

A Predictive Study of Pre-Service Teachers' Gender, Self-Concept, Interest and Attitude Towards Interactive Computer Technology (ICTS) in Nigeria Universities Faculties of Education

S. O. Adodo

Science and Technical Education Department,
Adekunle Ajasin University, Akungba Akoko. P.M B 001, Ondo State, Nigeria.
Corresponding Author's E-mail: so_adodo@yahoo.com, Tel.:+2348035064033

Doi:10.5901/jesr.2012v2n3p145

Abstract The study examines the combined contribution computer self- concept , interest/ attitude and gender of Nigerian Universities pre-service teachers towards Interactive Computer Technology (ICT). Three instruments was used to collect data for the study. The sample consisted of 240 pre-service teachers from the faculty of education of 5 Universities in the south west Nigeria. used for the study. The data collected was analyzed using Correlation matrix and Multiple regression. The results were tested at 0.05 alpha level. The outcome of the study showed that Two of the variables significantly predicted independent variable. While there was no significant relationship between gender and self-concept of pre-service teachers on ICT. The males had high self-concept than the females

Key words: Self-concept, Competency, pre-service teachers, attitude/interest, interactive computer Technology.(ICT)

1. Introduction

Education is the backbone of all sector of the economy of any country and the delivery of quality education remains topmost priority for nations. Education is of course at the core of the developmental programme of every nation. and the knowledge and the role of ICT in educational institution is shifting charismatically. The traditional role of ICT has been that of minor curricular subject, sometimes called informatics, computer literacy. Currently in most countries, developed and developing alike, information Communication Technology ICT is now at the centre of educational reform efforts that involves its use in coordination with changes in curriculum teacher training pedagogy and assessment. (Adebusuyi 2010) Countries like Singapore, Chile, USA and Norway etc have taken the position that the integration of ICT into classroom and curricula can improve educational systems and prepare students for the 21st Century learning society. Similarly, Multinational organization such as the (OECD) organization for Economic Cooperation and development, the European Union (EU) commission and GS Nations have identified the need to prepare students for life long learning in the knowledge economy and key assign a central role to ICT in accomplishing this goal.

Tertiary institutions are relevant actors in the social system, in what concerns the development of human capital, through the supply of new professionals that have universalistic skills which provides a better identification of social and economic responsibilities. It roles among others is education and leaning. Organization of tertiary institutions through Information and Communication Technology (ICT) and its uses in teaching and learning may now be regarded as an indispensable requirement of educational institutions. Indeed, ICT resources of desktop, Laptop, Palmtop, (Notebook) personal computer with accompanying software and complementary hardware such as interactive whiteboards, Digital camera data projector (Power point) Scanner etc are now increasingly regarded as part of the teachers' professional "tool Box". Teachers are not only to teach using ICT, but to improve student ICT competencies well. Unfortunately, most of the Nigerian tertiary institution lack the conducive ICT friendly environment, hence ICT within the depressed environment in most of Nigerian tertiary institutions have yet to find expression. Investigation revealed that in the research study of Odogwu (2000) that 201 students, and 14 teachers sampled identified inadequate infrastructure, facilities and teachers as challenges though they recognized the strong potential of ICT in Nigeria education once these challenges are met. Survey of the use of ICT by university students showed that the level of awareness of the relevance and utilization of ICT in the classroom is unexpectedly low in this technological era. While less than 25% of the students have used the internet for one thing or the other, less than 25% agreed to the usefulness of computer in the science Laboratory. All the students agreed they had a computer course, but more than 80% never touched a computer during the computer course presentation, 90% disagreed that any lecturer had never used a computer in whatever form to teach them. (Owotu 2009).

The situation hardly changed now across the public or Government owned tertiary institution. If students are computer literate today, it is due to their own activities outside the immediate classroom environment. The use is a little

