Int J Edu Sci, 21(1-3): 48-56 (2018)
DOI: 10.31901/24566322.2018/21.1-3.910

Impact of Computer Literacy Training on the Academic Performance of First Year Students in the University of Zululand, South Africa

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KEYWORDS Academic Performance. Computer Literacy. Logistic Regression. Odd Ratio. Training

ABSTRACT The purpose of this study was to assess the effectiveness of the computer training program for the first year undergraduate students on their academic performance. Based on a sample survey of 165 students and using logistic regression analysis, the results show that the odds ratio of all the variables except previous knowledge of computer and IT is greater than 1 (that is, odds>1). This means that the log odds of enhancing the academic performance of students who attended the computer literacy training are higher. This, therefore, implies that the probability of enhancing the academic performance of students who attended the training is higher than those who did not. This training is therefore recommended for every first year students, especially those from a disadvantaged background. The duration of the training, as well as the content of the training, should also be expanded in order to bring about better performance of students.

INTRODUCTION

Education is considered as an instrument of social change and transformation as well as human capacity development. However, this goal cannot be achieved if the required inputs such as computer literacy, effective teaching etc. are not provided. Computer literacy courses are very important in acquainting undergraduate students with basic computing ideas, concepts and aptitudes as well as promoting innovation through information technology (Sung et al. 2016: 252). It has been identified as an essential course that determines students' success in many college programs and carriers (Furste-Bowe et al.1995: 175; Karamti 2016: 322; Çakiroglu et al. 2017: 98). Such essentials accomplish two different but associated functions. To start with, they can be utilized as a filter which prevents program continuation. Second, they can be utilized as a measure of students' readiness which signals the set of entrance skills that are vital for successful accomplishment of their studies (Marcal and Robert 2000: 254).

The past three decades have witnessed rapid development in new and emerging technologies which have changed the way we live, work and learn (Voogt et al. 2013: 403; Sung et al. 2016: 252). It is believed that students from poor background lack necessary skills to use computer-based learning platform effectively and are therefore at a disadvantage (Ameh et al. 2008). This is because they lack the necessary resources, time and training program on computer literacy. As the gap between the rich and poor becomes more visible, there is recognition that these students from poor backgrounds are less likely to achieve in schools. Computer literacy training can be used as a tool to support or enhance efficient learning, research, and advancement of knowledge for learners, teachers, and school administrators thereby bridging the educational performance gap between the rich and poor (Meek et al. 2009: 1).

The addition of computer literacy in the education system has not only been found to improve access to learning by all and the quality of knowledge delivery, its application has like-

wise been effective in the teaching-learning process (Kareem 2015: 69). However, can the same be said of the educational outcome of learners, especially first years? Several studies (Elves et al. 1997: 59; Summers et al. 1999: 330; Woltering et al. 2009: 725; Serin 2011: 184; Karamti 2016: 322; Çakiroglu et al. 2017: 98) suggest that computer knowledge improves learners' performance, develops their problem-solving skills, increase their satisfaction among others.

High rate of access to computing technology and computers by learners (such as tablets, smartphones, and e-book readers) which Prensky (2001: 2) referred to as 'digital natives' have led policy makers and even learners themselves to conclude that learners entering higher institutions are already computer literate and thus computer literacy training is not necessary (Mark 2013: 1; Çakiroglu et al. 2017: 98). It must be noted that frequent use of computing technology tends to produce basic skills and competency in the student which will in turn also develop their self-efficacy in mastery in the field. However, Grenci (2013: 67) stated that there is a gap between computer use and mastery. It is possible for a student to be skillful in the use of computing technology, but this may not necessarily translate into success if not applied appropriately. For example, a student might be skillful in the use of computing technology for informal communication. This will not automatically translate or guarantee the student's success in class, although, it is believed that the skills can be transferred into other contexts or relevant situations.

While there is consensus within the existing literature on the significance of integrating computer literacy into the education system, there is no precise agreement on what set of abilities computer literacy actually presents to learners.

Studies on the relationship between computer use and academic performance have been inconclusive (Aristovnik 2012: 144). While some studies (Weaver 2000: 121; Gil-Flores et al. 2012: 653; Karamti 2016: 322; Çakiroglu et al. 2017: 98) have found a positive relationship between computer use and academic performance, others (Papanastasiou et al. 2003: 1; Fried and Yamanoto 2008; Wittwer and Senkbeil 2008: 1159) found a negative one. Authors (Fried 2008: 906) with a contrary view to the impact of computer literacy on students' performance cited problem generated by access to distracting materials which is as a result of access to laptops and internet.

