AN INVESTIGATION INTO THE SECONDARY SCHOOLS IN – SERVICE TEACHERS' SELECTED VARIABLES ON INTERACTIVE COMPUTER TECHNOLOGY (ICT) COMPETENCY

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ABSTRACT

The use of computer technologies has come to stay, an individual, group of individual and society who is yet to recognize this fact is merely living. The introduction of Information and Communication Technology (ICT) into the education industry has caused transformation in instructional process. The study investigated the in-service teachers instinctive variables and their competency at using interactive computer technologies (ICTCS). 240 teachers' were selected as sample for the study. Two research instruments (self concept scale, Attitude to Interactive Computer Technology Scale (AICTS) and Computer Interactive skills Scale (CISS). Correlation matrix, t-test statistics, ANCOVA and multiple regression analysis was used to analyse the data collected. The finding revealed that the instinctive variables significantly predicted the independent variable. Also, teachers gender did not make any significant contribution to their (ICTS) Competency. While teachers age and year of service significantly contribute to their ICTS competencies. A significant difference exist between the teachers age, teachers' year of service and their competency in ICTS

Keywords: service Teachers, Interactive Computer Technology, Computer Skills Competency.

INTRODUCTION

The successful implementation of an innovative approach in classroom teaching require substantial change in the teaching methods used by most teachers (Mcleod 1972 and Fogarty 1990) .The research on change which is most closely related to this study deals with the characteristics of innovative teacher and with the difficulty of helping them change their classroom practices. On the basis of research in a number of field, Rogers(1965)predicted that innovative teacher would be younger, more educated, more cosmopolitan and more likely to be viewed by others as non-conformists. However, no definite relation has been shown to exist between innovative teaching and the teacher's age even though it is reasonable to expect that the young are more likely to embrace changes then the old. According to Mcleod (1972),little research has also been found that focuses on the relationship between innovative teaching and the teacher's education or cosmopolitan qualities.

A number of studies have investigated the difficulty of helping teacher change their classroom practices. For example , Goodlad, Klein and Associates (1970) dealt with one hundred-and-fifty-eight classrooms in sixty-seven urban elementary school in thirteen states of the United State of America. The scholars investigated the teacher implementation of new ideas in several areas, including the use of objectives, inquiry teaching, individualization, group dynamics. The findings were uniformly negative. In spite of the fact that teacher often said they were individualizing instruction or sing inquiry method for instance, observers did not see these practices being implemented in the classroom.

Across the world, teachers 'roles and power of influence can not be undermined in the successful implementation and sustainability of innovations or national reforms(Albirini, 2004: Baylor & Ritche,2002. In Bakar and Mohamed (2008), the last two decades have witnessed a explosion of these computer technology in education scenery. In most developed countries, the use of individual response pads to promote interaction in the class and the use of internet to present course content is becoming more accepted (Eastman, 2007). Correspondingly, interactive

Whiteboards,, hand mobile gargets such as palm and pocket PCs, PDAs and mobile phone are being used for teaching- learning and assessment purpose (Beeland 2002; Karadeniz, 2009.) As a matter of fact, the rapid change interactive computer technology is bringing to teaching and learning is almost amazing. It is imperative to note that the level of success in ICT integration in school is not dependent on the quality or sophistication of the technology, but rather on the teacher's readiness and positive disposition (Deniz 2007) for quality to be achieved in the education sector. The teacher must be responsive to this modern teaching demands by getting acquainted with technology use. Since the focus of learning has changed from teacher –centred chalk and talk approach to learners-centred, (National research Council 2005) Government and agencies of education in various nations are not investing a lot to procure more computer set in schools in order to ensure boost both the teachers and students access to and use them as required. It is quite unfortunate that in Nigeria a developing counties, despite increasing technology innovations and increase procurement, computers are still under –utilized in most school (Jung,2001). Nigeria indeed came late into the adoption of ICT. Computers were introduced into Nigerian education system in the late 80s in accordance with the outcome of the 32nd ministerial council meeting of the National Council of Education 1987. This curriculum innovation then was meant to expose Nigerian students val teachers to a working mechanism and effective use of computer to solve emerging problems. The national policy for IT in 2001 was a giant stride entry point of governments appreciation of ICT in schools at all levels (Yusuf, 2005).

