

Enhancing Learning through Information and Communication Technology: University of Ilorin Pre-Service Teachers' Perception

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Abstract

Pre-service teachers are the trainees who prepared to undertake the teaching role of a teacher. However, the efforts in the use of information and communication technology (ICT) in pre-service teachers training on how to use it in teaching-learning process have not been fully addressed. ICT encourages the transformation of instruction from teacher-centeredness to learner-centeredness. Thus, this study examined the usefulness of ICT in enhancing learning among pre-service teachers in the University of Ilorin. The population for the study comprised of 1,400 final year pre-service teachers in the Faculty of Education while 150 students were randomly selected from all the departments in the Faculty of Education. Descriptive survey research type was adopted and a 4-point Likert-type scale questionnaire comprising 21 items was administered. Thus, four research questions and two research hypotheses were answered and tested using mean rating and *t*-test statistical tool, respectively. The findings revealed amongst others that; ICT enhanced learning among pre-service teachers with the mean rating of 3.3 using 2.0 as the benchmark. Also, pre-service teachers had positive attitude towards using ICT with the mean rating of 3.2 using 2.0 as the benchmark. Therefore, no significant difference existed between the perceptions of male and female pre-service teachers on the usefulness of ICT in learning. Also, no significant difference existed between the perceptions of male and female pre-service teachers on their attitude towards the use of ICT in learning. Based on the findings, it was recommended

amongst others that efforts should be made to improve on the use of ICT in learning among pre-service teachers.

Keywords: perception, ICT, usefulness of ICT, pre-service teachers, learning

Introduction

Pre-service teachers are students who partake in a pre-service training or a course of study which they need to undergo before they begin teaching. Thus, they are trained to become professional teachers. In this research the samples used are the final year pre-service teachers across the departments in the Faculty of Education. These departments include: (1) Adult and primary education, (2) Arts education, (3) Counselor education, (4) Educational management, (5) Educational technology, (6) Health promotion and environmental health education, (7) Science education and Social sciences education.

Pre-service teachers become more familiar with best practices, teaching strategies, and classroom application with regards to the application of information and communication technology in teaching-learning process. Therefore, positive perception of pre-service teachers would ultimately affect integration of ICT for learning. ICT tools equip the pre-service teachers the technological skills on how to do research online through collaborative means. Similarly, pre-service teachers use spread sheet and database programs to help organise and analyse the data collected, as well as using a word processing application to prepare their written report. University of Ilorin, Ilorin embraced the new media of communication in 2008 where students register online, check details online and also write examination online.

Pre-service teachers consider the use of ICT essential to life. Most cannot do without being on the ICT tools even for a day mostly for the social reason, while others use it for assignment purposes or to get more knowledge. The purpose of the ICT integration is to teach pre-service teachers both the theoretical and practical aspects of teaching effectiveness. Technology can be described as the entire use of human and non-human resources by means of technique to ease the burden of daily activities in human endeavors. ICT is used to support communication with learning

and instructional materials. It makes students active rather than inactive participants as receivers of information conveyed by the teacher, textbook, video based instruction, internet, and so on (Fajemirokun, 2003). Thus, all these reasons are geared towards focusing the usefulness of information and communication technology in enhancing learning among pre-service teachers in the University of Ilorin, Nigeria.

Literature Reviewed

According to Danmole (2011), in Nigeria, the aim of the education system is to teach the type of science that will be consistent with the challenges of modern technological age and produce the anticipated manpower with a view to teaching self-reliance and economic independence for the nation. This view is well expressed in the National policy on science and technology which include necessitate for enunciation and application of science and technology transfer and skill acquisition through mass education by the federal government in order to prepare students to live efficiently in the modern age technology.

In order to be technologically developed, a nation has to be scientifically literate because of the contributions from science and technology to man and his environment (Ogunlade et al., 2013). The success of technology is the one that is ultimately developed to the evolvement of approaches in the use of information and communication technology (ICT).

Perception of pre-service teachers towards the utilisation of information and communication technology for learning can give some clues about its essentiality in teaching-learning process. The word perception is a process of translating sensory idea into an integrated analysis of the world around with the present situation based on incomplete and unverified information, perception is equated with reality for most practical purposes and guides human behaviour in general. Perception can be seen as a way of understanding issues and the psychological ability to process or use information received (Daramola, 2011).