bit different in the private tertiary institutions. The difference tied to the fact that some of these private institutions are in a more socio-economically advantaged, a more endowed Physical emotional environment, higher parental expenditure on the learners' education and good class size which are far from the perennial over-population in public tertiary institutions. It is against these backdrops of the perennial systematic inefficiencies and failure that the three critical actions led by UNESCO in collaboration with mentor states become all important capacity building of teacher training institution in 46 countries in sub-Sahara Africa including Nigeria that aims to provides a conducive institutional environment for pre-service and continuing in-service teachers. In 2006 UNESCO followed this situation analysis with the launch of the reform project known as the Teachers Training Initiative for Sub-Saharan Africa (TTISSA) based on need for quality training, supply, status and retention of teachers (Owhotu 2009). Advancing minimum quality standards for qualify teacher can only work when the condition of life and work are improved and if a democratic political climate where teacher are consulted and empowered exist(UNESCO). The case is yet to get to the idea state/condition in Nigeria and hence the incessant strike by ASUU in Nigeria Clamoring for an improvement in the present environmental condition of the tertiary institution facilities equipment and infrastructure. Strategies put in place by UNESCO, TTISSA which strongly emphasize 25% of National Budget on Education, training of trainers and school heads, the setting up of documentation centres and teacher support centres and university school of Education, the National use of technologies, the development and use of research and co-operation with universities (UNESCO 2005) Illustrate the gaps that characterized prevailing learning environment in Nigeria

A cursory look at the quantity of education in Nigeria is along way far from achieving the goals of education for all by 2015 or fulfilling the dream of being one of the largest economist in the world by the year 2010. It is the aspiration of any nation to provide quality education to her citizenry, since no nation can rise above the quantity of her education (Jekoyinta, 2005). Researchers are advocating integrating computers skills into the content area proclaiming that computer skills should not be taught in isolation and that separate computer classes do not really help teachers learn to apply computer skills in meaningful ways. Bawden (2001) noted the increasing recognition that the end result of computer literacy does not mean gust to know how to operate computer, but to use technology as a tool for organization communication, research and problem solving purpose. It should be noted that specific computer skills are important for teachers. To learn "laundry list" approach does not provide an adequate model for teachers to transfer and apply skills from situation. Teachers may learn isolated skills fit together to solve problems and complete tasks but the ultimate is that teachers need to be able to use computers and other technologies with flexibility, creatively and purposefully.

Potter (2001) noted that individual computer skills taken to be meaningful when they are integrated within information problem solving process and teachers develop true information technology literacy when they have genuinely applied various information technology skills as part of the process involved in content delivery. With the growing numbers of student and teachers involved in most school system, some of the major applications of computer in education has being for school registration and class scheduling , test scoring, grading and , reporting. The computer is also useful to keep tract of all the subject each student has studied and the grade earned and all the records are stored in a database. One of the most important use of computers by the teacher is in the education delivery system. i.e. computers are programmed to deliver educational content "computer assisted instruction (CAI)".

It could be noticed that in order to check examination malpractice the JAMB has gone on line both at registration and at writing the exams .Writing the post UTME exams in some Universities is through ICT. The big question is; From where do we expect these students to have got the knowledge required for all these task as requisite for them to pass these exams. Are they given the opportunity acquire any of the experience while they are in schools? The funny aspect of the matter is that some of the teachers handling these students by preparing them in various subjects for these exams appear not to be computer literate or are with diminutive competency in computer

2. Problem

Adoption of ICTs in schools could be affected by a number of factors. These factor can be grouped into two (1) Contextual factors which refer to aspect of the environment in which ICT is used (2) Psycho-sociological factors (sex, age, teaching experience etc) which relate directly to the teachers knowledge willingness to adopt ICT. One expect the teachers to integrate technology into their leadership roles of teaching the young ones. But it was discovered that the in-service teachers attitude and interest at using these modern technology is very low with a far-reaching influence on their competency and their quality out-put in lesson delivery. To therefore revamp the education system in Nigeria, there is the need to produce technologically literate workforce with positive disposition to technology use and reasonable skills. Finding out the level of the pre -service teachers' competency, attitude and interest along side their gender will assist in diagnosing existing problems in the instructional process and possible area to help the teacher trainees. It is on this

premises that this study seek to find out the level of Pre-service teachers' competency and the contribution of some selected variables(Self-concept, interest/attitude and gender) of pre-service teachers' towards ICT(s)

3. Questions

1 What is the contribution of the Pre-service teachers' self-concept, interest/attitude, and gender to the prediction of their competency towards Interactive Computer Technology (ICT) ?

2 What is the relative contribution of Pre-service teachers' self-concept, interest/attitude, and gender to the prediction of their competency towards Interactive Computer Technology (ICT) ?