Jegede and Owolabi (2005) reported that the National Council for Accreditation of Teacher Education in Nigeria equally emphasizes the integrity of technology into education system in order to prepare an average Nigerian student for the 21st century global challenges. In a bid to asses and position the educational status of Nigerian students positively, some states and Federal Capital Territory have since ceaselessly embarked on encumbering students acquisition of computer-technology. In view of these developments, computer technology is on the increase in Nigeria, but it seem that the extent of its adoption, effective integration and utilization for positive output in education is dawdling as only few public and private schools are with few number of computer to work with and this is becoming issues of major concern to the education stakeholder in Nigeria as government are only paying lip service and cold attitude to this all important issue.

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 expects the teachers to integrate technologies into their leadership roles of teaching the young ones. Also, the teachers attitude and interest at using these modern technology will have a far-reaching influence on their competency for improved quality out-put in lesson delivery. Therefore to 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 teachers' competency, attitude and interest along side their age and years of service will assist in diagnosing existing problems in the instructional process and possible area to help them (the teachers). Though the importance of ICT(s) is being stressed to the teachers, they have been attending seminars and also have been reading a lot on what changes ICT can make in their instructional technique and the consequential effect of preparing their students/pupil to meet with ICT(s) global challenges. It is on this premises that this study seek to find out the level of Secondary school teachers' competency, the contribution of their extinctive variables on their interest/attitude towards ICT(s)

Questions

• What is the relationship between teachers' gender and their competency in computer?

• Is there any difference in the computer skills acquired by male and female teachers.

• What are the combined and relative contributions of teachers' selected variables on their competency in (ICT)?

Methodology

The design of the study

The study is a descriptive study of the survey type to find out how some teachers' variables correlate with then competency at ICTS

Subject selected

All the secondary school teachers in Ondo State constitute the targeted population of study. The samples used for the study were 240 secondary school teachers drawn from 10 Local government areas in the state. 130 female and 110 male teachers were selected through stratified random sampling technique. Two Instruments used for the study were (i) Attitude Interest to computer technology scale (ICTS) (ii) Computer Interactive skill scale (CISS) 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 its 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 second instrument Computer Interactive skill scale (CISS) is 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

Procedure for data collection

The questionnaire were administered through four research assistants who visited the schools to administer the instruments on the teachers and collected them back immediately. The data collected was analyzed using correlation matrix, t-test statistics and multiple regression model

Results

Question 1: What is the relationship between teachers' gender and computer skills they acquired.?

From Table 1 it could be observed that there is significant relationship between teachers' and computer skills acquired by them but non with gender. There is significant no relationship between operational skill and world wide web www(.074), word interface (.106) and using keyboard (.146) and also un-correlated with gender (-152. but correlates with Word processing and E-task. Working with

		Gender	Operational skill	World wide web task	E-mail task	Window interface	Using keyboard generally	Working with word processing
Gender				-152	-074	-108	-155	-039	-.121
Operational skill (OPS)		-.152		-074	.221**	.106	.146	.326**
World wide web task (WWWS)	pearson correlation sig. (2-tailed) N	-074	.074		546**	.198*	.148	.417**
E-mail task (EMT)	pearson correlation sig.(2-tailed) N	--108	.221**	.546**		.215**	.145	.536**
Window interface (WI)	pearson correlation sig. (2-tailed) N	-155	.106	.198*	215**		.098	438**
Using keyboard (UKB)	pearson correlation sig. (2-tailed) N	-039	.146	.148	.145	.198*		266**
Working with word processing (WP)	pearson correlation sig. (2-tailed) N	-121	.326**	.417**	.536**	.438**	.266**	

Table 1. Correlation Matrix of Computer General Skills Acquired and Gender

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word processing (.326) also correlate positively with, using keyboard (.266), word interface (.436), E-mail task (.536), world wide web www (.417) and also not with gender There is no correlation between using keyboard and operational skill (.146) l, world wide web (.148) and E-mail task (.145) but correlate positively with word interface (.198). E-mail task correlate with operational skill (.221), world wide web (.546) and window interface (.215), bud does not with using keyboard(.145) world wide web www correlate with E-mail task (.546),word interface (.195, word processing (.417) but not with key board (.148). This means that where there is no correlation, male and female teachers operate at different competency level. e.g at E-mail task; world wide web etc. and where there is relationship means that no difference in their aptitude. eg in sections like computer e-mail task, window interface and using keyboard generally.

