & Jacobson, 2011). Manual fitness alludes to the capacity to physically achieve assignments, where relational ability alludes to working and building up associations with others (National Research Council, 2013).

Computer technology acts a vital role in the global economy, in the lives of the Filipinos and in the development of the country wherein higher expectations from consumers and competitions from among countries are stiff. Constant changes in software applications and hardware specifications are present to improve workgroup standards to become globally competent continually (Ivček & Galinac, 2009). Its emergence has brought too much of an impact that affects people in all walks of life especially the students who will be the future leaders of the country. Schools as having the responsibility to address these needs have to offer their initiative by providing the public with better training in computer education in which state universities have to cater to these demands. The mechanics are to assess the proposed action plan with the aspects of all the factors that contributed to their learning, and level of competency (Gupta, 2011; Wolf, 1995).

According to Campanila et al. (2016) that universities have been investing in shifting to computing advancement with most of its day-to-day operations and transactions heavily relying on computer programs. Media can shape and influence the individual's attitude, beliefs, values, and lifestyle. Software applications can empower higher order thinking skills by engaging students in authentic, and demanding jobs (Dede, 2014). Students must be adequately trained on the most essential and recent trends to computer technology (Earle, 2002; Mumtaz, 2000; Yildirim, 2000). One example is email

which provides a valuable students-instructor communication channel and describes the process of setting up managing lists (Hopper, 2012; Kock, 2009). The nature of teaching and organization of instructional materials can be further developed through the use of the internet for increased communication, resources, and lesson (Noe et al., 2006; Borko, 2004). The Internet is incredibly useful for educational purposes (Baker et al., 2003; Lan, 2001; Sjölander et al., 1998). Teacher and students use it to supplement their lessons and opened up a substantial amount of knowledge to a much broader range (Lage et al., 2000).

Teachers to know their content and pedagogy when it comes to computer technology, learn along with the students as in hands-on operations (Ertmer et al., 2012; Gorder, 2008; Hew & Brush, 2007). If teachers become efficient in using technology as an instructional delivery system, then the educational opportunities of students can be widened eventually these students shall become compliment learners of computer technology (Motiwalla, 2007). Thus, integrating computer technology on a consistent basis in the teaching and learning process is indicated in this study in order to determine not only the factors affecting student competency level but also pinpoint and discover the underlying attributes for learning computer technology (Fenstermacher & Richardson, 2005; Tolme & Boyle, 2000).

Teachers can make utilization of the Internet by giving understudies additional assets and material from the Internet, for example, intuitive exercises and instructive amusements (Salmon, 2013; Yip & Kwan, 2006; Levin & Arafeh, 2002). Numerous school courses utilize a half and half model where numerous exercises are done web-based, requiring less in-class gatherings (El Mansour & Mupinga, 2007). Concentrating on PC training, learning can be taken and influenced by different factors that should be examined and analyzed in order to give the best impact as possible in acquiring the skill. Learning can become more comfortable and more enjoyable with practice. Therefore, hands-on experience should be given.

These are all in concentration on learning development, productivity, and technology. Various sets of foreign and local related literature and studies were thoroughly and carefully analyzed in order to set a pace for the researcher to pursue in researching this particular study. With all the gathered readings and reviewed literature and related studies, the researcher is ably guided on how to unfold the problems, although the difference of this study from the researchers' studies mentioned earlier is to concentrate more on computer technology on how to transfer learning to students more successfully. Its objective is to solidify and make worthy to the general public for continuing the development regarding the operation of programs, practical in assembly and all the basic computer concepts. Also, this will improve the quality of education for students taking up computer subject and internal efficiency of the system where computer technology is one of the focused fields of expertise.

3. Objectives of the Study

This study assessed the computer technology competencies of BSIT first-year students in a state university in Cebu City, Philippines. It answered the: 1) Profile of the respondents; 2) Level of

Competencies in computer with reference to the use of electronic mail, Internet application, Office software, desktop publishing, operating system, and installation, and configuration, and maintenance of the computer systems; 3) Factors affecting the respondents' computer competencies; and 4) Significant correlation between the level of computer competencies and its factor.

