

Full Length Research Paper

Gender and socio-economic background differentials in students' attitude to information and communication technology education in Nigerian secondary schools: Implications for policy, ICT education and counselling

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This is a study of gender and socio-economic background differentials in students' attitude to information and communication technology education in Nigerian secondary schools. The aim was to determine students' differential attitude to information and communication technology education in order to proffer appropriate counselling interventions for the advancement of information and communication technology (ICT) education among Nigerian adolescents. This study used descriptive survey research design involving a sample of 500 respondents. Data collection was done using a socio-demographic form and the ICT Attitudinal Scale (ICTAS) developed by the researchers. The instrument yielded 0.91 and 0.86 index of reliability and internal consistency respectively. While the results indicated poor attitude towards ICT education, no significant gender and socio-economic differentials was observed in students' attitude to ICT education. Thus, it was recommended that stakeholders in education especially, administrators, lecturers and counsellors should device appropriate means of fostering students' positive attitude to ICT education.

Key words: Information and communication technology (ICT), gender, socio-economic background, adolescents, Nigeria.

INTRODUCTION

Information and communication are vital to human existence, survival and development. Exchange of information is vital to human socialization since humans cannot live in isolation and their survival depends largely on how they can find information and share from one another's experiences. The breakthrough which humans have made in information and communication are so vast and spectacular such that it is increasingly becoming difficult for individuals to survive and make tangible contributions to human civilization without a mastery of information and communication technology. Hence, our educational system must of necessity incorporate

information and communication technology education in school curricular.

However, effort towards doing this in Nigeria seems ineffective and the pace of ICT education especially in secondary schools is appalling. Before the return of civil rule in 1999, many of the public secondary schools in Nigeria did not have computers not to talk of internet facilities with which they could link up with developments in the world. Even, where schools are supplied with computers, the problem of erratic power supply and the decay in infrastructure prevented schools from effectively making use of such facilities. Hence, it was not uncommon to see the few schools which had computers packing them in a room often labeled 'computer lab' which was constantly under lock and key. Thus, computers, which ought to be used to aid learning and

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inculcate information and communication skills in students became mere objects of decoration. Notwithstanding, the nation's return to democratic rule after several decades of military rule and its attendant stagnation of education, there is a gradual return of normalcy to the education sector as many public schools are now supplied computers and some teachers are now employed to teach information and communication skills in schools. Yet, the development of ICT among secondary school students is still very low. This may partly be due to students' attitude to ICT which was found to be very poor (Ogunkola, 2008). While further studies are necessary to understand why students' attitude to such an important project is poor, it is equally necessary to determine possible gender and socio-economic differentials in students' attitude to ICT education. This will permit a broad based understanding of the problem of poor attitude, stimulate policy formulation, provide empirical basis for counselling students on changing their attitude to ICT and perhaps generate further research which may lead to finding solutions to the problem and thus strengthen information and communication education in the country. Thus, one major research question and two null hypotheses were postulated for the study.

Research question

What is the current attitude of students' to ICT?

Research hypotheses

H₁: There is no significant gender difference in students' attitude to ICT.

H₂: There is no significant difference between students from high and low socio-economic backgrounds with regards to their attitude to ICT education.

LITERATURE REVIEW

Information communication technologies/technology

Information communication technologies (ICTs) are information handling tools that are used to produce, store, and process, distribute and exchange information (Yushau, 2006). Various information and communication tools are now able to work together, and combine to form networked world- which reaches into every corner of the globe. It is an increasingly powerful tool for participating in global markets, promoting political accountability; improving the delivery of basic services; and enhancing local development opportunities (Yushau, 2006). To Ogunkola (2008) ICT "is an electronic based system of information transmission, reception, processing and

retrieval, which has drastically changed the way we think, the way we live and the environment in which we live". It can be used to access global knowledge and communication with other people (Ogunkola, 2008). Students who use ICTs gain deeper understanding of complex topics and concepts and are more likely to recall information and use it to solve problems outside the classroom (Kadijevick, 2002). In addition, through ICT, students extend and deepen their knowledge, investigation, and inquiry according to their needs and interest when access to information is available on multiple levels (Jegede, 2007).

