References

Abubakar, R. B., & Adegboyega, B. I. (2012). Age and gender as determinants of academic achievements in college mathematics. *Asian Journal of Natural & Applied Sciences*, 1(2), 121-127. Retrieved from www.ajsc.leena-luna.co.jp/AJSCPDFs/Vol.1(2)/AJSC2012(1.2-12).pdf

Azubuike, E. N. (2012). *Effect of peer tutoring instructional strateg on achievement in biology of senior secondary school slow learners in anambra state (master's thesis)*. Retrieved from http://naulibrary.org/dglibrary/admin/book_directory/Educational_Management_Policy/11394.pdf

Borah, R. R. (2013). Role of teachers and guardians in honing their hidden skills. *Journal of Educational Planning & Administration, 3(2)*. Retrieved from www.ripublication.com/ijepav3n2_04.pdf

Glautier, M.W.E., Underdown, B., & Morris, D. (2011). *Accounting theory and practice (8th ed.)*. England: Pearson Education Limited.

Igboanugo, B. I. (2013). Effects of peer-teaching on students' achievement and interest in senior school difficult chemistry concepts. *International Journal of Educational Research*, 12(2), 61- 71.

Kolawole, E. B. (2007). Effects of competitive and cooperative learning strategies on academic performance of Nigerian students in mathematics. *Educational Research Review*, 3(1). Retrieved from http://www.academicjournals.org/err/PDF/pdf%202008/Jan/Kolawole.pdf

National Examinations Council (2002). *Regulations and syllabus for senior secondary school certificate examination.* Minna: NECO

National Population Census (2006). Retrieved from http://en.wikipedia.org/wiki/ Oyo_state_population

Nworgu, B. G. (2006). *Educational research: Basic issues and methodology*. Nsukka: University Trust Publishers.

Obiunu, J. J. (2008). Effectiveness of reciprocal peer tutoring on the enhancement of career decision making process among secondary school adolescents. *Educational Research and Review*, 3(7), 236-241. Retrieved from http://www.academicjournals.org/ERR

Ogundare, S. F. (2008). *Invitation to Research Methods in Education.* Lagos: Pavlov Publishers.

Okoli, J. N. & Egbunonu, R. N. (2012). Effects of blended approach on Nigerian senior secondary school students' achievement in Biology. *International Journal of Educational Research and Development*,4(1), 91-97.

Olawoyin, R. O. (2015). *Effects of reciprocal peer-tutoring on students' achievement in office practice in business studies in Oyo education zone of Oyo state.* Master's Thesis of Nnamdi Azikiwe University, Awka.

Shaw, S., Grimes, D., & Bulman, J. (2005). Educating slow learners: Are charter schools the last, best hope for their educational success? *The Charter Schools Resource Journal, 1*(1). Retrieved from http://www.ehhs.cmich.edu/~tcsrj/shaw4

Topping, K. J. (2005). Trends in peer learning. *Educational Psychology, 25(6),*631-645.

Yusuff, A. (2015). Book keeping and accounting education. Retrieved from http://www.musero.org.ng/publications/BOOk%20KEEPING_%20AND_%20ACCOUNTING%_20EDUCATION.pdf

ASSESSMENT OF ICT COMPETENCIES POSSESSED BY NCE GRADUATE BUSINESS STUDIES TEACHERS IN ENUGU STATE.