4. Methodology

The descriptive method of research was used employing a standardized tool to first-year students enrolled in the Bachelor of Science in Industrial Technology of the three identified campuses of the Cebu Technological University, Cebu, Philippines. There were 126 freshmen from Moalboal Campus, 21 first-year students from Barili Campus, and 67 first-year students from the Main Campus. These respondents were chosen using universal sampling. They were advised to respond to an adapted and modified standardized tool from TESDA. The instrument has nine parts, which consists of items concerning email, Internet manipulation, Office software, desktop publishing, operating system, and installation, and configuration, and maintenance of the computer systems. The data gathered were statistically treated using simple percentage, mean, and Pearson r.

5. Results and Discussions

Table 1 presents the profile of the respondents.

Table 1. Profile of the Respondents

	Campus							
	Moalboal (n = 126)		**Barili (n = 21)**		**Main (n = 67)**		**Combined (n = 214)**	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**
A. Age (in years)								
More than 20	13	10.32	1	4.76	0	0	14	6.54
16-20	113	89.68	20	95.24	67	100	200	93.46
B. Gender								
Female	65	51.59	7	33.33	40	59.70	112	52.34
Male	61	48.41	14	66.67	27	40.30	102	47.66
C. Civil Status								
Married	0	0	1	4.76	0	0	1	0.47
Single	126	100	20	95.24	67	100	213	99.53
D. Average Computer Usage (in a week)								
More than 20 hours	6	4.76	3	14.29	6	8.96	15	7.01
16-20 hours	5	3.97	8	38.1	22	32.84	35	16.36
11-15 hours	29	23.02	4	19.05	23	34.32	56	26.17
6-10 hours	43	34.13	4	19.05	10	14.93	57	26.64
0-5 hours	43	34.13	2	9.52	6	8.96	51	23.83

The study shows that most of the students studying at the said level have ages ranging from 16 to 18 years which are the ideal ages for first-year students who are ready and capable enough to learn computer technology. In some other aspects and some other areas of endeavor, men notably can surpass women, but the findings of this study had proven just the contrary in Barili campus only in which women have more preference than men when it comes to studying computer technology. The data uncover the reality that almost all of the student respondents are single; an indication that a freshman usually is belonging to this age level would go to college with lesser responsibilities heaped on his/her shoulders while studying compared to the married ones. Also, it was found out that each of the campuses had its indicative results signifying the students' ample opportunity in accessing the computer as far as socio-economic status and location are concerned.

Table 2. Level of Competencies of the Respondents

Competencies	Campus Moalboal (n = 126)		Barili (n = 21)		Main (n = 67)		Combined (N = 214)	
	Mean	Meaning	Mean	Meaning	Mean	Meaning	Mean	Meaning
A. Electronic Mail								
1. Opens, reads, and replies to e-mail messages that have been sent	3.44	Competent	3.24	Fair	3.28	Fair	3.32	Fair
2. Uses address books within the e-mail program	2.87	Fair	2.57	Less Competent	3.13	Fair	2.86	Fair
Aggregate Mean	3.16	Fair	2.91	Fair	3.21	Fair	3.09	Fair
B. Internet Manipulation								
1. Opens web pages and recognizes and uses hyperlinks	3.19	Fair	3.62	Competent	3.60	Competent	3.47	Competent
2. Navigates through a variety of websites, utilizing hyperlinks appropriately to discover useful information	3.37	Fair	3.90	Competent	3.61	Competent	3.63	Competent
Aggregate Mean	3.28	Fair	3.76	Competent	3.61	Competent	3.55	Competent
C. Word Processing								
1. Creates and formats documents utilizing word processing software	3.48	Competent	3.62	Competent	3.51	Competent	3.54	Competent
2. Edits, and prints documents utilizing word processing software and uses grammar and spelling	3.59	Competent	3.00	Fair	3.73	Competent	3.44	Competent