The importance of ICT in education

That ICT education has gained prominence in most parts of the world is no longer debatable but it still remains an exclusive right of the elites in Nigeria (Ogunkola, 2008). In many societies of the world, ICT education application is rapidly becoming all-pervasive; wherever one looks; one finds more and more examples of its application (Yi and Yujong, 2004). According to Arkkelin (2003) ICT education is something, one uses, it is a tool for achieving one's objectives more quickly, more cheaply or more efficiently. It even facilitates things, which, ten years ago would have been considered impossible. Moreover, advances in ICT education have caught the attention of many educators and researchers. ICT education based on instructional applications is considered an effective alternative to traditional teaching and learning methods (Larkin, 2003; Yi and Yujong, 2004). Today in numerous educational and training sessions, interactive programmes are used to teach young students and adults ICT education literacy skills. In the light of the above, Yushau (2006) submits that ICT educations have been introduced into school curricular for more than four decades, and they have been "unconditionally" accepted as an integral part of educational system. The foregoing underlines the submission of Yildir and Tsong (2001) for personal education in ICT and promoting ICT education literacy for both learners and instructors, especially in secondary educational institutions. Actually, the increase in ICT education use is rapid and has also generated new challenges.

The idea that teaching and learning can successfully take place through the application of electronic communication facilities between teachers and students is one which had generated, sometimes, hope and dismay and at other times, excitement and fear. Hope that many more learners can be reached at a more convenient pace that had erstwhile been the case, dismay that the infrastructures necessary for deploying an effective ICT platform is lacking in low-income countries like Nigeria (Jegede, 2007).

While information communication technology is an important area of study in its own right, it is having a

major impact across all curriculum areas. Easy worldwide communication provides instant access to vast array of data, challenging assimilation and assessment skills (Dishaw et al., 2002). Rapid communication plus increased access to ICTs in the home, at work, and in educational establishment, could mean that learning becomes a truly lifelong activity- an activity in which the pace of technological change forces constant evaluation of teaching process itself. The current issue is the use of ICTs in the classroom by the teachers. This includes specifically the use of computers, Internet, telephone, digital camera, data projector, etc. As the world continues to revolve around technology, students need to continue incorporating these new technologies into their learning activities.

Learners' attitude to ICT

Related literature indicates that foreign language learners usually have positive attitudes towards the Internet. In an analysis (Nayashi et al., 2004) of learners' views on Internet use for educational purposes, it was found that language used was a significant variable that affected their attitudes towards Internet use. In the same study, gender was also a significant subject variable that affected attitudes towards the Internet. A survey study by Arkkelin (2003) that aimed to investigate the attitudes towards educational uses of the Internet, socio-economic background of students was indicated as having a bearing with students' level of computer anxiety. However, he found that majority of the students who participated in the study have positive attitudes. It is still however difficult to say that the situation would be the same if participants were drawn from Nigerian secondary school students where the use of computer is still considered a privilege of the elite class. High levels of ICT education has been found to correspond to greater achievement of competence at work (Arkkelin, 2003). Learners' positive attitude to ICT education is a necessary prerequisite for classroom ICT education. Yildir and Tsong (2001) identified lack of knowledge and experience in the computing area as one of the most common reason for learners' negative attitudes toward ICT education. Nayashi et al. (2004) and Larkin (2003) all posited that there exists a relationship between ICT education and learners' attitude to it.

However, Yi and Yujong (2004) found other intervening or moderating variables influencing both positively and negatively. For example, ICT education anxiety discouraged ICT education skills acquisition (Nayashi et al., 2004) resulting in poor academic standing (Yi and Yujong, 2004). Poor academic standing and previous experiences with the ICT education tend to aggravate ICT education anxiety (Yildir and Tsong, 2001). Students with positive attitudes towards ICT education performed better (Nayashi et al., 2004). Moreover, a more complex

relationship was found between ICT education and academic performance (Yi and Yujong, 2004). Another study found that the level of ICT education and perceived advantage rather than ease of use of ICT educations contributed to ICT education ability (Nayashi et al., 2004).

METHODOLOGY

This study used descriptive survey research design using stratified random sampling method.

Sample

Participants for the study comprised of 600 students (Males = 300 (50%); Females = 300 (50%)) randomly drawn from the ten public junior secondary schools in Ogun state, Nigeria. Participants were requested to fill a socio-economic demographic form through which they were categorized into two groups (high and low socio-economic backgrounds). Next, the stratified random sampling technique along gender divide was employed in selecting the actual sample for the study. The age range of participants was 18 to 26 years with a mean age of 20.04 years and standard deviation of 2.18.