One of the most commonly reasons for using ICT in education has been to prepare students for a workplace where ICT tools improve the quality of education by increasing learners' engagement and motivation, by facilitating

the acquisition of basic skills and by enhancing teacher training. Therefore, it is important for the pre-service teachers to have positive perception towards the utilisation of ICT for learning. ICT encompasses all forms of equipment and tools inclusive of conventional technologies of radio, video and television to the modern technology of computer, hardware, software, among others, as well as the methods, practices, processes, measures, concepts and values that come into play in the manner of the information and communication actions (Yusuf, 2011).

Application of ICT has to do with introducing or using new ideas of innovative technologies in teaching and learning process. These innovative technologies can be used to sustain educational development. Therefore, the scholars opined that, with information and communication technology, there will be endless passion for teaching and learning. ICT facilitates quick access to more information and in an efficient manner. Teachers have to be acquainted with the type of technology that will allow students to be engaged more than ever before.

ICTs are transformational outfit, which when it is used appropriately, can encourage the transformation of instruction from teacher-centered to learner-centered. According to Alabi (2008), ICT deals with the latest communication using computer facilities. However, attitude of pre-service teachers towards the use of information and communication technology has its implication on the targeted learning outcomes. Olowojaye (1993) sees attitude as personal view of something, it is an opinion or general feeling about positive or negative attitude change. An attitude can also be referred to as a relatively enduring system of belief about an object or situation pre disposing one to respond in some evaluating manner, it may be distinguished from an opinion which is usually thought of as typical and short lived.

According to Akinsola and Olowojaiye (2008), it is a general belief that students' attitude towards a subject determines their success in that subject. In other words, favourable attitude result in high achievement in a subject. Attitude is also an important factor because it is the controller of actual behaviour of an individual, consciously or unconsciously. Attitude is an accumulation of information about an object, person, situation or experience. It is a disposition to act in a positive or negative way towards some object.

Information and communication technology is an exceptional in its scope, and it demonstrates many gendered forms of both verbal and nonverbal behaviour. Moreover, both male and female students will not forget the learning experiences through the use of ICT. Further still, ICT in teaching and learning process reduces the incidence of gender inequality in the use of learning and instructional materials. Hence, it guarantees productive learning experiences and encourage self-assessment by pre-service teachers irrespective of gender. Gender differences in learning and achievement have implications for girls' future careers and have been a source of concern for educators everywhere (Zembar and Blume, 2011). Moreover, integration of ICT in teaching and learning will aid the transfer of knowledge, skills and attitude to the learner, trainee or receiver of the instruction.

Although there are more computers and other information technologies in tertiary institutions nowadays, the use of these technologies have in a large number of cases, not enhanced at either individual or institutional level of productivity. The reasons adducted for this include inadequate training in new skills, and/or unwillingness by lecturers themselves to learn new skills (Adeyanju, 2015). Thus, ICT helps students improve their literacy and numeracy skills and to recognise their existing abilities. It also encourages both independent and collaborative learning experiences and helps learners identify areas where they need assistance and support. Learners can complete their education from any location as long as they have access to the ICT resources. Hence, this increases the success rate in learning (Zurita and Nussabaum, 2007).

Moreover, the educational role of ICT has grown immensely in several ways proving that technology use is indisputably competent of, and important for helping teach content. ICT supports pre-service teachers' performance of complex task; it is integrated into activities that are a core part of the classroom curriculum. ICT has been proved to accommodate learning styles and to be an effective motivator for pre-service teachers with specific learning needs. Pre-service teachers working in collaborative team-learning settings appear to function better when learning events are accompanied by technology use. ICT is also important when used to provide distance learning opportunities to students who otherwise would not have access as the regular undergraduates. There is evidence from research that ICT helps

pre-service teachers to learn more effectively. However, part of the drive towards greater use of technology in education is aimed at modernising schools and equipping the students of today with skills that will make them able to use ICT in their work place when they leave school.

One of the major cause of ICT not reaching its full potential in the foundation stage is the teacher's attitude. Some see it as a potential tool to aid learning whereas others seem to disagree with the use of technology in early year settings. Ogunlade et al. (2013) noted that studies on teachers and students' attitude towards ICT have confirmed that they are positive, yet computers were not being used fully for teaching and learning processes.

The National Policy on Education (FRN, 2013) emphasised the need to integrate ICT at all levels of education. Thus, pre-service teachers should develop positive attitude towards implementation of ICT in their learning endeavours. ICT literacy is the ability of individuals to use ICTs appropriately to access, manage, integrate and evaluate information, develop new understanding and communicate with others in order to participate effectively in the society (Adeyanju, 2015).