Ho: There is no significant difference in the computer skills acquired by male and female teachers.

From Table 2, it could be observed that the means scores of the computer skills acquired by the male teachers was 2.48 and that of the female was 1.60 while the standard deviation was 7.89 and 10.94 respectively.. The t-calculated value is 220.00 while the t-table value is 1.96 at 0.05 aloha level. Since the t-calculated is greater than t-table value, hence, the null hypothesis is not upheld, which means there is a significant difference in the computer skills acquired by male and female teachers. In the item rating, both the male and female teachers recorded a low average mean score. Thus suggesting that both male and female showed low ability in the computer skills acquired.

Research hypothesis (H$_{01}$): There is no significant relationship between teachers' predictive variables and ICT competency level.

Table 3 shows the Correlation between teachers' predictive variables and ICT competency. It is shown in Table 3 that there is a significant relationship between teachers' interest

and ICT competency with r value of 0.2877 followed by teachers' year of certification/ experience 0.2043 while there is no relationship between teachers' gender and competency. Also teachers' Years of certification/ experience and interest showed the highest relationship with r-calculated value of 0.3706 followed by teachers attitude/interest 0.3407 0. Teachers' gender is the least at 0.1552

Table 4 shows that f-cal is greater than f-tab, hence the hypothesis is rejected. By implication there is a positive significant relationship between teachers' predictive variables and ICT competency.

Multiple(adjusted)   R = 0.3128

Multiple(adjusted)   R2 = 0.0978

Standard Error estimated   = 0.5800

Table 5 shows that the regression equation is as follows:

Y=ICT Competence. = 0.22 × interest x 0.1060 year of cert/exper. 0.0640 x. gender + 0.5355 by interpretation, putting other variables aside, for every competence shown by, attitude/interest. There is a corresponding 0.22 unit

	Gender	Years of certification /experience	Interest	Competence
Gender	1.00			0.1552
Years of certification/ experience	0.1046	1.00		0.2042*
attitude/ Interest	0.3407*	0.3706*	1.00	0.2877*
Competence	0.1552	0.2042*	0.2877*	1.00

Table 3. Correlation matrix of teachers' predictive variables and ICT competency.

Source of Variation	Df	Ss	Ms	f-cal	f-table	P	Result
Regression	3	8.6086	2.8695	8.53	2.60	p=0.05	Significant
Residual	236	76.3871	0.3364				
Total	236	87.7956					

p≤0.05,

Table 4. Analysis of variance of teachers' predictive variables and ICT competency..

Variables in regression	B	SeB	Beta
Interest	0.2201	0.0698	0.2221
Years of certification/experience	0.1057	0.0613	0.1149
Gender	0.0640	0.0623	0.0675
Competence	0.5355	0.2107	

Table 5. Summary of Multiple regression analysis between teachers' predictive variables and ICT competency.

	Gender	Number	Mean	SD	Df	t-cal	t-tab	level of sig.
General	Male	110	2.48	0.66				
Skills					238			
Acquired	Female	130	1.60	0.72		220.00	1.960	0.05

Scale used 1= Strongly disagree, 2= Disagree, 3=Agree, 4 = Strongly agree

Table 2. T-test Analysis of Male and Female for Mean Score of Computer Skills Acquired.