Sung et al. (2016: 252) examined the effects of integrating mobile devices which include computer knowledge with teaching and learning using a meta-analysis of 100 journal articles between 1993 and 2013. Their results suggest a mean effect of 0.523 for the application of mobile devices on educational outcome. In the same vein, Rohatgi et al. (2016: 107) examined the importance of ICT self-efficacy for students' ICT use and achievement for Norwegian students. The results show that ICT self-efficacy has a positive relationship with ICT use and student achievement, although this depends on the level of expertise in ICT self-efficacy. Grant et al. (2009: 141) in their study, which compared learners' computer self-efficacy rating and their actual performance in computer skills test revealed that there is a gap between what learners perceived as their computing aptitudes and their actual assessed abilities.

In South Africa, Czerniewicz and Brown (2005: 1) examined the extent and how Information and Communication Technologies (ICTs) are being utilized in teaching and learning, rather than the impact of computer literacy training on learners' academic performance. Their findings indicated that only 2.15 percent of the 6577 learners surveyed "never or rarely used a computer to undertake any of the 18 computer-based learning activities that they were asked to do". In view of these, an evidence-based understanding of the impact of computer literacy training on the academic performance of first-year university learners is essential for institutional decision making associated with the management, administration of information and communication technologies in terms of provision of technical supports for learners and reduced the workload task to staffs.

The study is structured into six sections. The literature review is presented in Section 2, the methodology is presented in Section 3 while Section 4 has focused on discussion of findings. Conclusions and recommendation are presented in Sections 5 and 6 respectively.

Literature Review

Role of Computer Literacy in Education

The utilization of computer technology has grown to become a very important part of contemporary life and it directly affects communica-

tion, education, entertainment and work (Huffman and Huffman 2012: 583). For these reasons, computer literacy has been recognized to be valuable for students as it not just aids the learning process, it provides students with aptitudes that will be required in their future work life. Tella and Mutala (2008: 59) "defined computer literacy as acquiring basic skills such as those related to common software packages (Microsoft Word, Microsoft PowerPoint, and Microsoft Excel), operating systems (Windows), database management and the usage of internet and E-mail".

Due to advancement in technology, the term computer literacy has changed to what is commonly referred to as "information literacy". According to Detlor et al. (2012: 148), information literacy is the ability to ascertain when information is needed as well as being able to effectively locate, assess and use the needed information. This includes being proficient at utilizing different ICTs and different types of online information retrieval systems. These abilities are key to achieving success in today's business and academic environment, where information has become one of the most valuable intangible assets (Detlor et al. 2012: 160). As computers are increasingly being utilized, figuring out how to utilize them to oversee the learning process has become a core competency at tertiary institutions.

Acquisition of computer literacy skills ought to be initiated during the underlying or initial stages of the undergraduate educational modules (Ranasinghe et al. 2012: 504). A study conducted on medical students by (Osman and Muir 1994: 381), revealed that students who have not obtained fundamental computer literacy skills by the third year of undergraduate training are probably not going to do as such in the final years. The same sentiments were echoed by Odusanya and Bamgbala (2002: 189) who noted that the poor skills of undergraduate students in the use of the internet will affect negatively their chances of getting the most out of information technology. A study of the Kingdom of Bahrain by Al-Ammary (2012: 248), also affirmed that educational technology serves as a motivating factor for students to learn. Chen (2011: 209) also maintained the knowledge and use of ICT, especially software plays an important role in determining students' achievement.

Computer literacy displays considerable variations; these variations can be viewed from the gender perspective, socio-economic status and the user's environment (Furste-Bowe et al. 2005: 180). For instance, Oladunjoye and Benwari (2014: 1) surveyed the literature on computer literacy among undergraduate students in Nigeria. It was noted that although girls are generally interested in computers, they tend to show apathy for it during their leisure time. Okebukola (2003: 187) concurred and opined that girls are generally less computer literate than their male counterpart. In a study of ASA University students, Islam and Fouji (2010: 101) discovered eighty percent of their respondents disagreed that ICTs enhance their academic performance as they see it as a source of recreation. Perbawaningsih (2013: 717) also found similar results in the case of Indonesia.

