

AN ASSESSMENT OF TEACHERS' ACCESS AND COMPETENCIES IN INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN TEACHING IN KANO AND JIGAWA STATES OF NIGERIA

Danladi Sa'adu Ibrahim

Abstract

This study investigated senior secondary school teachers' access and competencies in integrating Information and Communication Technology (ICT) in teaching in Kano and Jigawa States of Nigeria. A Descriptive survey design was employed with 386 teachers randomly selected from Thirty Five (35) secondary schools. An Adapted questionnaire from Albirini (2005) study was used to collect data. Three research questions were formed to guide the conduct of the study. Simple percentage, frequency count, mean and standard deviation were used to analyze the results, whereas regression equation was used to establish relationships among variables. The findings concluded among other things that teachers have low access to ICT facilities, as well as low competencies in the utilization of ICT in teaching among teachers in the States. Recommendations were made for adequate provisions of computers in the schools to increase teachers' access and competency.

Twenty first century educational reform policies have been focused on a shift from traditional teacher centred pedagogy to a more learner's centred methods. Teaching and learning have gone beyond the teacher standing in front of a group of students disseminating information to them without the students' adequate participation (Ajayi, Ekundayo, &Haastrup, 2009). With the aid of ICT, teachers can take students beyond traditional limits, to ensure that students are actively involved in teaching learning process and create vital environment to experiment and explore.

Information and Communication Technology (ICT) has the potential to accelerate, enrich, and deepen skills of teachers, to motivate and engage students in learning, help relate school experience to work practice, help to increase economic viability for tomorrow teachers, contribute to radical changes in the school, to strengthen teaching, and to provide opportunity for connection between the school and the world (Ajayi, Ekundayo, &Haastrup, 2009).

Teachers play invaluable roles in the development of education system of a country. The saying that "no nation can rise above the quality of its teachers" is true. In consonance with this, Nigerian government has promised to provide teachers with intellectual and professional background adequate for their assignment and make them adaptable to any changing situation (FRN, 2004). Such changes call for a response to a new technological advancement and innovations, in order to enhance opportunities for better teaching and learning. It is hoped that teachers use of technology in education would improve educational outcomes, reduce anxiety when preparing lesson.

Teachers must have access and the required competencies to integrate ICT in their teaching. Ministries of Education in the Two States have made huge investments in ICT in the hope of attaining the goals of improving the quality of education through enriching the learning environment with educational software and technologies (Kano Teachers Digest, 2013, Ministry of Education Jigawa State, 2011). Presently all Senior Secondary Schools in the States have been provided with Computer laboratories equipped with Computers, Printers, Instructional software , Video players, Overhead projectors and Television set. In case of Jigawa State all senior boarding Secondary Schools were connected with the Internet (MOE, Jigawa State 2011).

Teachers need to have positive attitudes, competencies, and access to effectively and efficiently utilize it in teaching. Teachers' attitude toward ICT is not sufficient precondition for successful implementation of ICT in teaching; rather the tools and facilities must be made readily available to both the teachers and students in addition to the fact that they must have competencies in its utilization.

A look at the secondary schools in the two states has shown that many teachers in the system still rely much on the traditional "chalk talk" method of teaching rather than embracing the use of ICT. This is an indication that the teachers' are still lagging behind in the trend of changes in the country and the rest of the world. This presupposes that teachers attitudes, competencies and access to ICT may be low or lagging behind in the utilization of ICT. It is against this background that this study sought to investigate teachers' access and competencies in the integration of ICT in teaching in Kano and Jigawa States.

Statement of the Problem

Throughout the world many countries of the world have introduced ICT into their school system via different courses of actions. Their use is also underlined by a necessity for improving quality in teaching and learning. ICT integration in schools is needed to accomplish many objectives and improve the quality of lessons in all subject areas. Thus schools have to be equipped with the necessary ICT tools and facilities for effective lesson delivery.

Access to ICT infrastructures and resources in the schools is a necessary condition for the integration of ICT in education (Plomp, Anderson, Law, & Quale. 2009). Effective adoption and integration of ICT into teaching in schools does not only depend on availability of resources such as hardwares and softwares, obviously, if teachers cannot access ICT resources, then they will not use ICT. In addition, teachers must have the necessary competencies to utilize and integrate these resources in their teaching. Access to computers, update and sotwares, and competences are key elements in the successful adaption and integration of technology. Danladi (2006) opined that educational media (ICT) are of little value to learners if they are left on their own. Their usefulness is appreciated and enhanced only when teachers use them wisely and intelligently in the classroom. This can only be possible if teachers have the required access and competencies to integrate them. This study therefore, investigated teachers' access and competences in integrating Information and Communication Technology (ICT) in teaching in Kano and Jigawa States of Nigeria.