increase in teachers' ICT competency. Also putting other variables aside, for every competence shown by year of cert/experience., there is a corresponding 0.064 unit increase in teachers' ICT competency. Similarly, putting other variables aside, for every competence shown by teachers' gender, there is a corresponding decrease 0.0640 in teachers' ICT competency. Putting all other subject aside, for every competence shown by all other variables there is a corresponding 0.5355 decrease inteachers' ICT competency. From all indications, teachers' attitude/interest correlate higher to teachers' ICT competency, followed by their year of cert/experience. the least is the teachers gender. Table 5 also shows that there is a multiple correlation of 0.3128 among the variables. The coefficient degree of determination r2 is 0.0978 among the variables. By implication, teachers' ICT competency skills can be accountable for 10% of the degree of variability among the three variables while the remaining 90% is un-explained. The table of regression gives the regression equation as Y = ICT Competency = 0,0.220 attitude/interest, 0.106, years of certification, and 0.064 gender. The value of co-efficient range from 0.064 to 0.220. The table also shows the standard errors as 0.0698, 0.0613, 0.0623 and 0.2107respectively. The table shows that interest/attitude had the highest beta weight of 0.2221 (22%) on teachers' ICT competency as it produced the strongest strength for predicting ICT competency among the teachers. This is followed by teachers' years of certificate/ service 0.115 (12%) and the least is teachers' gender 0.068 (5%)

Discussion

The findings of this study showed that there is no significant relationship between operational skill acquired by the teachers and their gender but it also confirmed that the computer skills acquired by the teachers correlate with operational skills in some areas. Working with word processing (.326) correlate positively with using keyboard (.266), word interface (.436), E-mail task (.536) and world wide web. There is correlation between operational skill and world wide web www (.074), word interface (.106) and using keyboard (.146) and all are un-correlated with gender (-152..but their operational skill correlates with Word

processing and E-task. www (.417). This assert the opinion of Paul (2007) that an e-generation teacher may not be a certificated computer person but rather a Professional teacher of e- operation of any field, of any level, who has not only realise computer as an indispensable academic tool of this generation but also make maximum utilization of same.

The result of the study also revealed that male teachers in the teaching profession are more computer friendly than the female teachers as the study revealed that a significant difference exists in the computer skills between the male and females in-service teachers. This corroborated the finding of 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. Female teachers are more nervous and less confident about their computer skills (Namlu & Ceyhan 2002 cited in Alaba, 2010). It is worthy to note that the orthodox and conventional gender disparities that existed in the Science related subject are now being experienced in ICT as it is now obnoxiously assume that male teachers are more intrinsically able in computer use than their female counterparts but with motivation and encouragement such disparities in science in the past which some research outcome reported has reduced can also happen in ICT. Another outcome of this study is that the interest level of the teachers to ICT was found to be generally low and not encouraging and consequently affecting their attitude towards the acceptance, acquisition of ICT knowledge and skills and consequently affecting their effective use of computer and their pedagogy integration of computer. Supporting this outcome is the study of Bradley(1997) who reported that teachers option about their ability to use computers has a relationship with their attitude and interest towards computer application in the classrooms. The teachers year of certification was found to predict their competency at ICTs. This might be as a result of the few new breed teachers newly employed from among the graduates from various higher institutions. Meaning that improved competency at ICT skills and dispositions are associated with how ICT skills instruction is provided. With these outcome of the study ,

one may be prompted to infer and agree with Alaba, (2010) that many Nigerian Secondary school teachers are seemingly "techno-phobic" hence their intake of computer Technology skills for onward transfer into the Education system is relatively slow and low and this is already having ripple effect on quality of Education and obviously reflection in the students competent at using computer in writing some external Examinations and pass as it is required now to face the Unified Tertiary Matriculation Examination(UTME) and post UTME screening examinations conducted by various Universities in Nigeria. From the outcome of this study, it is clear that improvement in teachers' ICT skills and dispositions cannot be a matter of implicit expectation. As important as the development of ICT skills is, educators must take steps to make ICT objectives explicit in ICT and education Technology courses and integrate them into both the pre-service and in-service teachers training and pedagogy development. The impact requires both the willingness to incorporate instruction and explicit strategies and skills to do it effectively.

Conclusion and Recommendation of the study

There is no other time than now to experience a paradigm shift in the teaching of all subjects in our secondary schools from the conventional chalk and talk approach to paperless classroom. Hence the following recommendation are made

• Frantic effort should be made to train all our in-service teachers on short course training programs through seminar and workshop

• The government should show more commitment through proper funding of the Education Sectors by following the UNESCO recommendation of 25% of the national budgets.

• 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.

• The curriculum planners should take the right step to re-package the Educational Technology curriculum for the pre- service teachers so as to produce more younger

teachers who are completely computer literate.

• The on going 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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