Regarding socio-economic status, various studies demonstrated that individuals with high socio-economic status often display higher levels of computer literacy compared to individuals from low economic status. For instance, a study conducted on university student at the University of Wisconsin-Stout by Furste-Bowe et al. (2005: 180) showed that the socio-economic standing of the parents adds to the unevenness observed in computer literacy skill levels among undergraduate students. He noted that most students whose parents constitute the high socio-economic class oftentimes possess their own computers, which undoubtedly enhance their knowledge of computer technology unlike the students from the less privileged class. Oladunjoye and Benwari (2014: 1) also lamented the discrepancies in computing skills among undergraduate student; where some students possess basic knowledge of computers before entering the university, while others may be touching the computer for the first time in the university.

According to the International Telecommunication Union (ITU), despite the appreciative progress that was achieved in information technology in the past decades, there are important digital divides that are still needed to be addressed; for instance, ninety percent of 4.3 billion people that are not online reside in the developing countries. Fixed broadband penetration stands at six percent in developing countries, compared with 27.5 percent in developed countries. The gap is even wider when looking at the uptake of advanced internet services, like fixed broadband.

South Africa in particular, is still struggling to reverse the adverse effect of apartheid segre-

gation (in terms of race and funding) of the educational system. Indeed, a considerable number of students entering higher education institutions are from underprivileged schooling and disadvantaged socioeconomic societies with little or no access to educational facilities such as public libraries and computers (Bharuthram and Kies 2013: 413). Due to these reasons, a considerable number of students entering higher education institutions do not possess sufficient computer literacy skills to cope with the demands of their discipline. Furthermore, as Bharuthram and Kies (2013: 413) stressed the high level of inequality within the South African higher education system which was as a result of the segregation that existed during the apartheid era. It is very easy to distinguish between the two categories of institutions: (1) the historically advantaged, and (2) the historically disadvantages institutions. The University of Zululand falls under the latter categories and as such was provided limited resources by the government during the apartheid era.

There is a paucity of literature that documents the impact of computer literacy on the academic performance of students at South African universities, especially the previously disadvantaged institutions. Sibanda and Donnelly (2014: 480) documented on the impact of online learning platform on student achievement at a South African University of KwaZulu-Natal and found that the adoption of the online learning platform for first year modules did not impact on the performance of the students, although it improved the mark dispersion thereby lowering the standard deviation of marks in the year the online learning platform was adopted.

Bharuthram and Kies (2013: 413) also studied the benefit of including an e-learning online discussion component for the redesigning of English for Educational Development (EED) course at the University of the Western Cape. The study revealed that the introduction of e-learning into the EED curriculum motivated all students to participate in the discussions. It also improved the level of interaction and information sharing among the student both within and outside the online space, thus encouraging a community of practice.

METHODOLOGY

The study was conducted for the first year students in the two faculties of the University of Zululand using both qualitative and quantitative methods between June and September 2015. Some 250 structured questionnaires were administered to first-year students. The simple random sampling was used to select 250 students who took part in the computer literacy training. A total of 1,333 first year learners took part in the computer literacy training out of which 743 are from the Faculty of Commerce, Administration and Law (FCAL) and 590 from the Faculty of Science and Agriculture (FSA). However, from the responses received, there is evidence that some other student from the Faculties of Arts and Education also attended the training. All the elements of the population were included in the study. In all, 165 valid responses were analyzed. Informed consent was obtained from each respondent. Ethical approval for the study was obtained from the University of Zululand Research and Ethics Committee (UZREC).

The first section in the survey questionnaire dealt with the demographic features of the respondents. The second section was divided into 5 categories. Learners would be asked five questions about ownership, access to and their specific knowledge of computer in the first category, while knowledge of Microsoft Word, Excel and PowerPoint would be asked in the second, third and fourth categories respectively. Learners' knowledge and skills of computer would be asked in the fifth category. In the third section of the questionnaire, learners were asked to rate the effectiveness of the computer literacy training on their academic performance using a 5-point Likert scale "Strongly Agree", "Agree", "Neutral", "Disagree", "Strongly Disagree". Open ended questions were also asked in the fourth section to reflect upon their (learners') overall evaluation of the course.

To recruit participants, the researchers contacted the administrative head of departments, lecturers, tutors in the faculties for permission to distribute the questionnaires during their lectures and tutorials. Some students were also approached individually to fill the questionnaires. The responses were collected and analyzed.