Research Questions

The following questions were framed in order to guide the conduct of this study.

1. To what extent do senior secondary school teachers have access to computers in the States?
2. What are the perceived computer competencies of senior secondary school teachers in the States?
3. To what extent do teachers' accesses to computer affect their competences to integrate ICT in teaching?

Population and Sample

The population of this study comprised all senior secondary schools and senior secondary school teachers in the two States. There are a total of Three hundred and fifty two (352) senior secondary schools in the States. These were made up of Two hundred and twenty five (225) from Kano State, and One hundred and twenty seven (127) from Jigawa State. In addition, there are Seven thousand five hundred and twenty five (7525) teachers in the schools, comprising Five thousand three hundred and eighty (5380) from Kano State, and Two thousand one hundred and forty five (2145) from Jigawa State (Nigerian Educational Statistic Digest, 2010). A total of Three hundred and eighty six (386) were selected using a random sampling technique from Thirty five (35) senior secondary schools in the States.

Methodology

Descriptive survey design method was employed for the conduct of this research. Data were gathered using an adapted questionnaire from Albirini (2005) study titled "teachers access and competences in the integration of ICT in teaching". The questionnaire contained three sections

labeled; 1) Demographic information of the respondents; 2) Perceived access to ICT facilities scale, and 3) Perceived computer competence scale.

Perceived Computer Access

The Perceived Computer Access Scale consisted of three statements that took into account the possible locations where computers might be available for use by the EFL teachers: at home, in school, and other places (the last choice was given to accommodate locations not mentioned in the first two guided responses). Computer Access, as an independent variable, was quantified by the respondent's score on the three access-related items, each measured according to a 5-point scale, ranging from *never* (1), to *once a month* (2), to *once a week* (3), to *2 or 3 times a week* (4), to *daily* (5). The responses were reduced to a mean score indicating each respondent's perceived level of computer access, with higher scores indicating greater computer access.

Perceived Computer Competence

The Perceived Computer Competence Scale consisted of 15 items. The items focused on the common uses of computers in education: software installation (item 1), basic hardware (items 2-3), productivity software (e.g., word processing; items 4-7), telecommunication resources (items 8-9), basic troubleshooting (item 10), graphic application (item 11), grade keeping (item 12), educational software evaluation (item 13), organization tools (e.g., use of folders) (item 14), and virus handling (item 15). Computer- Competence was quantified by the score of the 15 items on a four-point scale, ranging from *no competence* (1), to *little competence* (2), to *moderate competence* (3), to *much competence* (4). The responses were reduced to a mean score that demonstrated the level of each respondent's perceived computer competence, with higher scores indicating greater competence.

Reliability of the Instrument:

The Instrument used in this study was adapted from Albirini (2004-2005). The version had established validity and reliability by Albirini, however, since the instrument was used in a different setting, the reliability had to be calculated. The reliability of the Instrument was established through test re-test method within two weeks interval on some selected Secondary School teachers in the States using Cronbach's Alpha Coefficient. Thus Cronbach's alpha was used to determine the internal consistency of items within each scale.

Reliability statistics

Test type	Cronbach alpha	No of items
Retest	.802	18

Review of Related Literature

Competencies are the state of possessing adequate knowledge for the performance of a duty. It is the power to produce a desired result (Dictionary Com. Cambridge Dictionaries). Competence is also the quality of doing something well with no waste of time, money, or energy. Teacher ICT shell is therefore the ability of the teacher to perform his teaching task with adequate knowledge of the subject matter and teaching methodologies and good preparation of lessons to produce desired change in the learners using ICT Tools and equipment. Igun; (2005) rightly pointed out that teachers and effective teaching cannot do without ICT in this era of communication Superhighway. The teachers and the Students must study, research, teach and communicate. With adequate and skilled knowledge and competence in ICT, Nigerian teachers will be able to collaborate on the same level with their counterpart or colleagues in the other parts of the World.