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Abstract

The study was undertaken to determine the level of ICT competencies of Business studies teachers in junior secondary schools in Enugu East senatorial zone of Enugu state Nigeria. Two research questions guided the study and two null hypothesis were tested. Survey design was adopted and the population consisted of 352 NCE graduate teachers in junior secondary schools in the area. The entire population was used for the study. The instrument used was questionnaire with a 5 point rating scale containing 27 items in two sections. The instrument was validated by three experts, two in measurement and evaluation and one in computer science. The reliability of the instrument was determined using cronbach Alpha reliability formula for internal consistency and reliability. Coefficients of 0.76 and 0.85 were obtained for the two sections. Data in respect of a research questions were analysed using mean and standard deviation while the hypotheses were tested using independent t-test (I tail, p-val = 0.05) on SPSS software. The two research questions showed that the ICT competency of teachers were moderate. All the two hypotheses tested showed that there were significant differences between the mean responses of the teachers (mean = 0.05), hence all the null hypotheses were rejected. The study revealed that teachers were not highly competent in ICT to enhance their teachings. Based on the finding of the study, it was recommended that government should organise workshops, seminars and conferences for secondary school teachers to enhance their ICT competencies and also grant study leave with pay to teachers to enable them embark on ICT training programmes.

Introduction

Technology advances and the accelerated transfer of information, along with related knowledge, skills and abilities are of paramount importance in today's society. Information and Communication Technology (ICT), without doubt, is the fastest growing technology today (Dlodlo & Sithole, 2001) which teachers should embrace to enhance teaching and learning in the classroom. In view of this, Nigerian teachers cannot afford to be isolated from the present wind of globalization since ICT has permeated every sphere of human development and education stands to be the greatest beneficiary of this development; thus Nigerian teachers cannot afford to be indifferent.

According to Ojaleye (2002), ICT is a generic term which refers to the technologies used in collecting, storing, editing and passing on information in various forms. Ojaleye

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further stated that in most general sense, information technology includes the use of communication satellites, radio, television, telephone, videotape recorders, compact discs, floppy discs and personal computers. Iji (2005) stat3ed that that ICT is understood be a complex of artifacts, technique and knowledge for studying human problems. Laudon (2000) referred to information technology as the tools, materials and equipment used in procuring, storing and distributing information. The author regarded information technology as synonym with microelectronic revelation. Hence, it is the application of science to information handling functions. Ajaero (2010) defined ICT as an umbrella term that includes communication devices and applications such as, radio, television, cellular phones, computer networks, computer hardware and software, satellite system, plus applications associated with them such as video - conferencing, e mailing, word processing, spreadsheet processing among others.

Certain competencies must be possessed by business studies teachers for effective teaching of business studies in schools. Such competencies include technical and methodology competencies. Technical competencies enable the teacher to apply technology wisely, logically and effectively while methodology competencies are skills and abilities applied in teaching and learning process. According to Enguage (2002), technical skills include scientific literacy, manipulative skills and technological skills. Technological skills involve the ability to solve problems with ICT tools which according to the author includes functional efficiency (which enables users to familiarize with the workings dos and don'ts of the technological tools), visual arts, cultural art and communication art which contribute to effective research and learning in the ICT environment. Technological skills also include maintenance literacy which means the ability to handle the servicing and safe keeping of ICT tools and equipment in such a manner that shall ensure the maximum efficiency and long life.

According to UNESCO (2002), learning, in its methods and nature has changed. With ICT in place, each learner can establish contact with learning resources on the internet and the libraries as well as the teacher at his own time, either through the phone or e - mail. Individual learning affords learners to combine work and study. The students now have the role of deciding their speed and pace of work as well as what to learn depending on their dispositions to the subject matter, provided that they remain within tolerance. According to School Net (2007), the method that teachers should adopt is to access and use electronic and communication resources such as the internet and e - mail for the benefit of educators and learners.

Earlier researches on the use of ICT in teaching indicate varied results. For instance, Richard and Augustine (2011) carried out a study on teacher competence in ICT in Zimbabwean secondary schools. Their result showed that teachers were knowledgeable and skilled in computer aided instructions and they had knowledge of the word processing software but they lacked knowledge and skills of presentation software. Tariq, Ayed and