To achieve the objective of the study, descriptive statistics (charts, mean and standard deviation) were used to examine the impact of the computer literacy training on the academic performance of the students. A descriptive study was appropriate because it described the present condition based on the reaction of the respondents. The study further examined the

impact of the computer literacy training on the performance of the students using logistic regression analysis, using examination performance (academic performance rating) as dependent variable and other independent variables which included age, race, gender, previous knowledge of computer, previous knowledge of IT, ownership of computer, knowledge of Microsoft Word, knowledge of Microsoft Excel, knowledge of Microsoft power point, computer skills, faculty, enhanced satisfaction, ability to source internet for information, enhanced ability to use Microsoft Word, enhanced ability to use Microsoft Excel, enhanced ability to use Microsoft power point, enhanced ability to write and submit assignment, enhanced ability to communicate via emails, improve typing skills. Logistic regression is used when the outcome variable is categorical (pass/fail) while the explanatory variables can be a mix of categorical and continuous variables. It is the non-linear transformation of the linear regression so that the predicted probability values are bounded within the (0, 1) interval. The logistic regression can be written as.

$$ln[p/(1-p)] = a + \beta X_i + e \quad (1)$$

where p is the value of the dependent variable between 0 and 1, *p/(1-p)* is the "odds ratio", while In [*p/(1-p)*] is the log odds ratio, or "logit"(logit(p)). This can be re-written as follows:

$$logit\ (p) = a + \beta X_i + e \quad (2)$$

where *logit (p)* is the academic performance indicator and X_i is the vector of explanatory variables, α and β are parameter constant and co-efficient respectively, while e is the error term.

The logistic distribution constrains the estimated probabilities to lie between 0 and 1. The Nagelkerke R^2 test was used to assess the ability of the model to predict students' academic performance. That is, the usefulness of the explanatory variables in predicting the dependent variable (Academic performance).

RESULTS AND DISCUSSION

Only first-year students who attended the five days computer literacy training were surveyed. The aim was to evaluate the impact of the computer literacy training on the academic performance of 2015 first-year students at the University of Zululand.

Demographic Features of Respondents

This age group reveals high participation of first-year students between ages 15-22 in the training. Table 1 shows that more than half (60%) of the respondents were aged between 19 and 22 years, followed by 33.9 percent aged between 15 and 18 years, three percent aged between 23 to 26, 1.8 percent aged 31 and above and 1.2 aged between 27 and 30.

Table 1: Age of respondents

		Frequency	*Percent*	*Cumulative percent*
Valid	27-30	2	1.2	1.2
	31 and above	3	1.8	3.0
	23-26	5	3.0	6.1
	15-18	56	33.9	40.0
	19-22	99	60.0	100.0
	Total	165	100.0	

More than half (67%) of the respondents were female and thirty-three percent were males (see Table 2). This shows that female students were on the average more than the male students in the training.

Table 2: Gender of respondents

		Frequency	*Percent*	*Cumulative percent*
Valid	Male	54	32.7	32.7
	Female	111	67.3	100.0
	Total	165	100.0	

Although the training was conducted mainly for the Faculty of Commerce, Administration and Law as well as the Faculty of Science and Agriculture, the responses the researchers retrieved indicate that other students from the faculty of art and education also attended. Some 41.8 percent of the respondents were from the Faculty of Science and Agriculture, followed by 30.9 percent from the Faculty of Commerce Administration and Law. Faculty of Art had 21.2 percent of the respondents filling the questionnaires while Faculty of Education had only 6.1 percent (Table 3). The level of the each faculty in understanding the importance of the study could relatively be seen here. Though the researchers faced some challenges in retrieving

some of the questionnaires from the students, thus accounting for their low turnout.

Table 3: Faculty of respondents

		Frequency	*Percent*	*Cumulative percent*
Valid	Education	10	6.1	6.1
	Art	35	21.2	27.3
	Commerce	51	30.9	58.2
	Science and Agriculture	69	41.8	100.0
	Total	165	100.0	

Impact of the Computer Literacy Training on the Performance of First Year Students

The study aimed at establishing the extent to which the computer literacy training affected the performance of 2015 first-year students at the University of Zululand using the Likert scale between 1 and 5 where 1 stands for strongly agree and 5 stands for strongly disagree. The mean response and logistic regression analysis were used to examine the impact of the computer literacy training on students' academic performance.