checker								
Aggregate Mean	3.54	Competent	3.31	Fair	3.62	Competent	3.49	Competent
D. Spreadsheet								
1. Incorporates tables and graphics into documents created with word processing software	3.42	Competent	4.10	Competent	3.42	Competent	3.65	Competent
2. Using formula	3.23	Fair	4.43	Very Competent	3.16	Fair	3.61	Competent
Aggregate Mean	3.33	Fair	4.27	Very Competent	3.29	Fair	3.63	Competent
E. Presentation Software								
1. Incorporates layouts, animations, and designs	3.48	Competent	3.71	Competent	3.30	Fair	3.50	Competent
2. Presents topics using slideshows with sound	3.29	Fair	3.90	Competent	3.27	Fair	3.49	Competent
Aggregate Mean	3.39	Fair	3.81	Competent	3.29	Fair	3.50	Competent
F. Desktop Publishing								
1. Utilizing different popular publication types	3.18	Fair	3.38	Fair	3.25	Fair	3.27	Fair
2. Incorporates color schemes, templates, and page size	3.25	Fair	3.76	Competent	3.30	Fair	3.44	Competent
Aggregate Mean	3.22	Fair	3.57	Competent	3.28	Fair	3.36	Fair
G. Operating System and Data Management Skills								
1. Uses multiple numbers of keyboard shortcuts and mouse to accomplish a variety of tasks on a computer	3.49	Competent	3.86	Competent	3.46	Competent	3.60	Competent
2. Locates, opens, and stores files within directory structures; renames files and directories; deletes, copies, and moves files within and among directory structures	3.43	Competent	4.05	Competent	3.57	Competent	3.68	Competent
Aggregate Mean	3.46	Competent	3.96	Competent	3.52	Competent	3.65	Competent
H. Computer System and Networks								
1. Performs primary computer set-up / assembly	3.33	Fair	4.14	Competent	3.30	Fair	3.59	Competent

2. Installing peripheral networks devices and other I/O devices	3.09	Fair	4.10	Competent	3.09	Fair	3.43	Competent
Aggregate Mean	3.21	Fair	4.12	Competent	3.20	Fair	3.51	Competent
I. Configuration and Maintenance								
1. Performs basic networking	3.11	Fair	4.00	Competent	3.16	Fair	3.42	Competent
2. Utilizes disk-clean up and defragmentation	2.94	Fair	3.95	Competent	3.01	Fair	3.30	Fair
Aggregate Mean	3.03	Fair	3.98	Competent	3.09	Fair	3.37	Fair
Overall Mean	**3.28**	**Fair**	**3.74**	**Competent**	**3.35**	**Fair**	**3.46**	**Competent**

The table shows that in Electronic Mail, most of the respondents have better performances when it comes to opening, reading and replying to e-mail messages rather than manipulating the address books within the program. This result connotes that e-mail provides valuable students and instructor communication channel and describes the process of setting up managing lists. The average of the weighted mean in using e-mail utilization resulted from Fair to Competent in which Moalboal got the highest score.

Referring to the Internet manipulation, the campuses got the result of Competent, which showed that students are moderately accessing the Internet. Based on the computed results, the students are more on navigating through a variety of websites and utilizing hyperlinks appropriately to discover useful information. This entails that the nature of teaching and organization of instructional materials can be further developed through the use of the internet for increased communication, resources, and lesson (Gibbone et al., 2010).

Novak et al. (1999) say that the Internet is incredibly useful for educational purposes. Also, Darling-Hammong (2000) mentioned that the teacher and students use it to supplement their lessons and open a substantial amount of knowledge to a much broader range.

For Word processing, the overall group is much interested in editing, printing, and formatting documents and uses grammar and spelling checker which connects with the statement of Kyriacou (1997) that Word Processing is an essential tool for an individual's digital age wherein proficiency on it, is vital for digital document needs and complex business requirements. The mentioned respondents are remarkably earning a Competent level rating at this point.

Spreadsheet software's task item two got a higher score which is the incorporation of graphics and tables according to the students' perception. Even though spreadsheet programs are in widespread use in classrooms at all levels of education wherein teachers use them primarily to keep budget and grade books and to help teach mathematical topics for students to learn, the students have gone at a reasonably competent level in using formula.

Presentation software performance tasks have reached the category from Fair to Competent in all

schools highlighting the incorporation of layouts, animations and designs as an item more practiced by students rather the presentation using slideshows with sounds. This software has moved beyond the mere imparting of facts to the facilitating of higher-order skills of creativity, and it is now used for a variety of tasks beyond simple presentations by teaching staff or students.

As for Desktop Publishing, the system had earned a Fair grade having the task 2 as the most cogent point which is the incorporation of color schemes, templates, and page size. The desktop publishing application was defined as a material that enhances visual communication and streamlines the process of disseminating information of all kinds. The results stress the need to have more focus on desktop publishing especially on the utilization of different popular publication types.