3. Methodology

The study is a descriptive study of the survey type to investigate the prediction of the criterion variables(self-concept, interest/attitude, and gender) on their competency towards Interactive Computer Technology (ICT) ? All the State owned Universities in the south west Nigeria constitute the targeted population of study. The sample used for the study were 240 pre-service teachers from 5 Universities in the south west Nigeria. The 5 Universities were selected through simple random sampling technique. Out of the 240 subjects for the study, 130 female = 54.2.% and 110 Male = 45.8 % were selected through stratified random sampling technique . The Instruments used for the study were (i) Self Concept Scale (SCS) (ii) Interest/ Attitude to computer technology scale (ICT S) and (iii) Computer Interactive skill scale (CISS) The self concept scale instrument used in the study was an adapted from Alaba (2010) which was an originally developed instrument by Camb and Silvester (2003) The instrument was developed to measure teachers' self concept to using computer. The validity of the instrument was done by test and measurement expert. The reliability of the instrument was established through test-re test method and the two scores obtained were correlated using Pearson Moment Correlation which yielded a co-efficient index $r = 0.77$. The attitude /Interest to computer technology scale instrument which contained 30 items , structured in 4-point scale ranging from 1-4 with strongly agree = 4, Agree = 3, Disagree = 3 and strongly disagree = 1. The psychometric property of the instrument was carried out by a test and measurement expert in order to ascertain it validity. Consideration was given to the suggestion raised before using the instrument. The reliability of the instrument through test retest method yielded a coefficient index $r = 0.82$. The third instrument Computer Interactive skill scale (CISS)This is a a self developed instrument measuring the computer interactive skills of the teachers to ascertain their competency at using computer. The questionnaire consisted of 5 item under 6 sub-division making a total of 30 items . It was structured in 4-point Likert scale ranging from 1- 4. To ascertain the validity of the instrument , it was given to a psychometrician and the comments were considered before using the instrument . The reliability of the instrument which was done through test-retest yielded a coefficient index r of 0.75

3.1 Administration of Instruments

The questionnaire were administered through 5 research assistants who visited the Universities to administer the instruments on the Pre-service teachers and collected them back immediately at different time of visit to the Universities. Inferential statistics of correlation matrix, and Multiple regression were used for the data analysis tested at 0 .005 alpha level.

Hypotheses Testing

(H_{01}): There is no significant relationship between the Pre-service teachers' predictive variables and ICT competency.

4. Results and Discussion

Table 1: Correlation matrix of the relationship between Pre-service teachers' predictive variables and ICT competency.

	Computer Competency	Self-concept	Attitude/interest	Gender
Computer Competency	1.00			
Self-concept	0.1046	1.00		
Interest/Attitude	0.3407*	0.3706*	1.00	
Gender	0.2871*	- 0.1771	0.5912*	1.00

Table 1 above shows the correlation between the pre-service teachers' predictive variables and ICT competency. The relationship between Interest/Attitude is significant, while the relationship between gender competency is also significant. Also students' Interest/Attitude shows the highest relationship with r-calculated value of 0.5912 followed by gender as 0.2871 and self-concept is least at - 0.1771. There is also a positive relationship between Interest/attitude and self-concept. While there is no relationship between gender and self-concept. This by implication is that there is a significant difference between male and female self-concept to use ICT. and their computer capability.

Table 2: Analysis of variance of Pre-service teachers' predictive variables and ICT competency.

Source of Variation	Df	Ss	Ms	f-cal	f-table	P	Result
Regression	3	23.263	7.544	29.69	3.89	$p \leq 0.05$	Significant
Residual	236	61.630	0.261				
Total	239	84.893					

Table 1b shows that f-cal is greater than f-tab, hence the hypothesis is rejected. By implication there is a low, positive significant relationship between pre-service teachers' predictive variables and ICT competency.

Table 3. Multiple regression analysis between students' predictive variables and ICT competency.