Instrumentation

Two instruments developed and validated by the researchers were used in the study. Socio-demographic form which requested participants to fill some demographic data such as gender and age and indicate the relative total income of their parents per year. The second instrument is the ICT Attitudinal Scale (ICTAS) which has 8 items to be rated on a 4-point Likert type scale thus; All the time = 4 points, Sometimes = 3 points, Rarely = 2 points and Never = 1 point. Higher scores (30 and above) indicate positive attitude to ICT education, lower scores (1 to 19) indicate negative attitude to ICT education. The tests re-test reliability using a set of 10 students selected outside the study area yielded ($r = 0.91$; in two administrations of 2-weeks interval) and it has internal consistency ($\alpha = 0.89$).

Procedure

The two instruments were administered one after the other by the three researchers with the aid of four research assistants. The research assistants were trained before the commencement of the study. Permission to conduct the research was obtained from the school managements. After, selecting the sample, participants were briefed about the objectives of the study and they were encouraged to respond objectively to the instruments by assuring them that all responses would be treated with utmost confidentiality. The researchers also offered to clarify any of the item on which they sought further clarifications. The instruments were retrieved immediately after completion. The administration of the two instruments lasted 50 min on average.

Data analysis

The data were analyzed using SPSS version 17. Result is presented in descriptive statistic for the responses to the ICT attitudinal scale. Independent sample t-test was performed to test the two null hypotheses postulated for the study.

Table 1. Descriptive statistics on responses to the ICT attitudinal scale.

S/N	Attitude to	Good (%)	Poor (%)
1.	Computer literacy	206 (34.38)	394 (65.62)
2.	Acquisition of basic skills	525 (87.5)	75 (12.5)
3.	Practice on computer	150 (25)	450 (75)
4.	Use of communication gadgets e.g. handsets	356 (59.38)	244 (40.62)
5.	Pursuing a career in ICT	112 (18.75)	488 (82.25)
6.	Internet browsing for assignments	206 (34.38)	394 (65.62)
7.	Acquisition of computer/laptop	450 (75)	150 (25)
8.	Receiving news, messages, alerts via e-mail	75 (12.5)	525 (87.5)

Table 2. Gender effect on attitude to ICT education.

Group	N	Mean	SD	Degree of freedom	t	p
Male students	300	28.74	3.61	598	1.471	0.214
Female students	300	27.44	3.28			

N = Number of participants; SD= standard deviation.

Table 3. Socioeconomic background effect on attitude to ICT education.

Group	N	Mean	SD	Degree of freedom	t	p
Students from high socio-economic background	356	27.15	2.71	598	1.153	0.123
Students from low socio-economic background	244	21.42	3.64			

N = Number of participants; SD = standard deviation.

RESULTS

Table 1 showed that majority of the respondents showed poor attitude to computer literacy, practice on computer, pursuing a career in ICT, internet browsing for assignments and receiving news, messages and alerts via e-mail. However, good attitude to use of communication gadgets especially handsets and acquisition of computers/laptops was observed as majority of the respondents indicated positive dispositions.

Results on Table 2 revealed no significant gender difference in students' attitude to ICT education ($t = 1.471$; $p > 0.05$).

Results on Table 3 revealed no significant difference in high and low socio-economic background students' attitude to ICT education ($t = 1.153$; $p > 0.05$). Students' attitude to ICT education is not dependent on their socio-economic background.

DISCUSSION

It is observable from the results that students still showed negative attitude towards information and communication

technology. This may not be due to lack of awareness of the imperative of ICT skills in all fields of human endeavours in contemporary world as well as lack of access to computers in many Nigerian schools. This finding lends credence to some previous findings on the subject which indicated that lack of access is often responsible for students' negative attitude to ICT education (Fakulehin, 2007; Ogunkola, 2008). However, the observed positive disposition to the use of communication gadgets and acquisition of computers/laptops may be due simply to the usual crave for material acquisition in Nigerian society. It may not really mean eagerness to learn and use such assets especially when such assets are still considered to be the exclusive rights of the elites. This inference is corroborated by Ogunkola (2008) who observed that access to computers in Nigeria is still an exclusive preserve of the elite class. Yet, learners' positive attitude to ICT education is a necessary prerequisite for classroom ICT education. Yildir and Tsong (2001) identified lack of knowledge and experience in the computing area as one of the most common reason for learners' negative attitudes toward ICT education. Nayashi et al. (2004) and Larkin (2003) all posited that

there exists a relationship between ICT education and learners' attitude to it.