The target respondents also made an impressive performance in the Operating system familiarization especially on the mouse manipulation and key shortcuts garnering a Competent Level in three campuses. The Operating System training enables learners to manage the activities of the processor regarding job execution recording to the priority of arrival of jobs. The computed data suggested having more practical training on these areas to attain the Very Competent scale since this is one of the competencies that Information Technology student with computer technology as a major should master.

Meanwhile, in the Installation of Computer Systems, Barili Campus showed an excellent focus on hardware servicing by having a Competent score in the Installation of Computer Systems compared with the two schools, which remained at Fair level. However, the overall results from the three mentioned campuses garnered a Fairly Competent level, which is Performing basic computer set-up. This competency is one of the essential features in the field of computer technology. Thus, the data unfolded the need to have more training in this area to equip students with knowledge about the hardware aspect. Indeed, installing computer systems and network helps minimize the impact of changes in the said field of computer technology, provides exact information, improve security and facilitates adherence to standards.

The results for Configure and Maintenance of computer systems competency are the same as the previous one revealing that student respondents have better networking skill. Networking is one of the core competencies in hardware operation which is needed in the Information Technology environment. Cisco system provides networking skills providing learning to individuals by knowing more about fundamental networking which can help by having better decisions about the network designs and services which are essential in the computer technology environment. These dominant features imply that students have obtained relevant experiences already that will allow them to be ready and be exposed to the broader area of the computer world or some of them do not have a hard time comprehending the area above of learning. According to Etcuban and Pantinople (2018) that the primary focus of appropriate teaching brings change in the behavior of learning.

Table 3 presents the influential factor of the family which involves the parents, and the household members of the respondents' home. This factor indeed partakes in the development of the students in learning the area of computer subject.

Table 3. Respondents' Perceptions on the Extent of Family Factor

Factors	Campus Moalboal (n = 126)		Barili (n = 21)		Main (n = 67)		Combined (N = 214)	
	Mean	Meaning	Mean	Meaning	Mean	Meaning	Mean	Meaning
1. My parents encourage me to study computer lessons	3.57	Agree	4.00	Agree	3.69	Agree	3.75	Agree
2. My parents check my homework on the computer	2.93	Fairly Agree	2.95	Fairly Agree	2.85	Fairly Agree	2.91	Fairly Agree
3. My parents provide me with financial and physical support for my computer subject	3.56	Agree	4.24	Strongly Agree	3.66	Agree	3.82	Agree
4. My family is interested in computer manipulation	3.32	Fairly Agree	3.81	Agree	3.33	Fairly Agree	3.49	Agree
5. My family has a computer and related equipment at home	2.70	Fairly Agree	2.95	Fairly Agree	3.19	Fairly Agree	2.95	Fairly Agree
6. My family uses a computer and related equipment	2.72	Fairly Agree	2.67	Fairly Agree	3.13	Fairly Agree	2.84	Fairly Agree
7. My family members have a computer background	2.69	Fairly Agree	2.52	Fairly Agree	3.01	Fairly Agree	2.74	Fairly Agree
8. My family is aware of the importance of computer parts	2.97	Fairly Agree	2.43	Disagree	2.91	Fairly Agree	2.77	Fairly Agree
9. My family loves playing computer games and uses networking websites	2.75	Fairly Agree	2.14	Disagree	2.79	Fairly Agree	2.56	Disagree
10. My family is aware of the tools needed for computer instruction	2.79	Fairly Agree	2.57	Disagree	2.82	Fairly Agree	2.73	Fairly Agree
Aggregate Mean	3.00	Fairly Agree	3.03	Fairly Agree	3.14	Fairly Agree	3.06	Fairly Agree

For the overall result on the Family factor, it was found out that Moalboal Campus and Main Campus had rated Agree on only two aspects namely; My parents encourage me to study computer lessons and My parents check my homework in computer which implies that their families give value to education while the rest were rated as Fairly Agree. This signifies that the respondent students realize the significant role that the family plays in the development of their competence learning. They indeed have the perception that without the atmosphere of encouragement and interest provided to them by their respective families, they too will falter in their learning activities.

Barili on its part had responded differently in items which were rated as Disagree like My family is aware of the importance of computer parts, My family loves playing computer games and uses networking websites, and My family is aware of tools needed for computer instruction which means that whatever their families do will have no relationship with their learning in computer education. However, they have marked the item 3 as Strongly Agree with which is My parents provide financial and physical support for my computer subject and Agree for My parents encourage me to study computer lessons and My family is interested with computer manipulation.