A. Mean Responses of the Impact of the Computer Literacy Training on the Academic Performance of First Year Students

Descriptive information from the respondents was used to examine the impact of the computer literacy training on their academic performance. A mean of 1 to 2 signifies agreement, 3 signifies neutrality and a mean of 4 or 5 indicate disagreement (Table 4).

On average, results from the respondents indicate that the computer training has enhanced their ability to source the internet for information (mean 1.6), the computer training has enhanced their ability to use Microsoft Word (mean 1.7), the computer training has helped them in writing and submitting assignment (mean 1.8), the computer literacy training have improved their typing skills and pace (mean 1.8), the computer training has enhanced their academic performance (mean 2.1), the computer training has enhanced their satisfaction (mean 2.1). This is in line with the study of Sung et al. (2016: 252) which suggest that the application of mobile devices has an impact on the educational outcome of learners. However, the same cannot be said of the use of Microsoft Excel with a mean of 2.4 which tends towards uncertainty.

B. Logistic Regression Analysis

The study further examined the impact of the computer literacy training on the academic performance of students using logistic regression analysis (Table 5).

The estimated results presented in Table 5 show the coefficients, their standard errors, the Wald test statistic, probability values (Sig.), odds ratio, and the ninety-five percent confidence interval of the coefficients. The odds ratio of all the variables except previous knowledge of computer and IT are greater than 1 (that is odds>1). This means that the odds of enhancing the academic performance of students who attended the computer literacy training are higher which implies that the probability of enhancing their academic performance is higher for students who attended the training. (Note: if the odds ratio is >1; the probability of an event occurring with a unit increase in the independent variable is higher). Also, from Table 5, it can be seen that the probability values of knowledge of Microsoft word, computer skills, the level of satisfaction

Table 4: Mean responses of the impact of the computer literacy training on the performance of the 2015 first year students, UNIZULU

Impact of the computer literacy training on the performance of first-year students	*Mean*	*Std. deviation*
The computer training has enhanced your performance	2.1	1.0
The computer training has enhanced your satisfaction	2.1	0.8
The computer training has helped you source internet for information	1.6	0.9
The computer training has enhanced your ability to use Microsoft Word	1.7	0.9
The computer training has assisted you in using Microsoft Excel	2.4	1.1
The computer training has assisted you in using power point	2.4	1.2
The computer training has helped you in writing and submitting assignments	1.8	1.0
The computer training has helped you to communicate with others via emails	1.9	1.2
The computer literacy training has helped you improve your typing skills and pace	1.8	1.1

Table 5: Logistic regression results on the relationship between academic performance and factors that influence it

		Estimate [B]	*Std. error*	*Wald*	*df*	*Sig.*	*Exp [B]*	*95% confidence interval*	
								Lower bound	*Upper bound*
Threshold	[Academic performance = 1.00]	-25.2	1.4	332.0	1	0.000	0.7	-27.9	-22.5
	[Academic performance = 2.00]	-21.8	1.5	205.0	1	0.000	1.7	-24.8	-18.8
	[Academic performance = 3.00]	-19.8	1.6	149.0	1	0.000	1.6	-23.0	-16.6
	[Academic performance = 4.00]	-18.2	1.7	112.4	1	0.000	1.7	-21.6	-14.9
Location	Age	-0.3	0.2	2.1	1	0.148	1.5	-0.9	0.1
	Gender	0.4	0.4	1.2	1	0.266	3.4	-0.3	1.1
	Previous knowledge of computer	0.5	0.4	1.8	1	0.180	0.6	-0.2	1.3
	Previous knowledge of IT	0.4	0.7	0.3	1	0.577	0.8	-1.0	1.8
	Ownership of computer	0.1	0.4	0.1	1	0.815	1.6	-0.7	0.8
	Knowledge of Microsoft word	1.2	0.5	5.8	1	0.016	1.2	0.2	2.2
	Knowledge Microsoft power point	-0.5	0.5	1.4	1	0.241	1.7	-1.4	0.4
	Knowledge of Microsoft excel	-0.3	0.4	0.5	1	0.474	1.0	-1.1	0.5
	Computer skills	0.5	0.2	5.3	1	0.021	1.3	0.1	0.9
	Faculty	0.2	0.2	2.0	1	0.160	1.4	-0.1	0.5
	Enhanced satisfaction	0.5	0.3	4.0	1	0.046	1.3	0.01	1.0
	Ability to source internet for information	0.03	0.2	0.02	1	0.887	1.9	-0.4	0.5
	Enhanced ability to use Microsoft word	0.3	0.3	1.03	1	0.311	1.1	-0.2	0.7
	Enhanced ability to use Microsoft excel	0.3	0.2	3.5	1	0.063	1.3	-0.02	0.7
	Enhanced ability to use Microsoft power point	0.3	0.2	2.0	1	0.152	0.7	-0.1	0.7
	Enhanced ability to write and submit assignment	0.7	0.2	8.3	1	0.004	1.7	0.2	1.1
	Enhanced ability to communicate via emails	0.1	0.2	0.2	1	0.631	1.5	-0.2	0.4
	Improve typing skills	0.3	0.2	2.0	1	0.158	1.7	-0.1	0.7
	Pseudo R-Square								
	Cox and Snell	0.51							
	Nagelkerke	0.55							