Aim of the Study

The study sought to examine the enhancement of learning through information and communication technology as perceived by the University of Ilorin pre-service teachers. Specifically, the study investigated:

1. The effect of using information and communication technology in enhancing learning among pre-service teachers.
2. The attitude of pre-service teachers towards using information and communication technology to enhance learning.
3. The difference in the perception of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning.
4. The difference in the attitude of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning.

Research Questions

Answers were sought to the following questions:

1. What is the effect of using information and communication technology in enhancing learning among pre-service teachers?
2. What is the attitude of pre-service teachers towards using information and communication technology to enhance learning?
3. What is the difference in the perception of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning?
4. What is the difference in the attitude of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning?

Research Hypotheses

The following hypotheses were tested in the study:

H_{0_1} : There is no significant difference in the perception of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning

H_{0_2} : There is no significant difference in the attitude of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning

Methodology

The method that was adopted in the analysis and interpretation of the data obtained was both descriptive and inferential statistics. The population for this study consisted of 1,400 final year pre-service teachers in the Faculty of Education while 150 pre-service teachers were randomly selected from all the final year trainee teachers across all the departments in the Faculty of Education. These departments are: (1) Adult and primary education, (2) Arts education, (3) Counselor education, (4) Educational management,

(5) Educational technology, (6) Health promotion and environmental health education, (7) Science education and Social sciences education. The instrument for this study was a researchers–designed questionnaire entitled 'usefulness of information and communication technology in enhancing learning among pre-service teachers in the University of Ilorin, Ilorin, Nigeria.'

Questionnaire items were ranked; 4 for Strongly Agree (SA), 3 for Agree (A), 2 for Disagree (D) and 1 for Strongly Disagree (SD). The total calculated mean score is four on each variable responded to. Therefore, the minimum calculated grand mean score values on each instrument by respondents should not be less than 2.0 to be considered as positive responses, which was refers to as 2.0 bench mark for the administered instruments. The research questions one and two were answered by converting frequencies to mean, while research questions three and four were answered through the corresponding hypotheses one and two. Moreover, hypotheses one and two were tested using *t*-test to find out significant difference between male and female pre-service teachers. All hypotheses were tested at (0.05) level of significance.

Data Analysis and Results

This section presents the analysis and interpretation of data collected for this study. Data obtained in respect to research questions were analysed using mean and *t*-test was used for the research hypothesis hypotheses.

Demographic Information of Respondents

The distribution of pre-service teachers involved in the study according to gender shows that there was a difference in the distribution along gender lines. Table 1 shows that (85) 56.7% were males in all the sampled respondents while (65) 43.3% of them were females.

Table 1 Respondents based on gender

Pre-service Teacher	Frequency	Percentage
Male	85	56.7
Female	65	43.3

Research Question 1: What is the influence of using information and communication technology in enhancing learning among pre-service teachers?

Table 2 Analysis of pre-service teachers' responses on the influence of using information and communication technology in enhancing learning among pre-service teachers

S/N	Statement	Mean
1	Learning using ICT motivates me to learn	3.5
2	Using ICT based instruction offers learning assisted instruction	3.4
3	ICT based instruction influences my academic performance	3.3
4	ICT provides varieties of contents which enhances my long retention of information	3.3
5	I have better understanding of the subject matter when leaning using ICT	3.2
6	ICT based instruction enhances my comprehension of information on learning experiences	3.3
7	ICT based instruction makes learning more meaningful.	3.3
8	ICT based instruction assists me to progress at my own pace	3.3
9	ICT based instruction assists learners to learn productively	3.2
10	ICT based instruction will be counter productivity due to insufficient technical resources	3.1
Grand Mean		3.3

Based on the results in Table 2, it shows that pre-service teachers are aware of the use of information and communication technology in enhancing learning with the mean rating of 3.3 using 2.0 as the benchmark. There is an indication from the responses in items 1–10 that the use of ICT enhanced effective learning among pre-service teachers. As seen from the analysis in the table, more respondents believed that ICT could generally provide better learning experience.

Research Question 2: What is the attitude of pre-service teachers towards using information and communication technology to enhance learning?