Tayseer (2007) had a study on vocational teacher adoption of ICT in Jordanian Secondary Vocational schools and the study revealed that vocational teachers moderately possess the ICT skills. Abdul Salaam (2007) carried out a study on the availability and usability of ICT among secondary school teachers in Oyo metropolis. The study also showed that none of the school covered in this study have interactive boards, multimedia facilities and virtual library. In education, the teacher is the change agent between the learner and technology and plays a critical role in the process of teaching and learning. Therefore, it is necessary for teachers to stay abreast of changing technology and current opportunities in order to assure their place of leadership in instructional technology. Unfortunately many teachers seem not to posses the competencies required for the application of ICT in teaching and learning. Many appear not to possess the competencies required for effective application of ICT in most educational institutions in Nigeria therefore, there is need to identify the ICT technical and methodological competencies of teachers either to help them improve on the ones they have or help them acquire the ones they lack.

Purpose of the study

The purpose of the study is to determine the ICT competencies possessed by NCE graduate business studies teachers in Enugu state. Specifically the study determined:

1. the level of ICT technical competencies possessed by NCE graduate business studies teachers in Enugu state
2. the level of ICT methodology competencies possessed by NCE graduate business studies teachers in Enugu state.

Research Questions

The following research questions guided the study:

1. To what level do NCE graduate business studies teachers in junior secondary schools in Enugu State possess ICT technical competencies for effective teaching of business studies?
2. To what level do NCE graduate business studies teachers in junior secondary schools in Enugu State possess ICT methodology competencies?

Hypotheses

Two hypotheses were tested at 0.05 level of significance as follows:

1. There is no significant difference between the mean responses of business studies teachers in government and private junior secondary schools in Enugu state regarding the level of ICT technical competencies they possessed for effective teaching of business studies.
2. There is no significant difference between the mean responses of business studies

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teachers in urban and rural schools regarding the level of ICT methodology competencies possessed for effective teaching of business studies in junior secondary schools in Enugu State.

Method

Survey design was adopted for the research. Survey is a research design used by researchers to collect information from a given sample of respondents using questionnaires, observations or interviews. The study was conducted in Enugu East Senatorial Zone of Enugu State Nigeria. The area consists of six local government areas of which three are urban while the others are rural. The schools are grouped under Enugu and Agbani Education Zones.

The population consisted of 352 NCE graduate business studies teachers in secondary schools in the area. Of these teachers, 76 were from urban government and 124 from urban private schools while 72 were from rural government and 80 were from rural private schools as sourced from available records in Research and Statistics Department of the Enugu State Ministry of Education. The entire population was used as the sample because it was manageable. Instrument for data collection was questionnaire developed by the researcher consisting of two parts 1 and 2. Part 1 elicited information on demographic data of the subjects while part 2 comprised sections A and B containing 17 and 10 items respectively on a 5 point rating scale thus;

Very Highly Competent (HC)	-	5 points
Highly Competent (C)	-	4 points
Moderately Competent (MC)	-	3 points
Fairly Competent (FC)	-	2 points
Incompetent (IC)	-	1 point

The instrument was subjected to face validation by three experts from Measurement and Evaluation and Computer science. The researcher carried out the reliability test using 50 Business studies teachers selected randomly from Ebonyi State. The reliability coefficient was calculated using Cronbach Alpha reliability formula and reliability coefficients of 0.76 and 0.89 were obtained for the two clusters.

Mean values and standard deviation were used to analyze data in respect to the research questions while Independent t-test was used to test the hypotheses at 0.05 level of significance using SPSS software. The mean values were used to provide answers to the research questions while the standard deviation (SD) provided the extent of deviation from the mean values. The decision rule adopted in respect of the research question was based on the upper and lower limit of scale values as shown below:

4.50 - 5.00 Very Highly competent;
3.50 - 4.49 Highly Competent;
2.50 - 3.49 Moderately Competent;
1.50 - 2.49 Fairly competent;
0.50 - 1.49 Incompetent;

In the case of hypotheses testing, SPSS was used to determine the p- value at which the hypotheses could be significant compared to the predetermined alpha level (0.05) for the study. The null hypothesis was rejected where p-value was less than 0.05 ($p < 0.05$) otherwise the hypothesis was accepted.