Several researchers had investigated the ICT skills of secondary School Teachers both in Nigeria and other countries of the world for instance Ajayi and Ekundayo (2009) examined the Application of information and communication and Technology in Nigerian Secondary Schools in Ondo and Ekiti States their funding revealed among others that, ICT Facilities were lacking in schools and students and teachers were to a little exposed to the use of ICT. Moreover, the study revealed the perceived benefits of using ICT in Schools which include making teaching – learning interesting; helping the distance learning programs helping teachers to be up-to- date enhancing quality of work of

both the teachers and the students. However despite these perceived benefits, the study also revealed some of the challenges facing ICT in secondary Schools: Irregular power supply; inadequate Computer literate teachers; high cost of purchasing computers in Schools; inadequate facilities to support full Application of ICT and lack of fund.

Ubulum, Enyeket, Onuekwa, and Amaehule (2011) in their analysis of ICT Accessibility and Utilization in teaching of business studies in Secondary Schools in Andoni of Rivers state, Nigeria found that, there was the problem of Accessibility of ICT in the schools as indicated by the respondents. However, there is no significant difference on gender utilization of ICT among males and females teachers.

In another study on teachers skills, perceptions, and practices about ICT in Secondary Schools in Ghana BuabengAndoh (2012), discovered a positive correlation between ICT use and teachers competence. Further teachers perceptions in terms of using ICT were found to be positive but not statistically significant. The study also revealed inverse correlation among ICT use, age, and teaching experience. The descriptive results indicated that teachers' knowledge in basic ICT Applications as well as integrating ICT into teaching and learning processes was low.

The reasons for low use of these ICT tools could be attributed to lack of access to equipment in Schools, Lack of teacher's skills in the use of the equipment. This is in agreement with Ubulum, Enyekit, Onuekwa and Amaechule, (2011), Ajayi (2008), Ajayi and Ekundayo (2009) and sites M. study which found that lack of computer literacy among teachers, lack of training with regards to integration of ICT into teaching and absence of a properly developed computer skills curriculum were barriers to teachers application of the technology (Howie, Muller, & Paterson 2005).

Findings of the study

The findings of the study are presented research question by research question. To what extent do senior secondary school teachers have access to Information and Communication Technology (ICT) in teaching?

The overall result shows that there is low access to information and Communication Technology (ICT) facilities with a calculated mean score of 2.81 and standard deviation of 1.31 ($X=2.81$, $SD = 1.31$).

Table 1. Access to Information and Communication Technology (ICT) Facilities

S/N	Items	Daily	2-3 Times a week	Once a week	Once a month	Never
1	Use computers in your home	199 (51.6%)	52 (13.5%)	36 (9.3%)	20 (5.2%)	79 (20.5%)
2	use computer at school (Computer Lab. or library)	74 (19.2%)	122 (31.6%)	59 (15.4)	40 (10.4%)	91 (23.6%)
3	Use computer at other places (like internet cafes e.t.c.)	43 (11.1%)	54 (14%)	131 (33.9%)	72 (18.7%)	86 (22.3%)

1. What are the perceived computer competences of senior secondary school teachers in the States?

The overall result shows that perceived computer competences of senior secondary school teachers in the States has a mean of 2.54 and a standard deviation of .635 ($X =2.54$, & $SD = .635$).

Information and Communication Technology (ICT) Competencies of Teachers

S/N	Items	SD	D	N	A	M	SD
1	Install new software on a computer	157 (40.7%)	99 (25.6%)	79 (20.5%)	41 (13.2%)	2.06	1.06
2	Use a printer	133 (34.5%)	98 (25.4%)	98 (25.4%)	57 (14.8%)	2.20	1.07

An Assessment of Teachers' Access and Competencies in Integration of Information and Communication Technology (ICT) in Teaching in Kano and Jigawa States of Nigeria