These features give an idea that their respective parents really oriented their young individuals with the importance of education and pushed them as well as encouraging them to study hard having taken to account the reality that some of these supportive parents have difficulty in pursuing their children to go to the expensive life in college due to financial problems.

The points that the students reasonably agreed were: My parents check my homework in the computer, My family has a computer and related equipment at home, My family uses a computer and related equipment, and My family members have a computer background. These comprise are the second another set of evidence that the students perceived on their parents or guardians as being not only caring with their studies but have computer ability influences on them that somehow gave them the familiarity with some tasks in computer operations. These results are very much in connection with their parents' income referring to those who are generally working in homes and restaurants near the said location. One of the significant impacts on computer competency is the family factor while most of the Technology integration research focuses on integration in classrooms, some scholars have specifically examined children's use of technology at home.

Children prefer to spend more hours with the computer at their houses rather than at school environment. However, children's use of computers at home depends on how the parents perform their responsibility in controlling and guiding children in accessing the appropriate websites necessary for their education. Parents' support on their children with the use of Computer Technology affects their skills especially in involving it to the outside community.

The same source above also found that parents' support on the use of technology affects the level of integration at home. They also found that less learning had highly involved parents who helped choose appropriate software, coached their child on the computers worked jointly with the child at the keyboard, and offered natural praise as well as practical.

In other words, the attitude and behavior of children toward computer use are so much affected and influenced by the computer training that children obtain from their respective homes and families. The more constant they are exposed to computers in their homes, the more chances that they could develop a proper attitude towards computer use and thus could be properly honed in computer education.

Table 4 presents the respondents in need of these factors to give an impact on to their knowledge and skills so that positive inputs can happen thereby letting their computer competency soar up to a more remarkable level. The computed results presented indications that the factors that involve outside the learning institution will somehow shape up the level of learning of the students as perceived by them in the survey questionnaires.

Table 4. Summary of the Test of Significant Relationship Between Family Factor and the Level of Computer Competence of the Respondents

Variable	Pearson r	Strength	P-value	Significance	Result
Family Factor and Level of Computer	0.243	Low Positive Correlation	0.001	Significant	Ho Rejected

For Family factor computation, there was a low positive correlation between the family category and the level of computer competence (Pearson r = 0.243) and such relationship was found out to be significant (p-value < 0.05). It is evident that the family has a very much strong influence on the direction of the students' goals. If the family has a strong experience in computer, the student will tend to follow his/her family's path. Because of this factor, a student's exposure to the computer world will depend on the kind of family that he or she has. If the family is computer savvy, then the children too can be adequately familiarized with varied aspects of computer education and can readily absorb whatever is taught. They can also experience the everyday tasks done at home. However, if the family, however, has no interest in computers, then the student will possibly tend to follow and falter in the end and be less knowledgeable in computer operation and manipulation.

6. Conclusions

In examining the level of computer technology competencies of the student respondents closely, the results of the data unfolded the reality that students have a remarkable level of competency. The use of an electronic mail application comes lowest in rank according to the students' perception. This leaves an impression that although the students' achievement is at the average level, they still need to focus more and make improvements on the competency mentioned above tasks in order to obtain the Very Competent rating. Furthermore, they need to identify their weak areas most specifically on the portion of manipulating the electronic mail in order to ascend from Fairly Competent level to a much higher level of achievement. At this phase, since no item had ever attained the Very Competent level, category

which implies the highest among all, the figures and results are revealing and encouraging the targeted student respondents to continue concentrate on areas that need improvement and exert some more effort to practice their skills in the performance of computer tasks, computer operations, and other related computer manipulations and activities in order to achieve an overwhelming competence in the field of computer technology. As for family factor using the Pearson correlation that was devised reveals the reality that they truly affect and influence the students' level of computer technology competency.

6.1 Recommendations

As seen from the results of the study, all student respondents perceived that their respective campuses made a mark of achievement and performance obtaining a rating equivalent to Fair level though they perceived to have impressive ratings for their levels of competency, they still need to strengthen their skills by practicing and focusing more on the identified weak areas in order to attain the Very Competent level for their schools since no one ever got the highest expected over-all rate of the mentioned level scale at this particular point in time. Therefore, with only the average level of competency attained by the Campuses as perceived by students, it is strongly recommended that parents and members of the family household take an active part in the development of the computer learning competencies of the student.

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