Table 3 Analysis of the attitude of pre-service teachers towards learning with information and communication technology

S/N	Statement	Mean
1.	The use of ICT in learning provides good avenue for efficient and effective learning	3.4
2.	ICT make learning more pleasurable, meaningful and more effective	3.4
3.	ICT helps to learn more accurate and reliable information and facts	3.4
4.	Use of ICT in learning gives room for an individualised instruction	3.5
5.	ICT help to record and store information for future use	3.5
6.	Use of information and communication technology helps to support a wide range of educational activity	3.7
7.	Use of ICT gives the students' opportunity to make use of their senses to the fullest	3.1
8.	ICT will eliminate eye contact and reduces students' seriousness	2.7
9.	ICT reduces stress and tension inherent in large classes	3.0
10.	Using ICT to learn will be frustrating	2.4
11.	Network problem gives limitation to the use of ICT for learning	3.1
Grand Mean		3.2

Based on the results in Table 3, pre-service teachers reacted positively to the usefulness of information and communication technology in enhancing learning with the mean rating of 3.2 using 2.0 as the benchmark. There is every indication from the responses in items 1–11 that the attitudes of pre-service teachers to the use of ICT was positive and that the ICT enhanced effective learning among pre-service teachers.

Hypotheses Testing

H1: There is no significant difference in the perception of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning

Table 4 Significant difference in the perception of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning

Variable	No	Mean	Std. deviation	Df	<i>t</i> -value	Sig.(2-ailed)	Remarkd
Male	85	32.45	4.207	148	-0.151	0.880	Accepted
Female	65	32.55	4.420				

NS - Not Significance at $p > 0.05$

From Table 4, analysis established that the t -value = -0.151, with p -value of $0.880 > 0.05$ alpha level. It means that the null hypothesis one, which states that there is no significant difference in the perception of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning, is accepted. This implies that the perception of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning showed no significant difference. Hence, the hypothesis was accepted.

H2: There is no significant difference in the attitude of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning.

Table 5 Significant difference in the attitude of male and female pre-service teachers towards the usefulness of information and communication technology in enhancing learning

Variable	No	Mean	Std. deviation	Df	<i>t</i> -value	Sig.(2-ailed)	Remarkd
Male	85	34.32	3.871	148	0.336	0.737	Accepted
Female	65	34.11	3.679				

NS - Not Significance at $p > 0.05$

From Table 5, analysis established that the t -value = 0.336, with p -value of $0.737 > 0.05$ alpha level. It means that the null hypothesis two, which states that there is no significant difference in the attitude of male and female pre-service teachers towards the usefulness of information and communication

technology in enhancing learning, is accepted. This implies that the attitude of male and female pre-service teachers showed no significant difference. Hence, the hypothesis was accepted.

Summary of Major Findings

Based on the analysis of responses of the respondents, it was revealed that:

1. The use of the information and communication technology enhances learning among pre- service teachers.
2. Pre-service teachers reacted positively to the usefulness of information and communication technology in enhancing learning.
3. There was no significant difference in the perception of male and female pre-service teachers towards information and communication technology in enhancing learning.
4. There was no significant difference in the attitude of male and female pre-service teachers towards information and communication technology in enhancing learning.

Discussion

The perception of pre-service teachers towards the usefulness of information and communication technology for learning was examined in research question one. The usefulness includes among others; ICT for learning improves the quality of work; ICT for learning enables to accomplish course contents within time frame; ICT for learning enhances productivity in teaching and learning process; ICT for learning improves pre-service teachers' relationship through improved interaction, among others. Thus, the result of the mean value established that pre-services positively perceived the usefulness of ICT for learning. The finding corroborates with the submission of Yusuf (2005b), who noted that ICT provided opportunities for student teachers, teaching and non-teaching staff to interact with one another more successfully throughout formal and informal teaching and learning.

The difference between male and female pre-service teachers on their perceived usefulness of ICT for learning was examined by research question 3 and hypothesis 1. The results of the *t*-test established no

significant difference between male and female pre-service teachers in their perceived usefulness of ICT for learning. This finding supports the finding of Onasanya et al. (2010), who concluded on gender performance in ICT usage for teaching and learning that male and female students performed equally well.

Pre-service teachers' attitude towards using ICT to enhance learning was also examined. Thus, the result of the mean value established that pre-service teachers reacted positively to the usefulness of ICT for learning. The finding of this study gives credence to Yusuf (2005a) assertion that mediated instruction significantly influence students' attitude towards instructional content. Finally, the finding was also consistent with the earlier findings Hong, Ridzuan and Kuek (2003) who reported that the teaching and learning process in the recent years seem to be experiencing impressive awareness, which has noticeable improvements on the students' attitude on learning.