Source: Authors' estimation

with the training, ability to use Microsoft Excel as well as ability to write and submit assignment are statistically significant at the five percent level of significance while other variables are not. This implies that for a one unit increase in knowledge of Microsoft word (that is, from 0 to 1) we expect a 1.2 unit increase in the academic performance of the students, provided all other variables in the model are held constant. Furthermore, for a unit increase in computer skills, level of satisfaction with the training, ability to use Microsoft Excel and ability to write and submit an assignment, there is likely going to be a 0.5, 0.5, 0.5, and 0.7 unit increases in the academic performance of the students respectively, provided all other explanatory variables are taken as given.

The significant impact of computer skills on students' performance is in conformity with the study of Chen (2011: 409) who opined that knowledge of ICT impact positively on students' academic performance. Also, the significant impact of the ability to use a computer on students' academic performance in line with the studies of Karamti (2016: 334) and Çakiroglu et al. (2017: 106). The Naelkerke R^2 value of 0.55 suggests that the model is very useful in predicting students' academic performance.

CONCLUSION

Computer literacy courses are believed to play a vital role in familiarizing undergraduate students to basic computing ideas, concepts and

skills and it had been identified as an essential determinant of students' success in many college programs and careers. The purpose of this study is therefore to assess the effectiveness of the computer literacy training program on the academic performance of first year undergraduate students.

Using tables, charts as well as correlation and logistic regression analysis to analyse the questionnaires, the results revealed that the majority (60) of the respondents are aged between 19 and 22 and are predominantly of the black race. This age group forms a bulk of first-year students entering University and also the target population (previously disadvantaged group). The majority (41.8%) of the respondents is female with the Faculty of Science and Agriculture forming a larger proportion of students without prior knowledge of IT related subjects. This is an indication that first-year students are really deficient in terms of basic computer knowledge. However, there was significant improvement in their ability to handle some basic activities using their computers. This is evident in the mean responses of the respondents which indicated that the computer training has enhanced their ability to source the internet for information, use Microsoft Word, write and submit assignments as well as their typing skills and pace among others.

The odds ratio of all the variables except previous knowledge of computer and IT are greater than 1 (that is odds>1). This means that the odds of enhancing the academic performance of students who attended the computer literacy training are higher which implies that the probability of enhancing their academic performance is higher for students who attended the training. The result shows that for a one unit increase in knowledge of Microsoft word (that is, from 0 to 1), the academic performance of students is likely to increase by 1.2 units provided all other variables in the model are held constant.

In conclusion, the results show that the majority of the first year entering students are not prepared in terms of basic knowledge that will help them to excel in their chosen field of study as well as with the University standard. This will definitely affect their academic performance negatively. The responses also revealed that the student has really improved in terms of their knowledge of basic computer skills which have also impacted on their academic performance.

RECOMMENDATIONS

It was established in the study that computer literacy courses play a vital role in introducing University students to fundamental computer concepts and skills as well as promoting innovation through information technology. It was also established that such courses constitute major factors that determines students' success in the University based on the level of digital advancement which has formed a core of teaching and learning in our Higher Institutions. Computer literacy is paramount for any student to excel and as well compete with his or peers all over the world. In view of these, computer literacy training is therefore recommended for every first year students, especially those from a disadvantaged background. The duration of the training, as well as the content of the training, should also be intensive in order to bring about better performance of students.

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Paper received for publication on April 2016
Paper accepted for publication on December 2016