Multiple	R = 0.5235		
	R ² = 0.2740		
Standard Error	= 0.5110		
Variables in regression	B	SeE	Beta
Interest/Attitude	0.4269	0.0540	0.4556
Gender	0.0938	0.0549	0.0963
Self-concept.	0.0845	0.0549	0.0934
Computer Competency	- 0.1916	0.185	

Table 3 shows that the regression equation is as follows:

$$\text{Computer Competence} = 0.43 \times \text{Interest/Attitude} + 0.094 \times \text{Gender} + 0.085 \times \text{Self-concept}$$

By interpretation, putting other subjects aside, for every unit score increase in students' Interest/Attitude, there is a corresponding 0.43 unit score increase in ICT competency. Also, putting other subjects aside, for every unit score increase in gender there is a corresponding 0.094 unit score in their ICT competency. In the same vein putting other variables aside, for every unit score increase in Self-concept, there is a corresponding 0.085 unit score in students' ICT competency. Putting other variables aside, for every unit score increase in all other variables, there is a corresponding 0.19 unit decrease in students' ICT competency. The table also shows that there is a Multiple correlation of 0.5235 among the four variables. The degree of determination is 0.2740 among the four variables. By implication students' ICT competency can be accountable for 27% of the degree of variability among the other three variables.

5. Discussion of Findings

The result of the study revealed that male teachers in the teacher industry are more computer friendly than their female counterpart as the study revealed that a significant difference exists in the computer skills between the male and females Pre-service teachers. The relationship between Interest/Attitude is significant, while the relationship between gender competency is also significant. The female self-concept to computer use is very low compared to their male counterpart. This is inline with Rekabdarkolaei & Amuei (2008) that female teachers are more anxious or less experienced, less confident in ICT competence. Mehloff, 2001 reported that there was no relationship between gender and teacher computer use but that Female teachers are more nervous and less confident about their computer skills (Namlu & Ceyhan 2002 cited in Alaba, 2010).

Interest/Attitude shows the highest relationship with r-calculated value of 0.5912 followed by gender as 0.2871 and self-concept is least at 0.1771. This is inline with the report of Timothy et al (2010) that pre-service teachers in Singapore

had high computer self- efficacy with respect to Basic Computer Skills (BCS) and fair self -efficacy to Web-base Skills (WBS). There is also a positive relationship between Interest/attitude and self-concept of to ICT competency. This is corroborated by the submission of Compeau and Higgins (1995) that an individual's use of technology will be affected by their efficacy ,and that participants with high self-efficacy beliefs, use computer more often and experience less anxiety. This will also be the same for an individual with high self-concept and interest as it is in the outcome of this study. Such beliefs will tend to see themselves as able to use computer technology, while those with low self –efficacy belief tend to become more frustrated and anxious when working with computer . An individual with little interest at using ICT will hesitate to use it when required pedagogically. (Olive & Shapiro 1993) Hence the need to enhance the female teacher trainees self-concept and self-efficacy in ICT so that they can have the confidence to develop the required skills to help them become ICT facilitators when they get to the field.

6. Conclusion

The study examines the combined contribution computer self- concept , interest/ attitude and gender of Nigerian Universities pre-service teachers towards Interactive Computer Technology (ICT). According to Frances (2005) , the specific skills required for the academic use of ICT can be acquired during secondary education. This emphasizes the importance of this study that the pre service teachers should be well trained on how to make secondary students they are being prepared to teach to acquire the skills required for them for the academic use of ICT either to enhance their study or write examination and pass as the demand is now in almost all external Examinations in Nigeria.

The outcome of the study shows that the Nigerian undergraduate pre-service teachers had high interest and positive attitude to ICT. There is a low, positive significant relationship between pre-service teachers' predictive variables and ICT competency. The relationship between Interest/Attitude is significant, while the relationship between gender competency is also significant. The female self-concept to computer use is very low compared to their male counterpart. There is also a positive relationship between Interest/attitude and self-concept. while there is no relationship between gender and self –concept . This by implication is that there is a significant difference between male and female self-concept to use ICT. and their computer capability.

7. Recommendation

There is no other time than now to experience a paradigm shift in the teaching of all subjects in our tertiary institutions from the conventional lecture approach to paperless classroom. Hence the following recommendations are made

- 1 . Frantic effort should be made to train all our in-service teachers on short course training programs through seminar and workshop
- 2 The government should show more commitment through proper funding of the Education Section Following the UNESCO recommendation 25% of the national budgets.
- 3 The schools should be Equipped with enough computer sets to turn the schools around to a computer friendly Environment. This can be achieved through the collaborative efforts of the stake- holders, education agencies and philanthropies.
- 4 The curriculum planners should take the right step to re-package the education Technology curriculum for the pre-service teachers so as to produce the 21st century younger teachers who are completely computer literate.
- .5 The capacity building training on ICT for the in-service teachers should change from the theoretical impartation of computer skills to more proactive and pragmatic computer interactive approach.

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