The difference between male and female pre-service teachers on their attitude towards the usefulness of ICT for learning was equally examined. The results of the *t*-test established no significant difference between male and female pre-service teachers in their attitude towards the usefulness of ICT in enhancing learning. This finding agrees with the submission of Adeyanju (2015) that gender has no influence on the students' attitude towards using ICT. Therefore, pre-service teachers' attitude toward learning relies on the use of stimulating learning materials such as ICT tools.

Implications/Contributions to Knowledge

The contributions of these findings to knowledge are based on the fact that positive perception of pre-service teachers towards the utilisation of information and communication technology would be an improvement in the learning process at the universities level. Similarly, ICT, if allowed to be fully incorporated into teaching and learning process, it could enhance high level of teacher-students relationships through collaborative means, which does not necessarily restricted to the conventional method of teaching and learning, where if the teacher not in class teaching-learning process cannot take place.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. Pre-service teachers should be trained in the use of information and communication technology to make them technologically and academically inclined.
2. Pre-service teachers, irrespective of their gender should be encouraged to make use of information and communication technology in learning.
3. Teachers should incorporate fully the use of information and communication technology to make learning effective and to motivate learners.

References

- Adeyanju, O. L. 2015. Lecturer's access to attitude and proficiency in information and communication technology in colleges of education in south-west, Nigeria. Unpublished PhD diss. Department of Educational Technology, University of Ilorin, Ilorin, Nigeria.
- Akinsola, M. K. and F. B. Olowojaiye. 2008. Teacher instructional methods and students' attitudes towards mathematics. *International Electronic Journal of Mathematics Education* 3(1): 60–73.
- Alabi, A. T. 2008. The application of computer in educational management. *International Journal of Educational Management (IJEM)* 5(6): 54–165.
- Danmole, B. T. 2011. Emerging issues on the universal basic education curriculum in Nigeria: Implication for the science and technology component. www.medwelljournals.com/full_text/?doi=pjssci.2011.62.68 (accessed 22 February 2015).
- Daramola, S. O. 2011. *Basic principle of instruction*. Nigeria: Lekan Printing Press.
- Fajemirokun, T. O. B. 2003. *Curriculum innovation for sustainable technology education in Nigeria*. Ibadan: Evans Brothers Limited.
- Federal Republic of Nigeria (FRN). 2013. *National policy on education*. Lagos: NERDC Press.
- Hong, K.-S., A. A. Ridzuan and M.-K. Kuek. 2003. Students' attitudes toward the use of the Internet for learning: A study at a university in Malaysia. *Educational Technology & Society* 6(2): 45–49.
- Ogunlade, O. O., S. A. Afolayan, A. A. Ogunlade and A. A. Amosa. 2013. Under graduates' attitude toward information and communication in university of Ilorin. <http://www.macrothink.org/journal/index.php/ijld/article/view/3734/view/3734/3080>
- Olowojaye, F. B. 1993. Attitude of senior secondary school students as it relates to achievement in Mathematics. *Lagos Journal of Science Education* 4(51–56).

- Onasanya, S. A., M. A. Fakomogbon, R. A. Sheu and A. K. Soetan. 2010. Learning information and technology skills and the subject context of introductory technology learning in Nigeria. *Journal of Artificial Intelligence* 3: 59–66. <https://doi.org/10.3923/jai.2010.59.66>.
- Yusuf, M. O. 2005a. An investigation into junior secondary school students' attitudes towards mediated instructions. *Ife Journal of Curriculum Studies and Development* 2(2): 56–63.
- Yusuf, M. O. 2005b. Information and communication technology and education: Analysis of the Nigerian National Policy for Information Technology. *International Education Journal* 6(3): 316–321. <http://ehlt.flinders.edu.au/education/iej/articles/v6n3/Yusuf/paperon>.(accessed 24 September 2012).
- Yusuf, M. O. 2011. Improved teacher education programme in Nigeria through information and communication technology (ICT). *Journal of Science, Technology, Mathematics Education* 8(1): 190–204.
- Zembar, M. J. and L. B. Blume. 2011. Gender and academic achievement. <http://www.education.com/...rence/article/gender-academic...>
- Zurita, G. and M. Nussabaum. 2007. A conceptual framework based on activity theory for mobile CSCL. *British Journal of Educational Technology* 38(2): 211–235. <https://doi.org/10.1111/j.1467-8535.2006.00580.x>.