The finding that gender and socio-economic background differences in students' attitude to ICT education were insignificant implies that male and female form high and low socio-economic background students' attitude to ICT was the same. This means that irrespective of gender or socio-economic background differences, students' attitude to ICT education was poor. The reasons for this may be due to the amount of deprivations students have suffered in recent past. Due to the long time of deprivation and neglect, students have come to see education as a mere past time and routine which they have to do before finding a lucrative activity which would make them feel happy in the growing materialistic society. It may also be due to ignorance and lack of awareness of the tremendous opportunities which ICT skills may offer them. The finding of no significant gender difference in students' attitude to ICT runs contrary to Nayashi et al. (2004) who found that gender was also a significant subject variable that affected attitudes towards the Internet. The finding on socio-economic background also negates that of Arkkelin (2003) students' attitudes towards educational uses of the Internet was influenced by their socio-economic background. The present finding showed that students irrespective of gender and socio-economic background showed negative attitude to ICT education. This is plausible since ICT education is still considered elusive and within reach of only the privileged few in Nigerian schools.

Implications for Policy, ICT Education and Counselling

The findings of this study portend that school authorities should device appropriate ways to ensure that ICT education is made attractive to students in Nigerian schools. There should be greater commitment to provision of computers and other necessary facilities in schools so that every student can have access to such facilities. It is unethical to say that secondary schools are yet to have internet facilities in the 21st century. ICT education should focus on clear demonstration of skills and knowledge acquired during lectures. Emphasis on practical works as ICT education would aid skills acquisition.

Similarly, greater emphasis on guidance and counselling services for students on the need to embrace ICT education becomes more imperative with the findings of this study. Value clarification, cognitive restructuring and morale-boosting should be emphasized in all academic counselling programmes meant for students in order to change their attitude to ICT education in Nigerian schools.

CONCLUSION AND RECOMMENDATIONS

Students showed negative attitude to ICT education because of their lack of awareness about ICT, inadequate access to computers and other ICT facilities. It is therefore necessary for all the stakeholders in education especially, administrators, teachers and counsellors to device appropriate means of fostering students' positive attitude to ICT education. Adequate provision of facilities and creation of awareness about ICT education may help foster positive attitude to this important skill. It is hoped that effective implementation of these recommendations would facilitate effective implementation of ICT education in Nigerian secondary schools.

REFERENCES

- Arkkelin D (2003). Putting Prometheus feet to the fire: Student evaluations of Prometheus in relation to their attitudes towards and experience with computers, computer self-efficacy and preferred learning style. Syllabus 2003 proceedings.
- Dishaw MT, Diane MS, Bandy DB (2002). Extending the Table – Technology Fit Model with Self-efficacy constructs. Confer. Proc. Eighth Am. Confer. Inf. Syst., pp. 1021-1027.
- Fakulehin SO (2007). Contributions of ICT to educational changes in Nigerian schools. *J. Voc. Res.*, 1(3): 194-201.
- Jegade PO (2007). Computer Attitude As Correlates Of Computer Self - Efficacy among South Western Nigerian Higher Education Teachers. Paper presented at Sixth International Internet Education Conference, September, 2 -7, 2007, Ramses Hilton, Egypt. Retrieved on 22/09/2009 from www.google.com/ICT-Learn2007.
- Kadijevick DJ (2002). Four critical issues of applying educational technology standards to professional development of mathematics teachers. Proceedings of the 2nd International Conference on the Teaching of Mathematics at the Undergraduate Level, University of Crete.
- Larkin TL (2003). Learning style in the classroom: a research guided approach. Paper presented at the Annual Conference of International Conference on Engineering and Computer Education, March 16 – 19, 2003, Sao Paulo, Brazil.
- Nayashi A, Chen C, Ryan T, Wu J (2004). The Role of Social Presence and Moderating Role of Computer Self-Efficacy in Predicting the Continuance Usage of E-learning Systems. *J. Inf. Syst. Educ.*, 15(2): 139-154.
- Ogunkola BJ (2008). Computer Attitude, Ownership and Use as Predictors of Computer Literacy of Science Teachers in Nigeria. *Int. J. Environ. Sci. Educ.*, pp. 53-57.
- Yi Y, Yujong H (2004). Predicting the use of web-based information systems: self –efficacy, 449 enjoyment, learning goal orientation as the technology Acceptance Model. *Int. J. Hum. Comp. Stud.*, 59(4): 431-449.
- Yildir I, Tsong Y (2001). A Comparison of Computer Attitudinal Characteristics of Elementary School Children and their Teachers in Turkey. A paper submitted to SIG International Studies.
- Yushau B (2006). Computer attitude, use, experience, software familiarity and perceived pedagogical usefulness: The case of mathematics professors. *Eurasia J. Math. Sci. Tech. Educ.*, 2(3): 1-7.