3	Use a computer keyboard	107 (27.9%)	101 (26.2%)	79 (20.5%)	99 (25.6%)	2.44	1.14
4	Operate a word processing programme (e.g., Word)	36 (9.3%)	163 (42.2%)	1396 (33.7%)	57 (14.8%)	2.53	.855
5	Operate Presentation programme (e.g. Power point)	131 (33.9%)	122 (31.6%)	84 (21.8%)	49 (12.7%)	2.13	1.02
6	Operate a Spreadsheet programme (e.g. Excel)	121 (31.3%)	135 (35%)	77 (19.9%)	53 (13.7%)	2.16	1.01
7	Operate a Database programme (e.g. Access)	74 (19.2%)	108 (28%)	94 (24.4%)	110 (28.5%)	2.62	1.09
8	Use internet for communication (e. g. email & Chat room)	32 (8.3%)	98 (25.4%)	116 (30.1%)	140 (36.3%)	2.94	.973
9	Use World Wide Web to access different type of information	31 (8%)	69 (17.9%)	124 (32.1%)	162 (42%)	3.08	.956
10	Solve simple problem in operating computers	75 (19.4%)	016 (27.5%)	99 (25.6%)	106 (27.5%)	2.61	1.08
11	Operate a Graphics programme (e.g. Photoshop)	84 (21.8%)	97 (25.1%)	89 (23.1%)	116 (30.1%)	2.61	1.12
12	Use computers for grade keeping	55 (14.2%)	117 (30.3%)	109 (28.2%)	105 (27.2%)	2.68	1.02
13	Select and evaluate educational Software	81 (21%)	125 (32.4%)	86 (22.3%)	94 (24.4%)	2.50	1.07
14	Create and organise computer files and folders	38 (9.8%)	82 (21.2%)	91 (23.6%)	175 (45.3%)	3.04	1.02
15	Remove computer virus	123 (31.9%)	68 (17.6%)	74 (19.2%)	121 (31.3%)	2.50	1.23

2. To what extent do teachers' accesses to computer affect their competences to integrate ICT I teaching?

A negative correlation between computer access and computer competence was found as $r = -.230$, $p < .001$ indicating that inadequate access decrease computer competences.

Summary of Findings

1. Low access to computers among senior secondary school teachers in the States.
2. Low competence in integrating ICT in teaching among senior secondary school teachers in the States.
3. Inadequate/low access to computers decreases the competences of the teachers to integrate ICT in teaching.

Recommendations

Teachers being the bedrock upon which the development of any nation depends should avail themselves of the opportunity provided by ICT for interactive and students centred teaching where by students would no longer be passive receivers of information, but active participants in teaching and learning processes.

Adequate provision of computers should be made in all schools so as to increase teachers' access to computers; this will consequently increase their competences

References

- Ajayi, A. Ekundayo, C.&Haastrup, P. (2009).The Application of Information and Communication Technology (ICT) in teaching in Nigerian colleges of education. *Asian Journal of Information Technology*.vol 7(5)210- 216.
- Ajayi, I.A. (2008): Towards Effective Use of Information and Communication Technology for teaching in Nigerian Colleges of Education. *Asian Journal of Information Technology*,Vol. 7(5). PP. 210-214.
- Albirini, A. (2004). An exploration of the factors associated with the attitudes of high school EFL teachers in Syria toward information and communication technology. Unpublished Doctoral Dissertation, Ohio State University.AAT 3141718.
- Albirini, A. (2005). Teachers' attitudes toward information and communication technologies:The case of Syrian EFL teachers.*Computers & Education*, In Press, Corrected Proof.
- Buabeng-Andoh, C. (2012): An exploration of Teachers' Skills, Perceptions and Practices of ICT in Teaching and Learning in the Ghanaian Second-Cycle Schools: in *Journal of Contemporary Educational Technology*, Vol. 3(1) 36-39.
- Graziano, A. M., &Raulin, M. L. (1997).*Research Methods: A process of inquiry*. Addison Wesley Education Publisher Inc.
- Howie E.J. Muller, A & Patterson, A (2005) Information and Communication Technologies in South African Secondary Schools Pretoria, JISRC.
- Igun, S.E. (2005): Users and Internet Skills. Report from Delta State University, Abraka, Nigeria .*Electronic Journal of Academic and Special Librarianship*, Vol. 6(3).
- Kano State Government (2013).*Kano Teachers Digest*. A publication of Kano State senior secondary school management board (KSSSMB), Kano printing press, Kano.
- Plomp T. Anderson, R.E., Law, N, & Quale, A. (2009): Cross National Information and Communication Technology; *Policies and practices in education*Charlotte, N.C., Information Age publishing
- Ubulum, W.J; Enyekit, E.O, Onuekwa; F.A, &Amaehule, S. (2011) Analysis of Information and Curriculum and Technology (ICT) Accessibility and Utilization in Teaching of Business studies in Secondary Schools in Andonia, Nigeria.*Conference Preceding*,International Conference on teaching and learning, 11th - 15th September, 2011, Portharcourt, Nigeria.