Results

Research Question 1

To what level do NCE graduate business studies teachers in Enugu state possess ICT technical competencies for effective teaching of business studies in junior secondary school?

The analysis of data in respect of this research question is in Table 1.

Table 1:

Level of technical competencies possessed by NCE graduate Business studies teachers.

S/N	Technical Competencies	Government				Private				Overall Mean	
		Rural		Urban		rural		urban			
			SD	Mean	SD	Mean	SD	Mean	SD	Mean	Remark
1.	Ability to select learning experience and present lessons Electronically	2.96	1.53	3.37	1.67	2.93	1.42	3.03	1.49	3.05	1.52	MC
2	Ability to use a browser	3.09	1.73	3.23	1.51	2.64	1.66	3.24	1.64	3.00	1.65	MC
3	Ability to identify web address	2.70	1.50	2.89	1.61	2.93	1.74	3.09	1.48	2.91	1.60	MC
4	Ability to type work without assistance	2.74	1.55	3.43	1.57	2.13	1.38	3.19	1.46	2.78	1.56	MC
5.	ability to apply set induction in electronic Form	2.78	1.63	2.86	1.54	2.78	1.53	2.60	1.47	2.76	1.54	MC
6	Ability to connect computer terminals	2.87	1.55	2.77	1.52	2.53	1.60	2.92	1.59	2.74	1.57	MC

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Table 1 Cont'd.

S/N	Technical Competencies	Government Rural		Government Urban		Private rural		Private urban		Overall		
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Remark
7	Ability to cite an electronic references to information used	2.57	1.42	3.03	1.57	2.60	1.50	2.81	1.44	2.73	1.49	MC
8	Ability use spell checks	2.91	1.73	2.83	1.57	2.56	1.71	2.65	1.74	2.72	1.69	MC
9	Ability to generate appropriate graph eg bar , column ,line	3.03	1.60	2.94	1.60	2.38	1.43	2.71	1.50	2.72	1.53	MC
10	Ability to interpret data from an existing Spreadsheet	3.26	1.63	3.01	1.49	2.04	1.13	2.71	1.70	2.66	1.54	MC
11	Ability to enter data in a cell	2.43	1.54	2.89	1.57	2.56	1.51	2.49	1.51	2.59	1.53	MC
12	Ability to apply word processing to produce present and evaluate Lesson	2.78	1.54	2.89	1.50	1.98	1.28	2.92	1.59	2.56	1.51	MC
13	Ability to apply software programmes to produce, present and evaluate lessons	2.87	1.71	2.66	1.58	2.31	1.37	2.49	1.47	2.55	1.52	MC
14	Ability to record lessons on compact disc recorder	2.70	1.53	2.60	1.64	2.24	1.43	2.71	1.46	2.52	1.51	MC
15	Ability to use excel in ICT base lessons	2.74	1.55	2.69	1.65	2.13	1.30	2.44	1.47	2.45	1.49	FC
16	Ability to apply Corel Draw to produce present and evaluate Lessons	2.70	1.53	2.40	1.58	2.16	1.49	2.33	1.46	2.37	1.52	FC
17	Ability to work on two programmes simultaneously with a computer	2.51	1.37	2.69	1.52	1.95	1.29	2.44	1.44	2.34	1.42	FC

Table 1 indicates that respondents to 14 items stated that they moderately possessed technical competency for effective teaching of business studies in junior secondary schools in Enugu State. The remaining items which were items 15, 16, and 17, indicated that the NCE business studies teachers fairly possessed the technical competency for effective teaching of business studies in junior secondary schools in Enugu State. This implies that in 82.35% of the items, the business studies teachers stated that they possessed the technical competency moderately while in the remaining 18% items, the business studies teachers were fairly competent as regards to technical competency.

Research Question 2

To what level do NCE business education teachers in Enugu State possess ICT methodology competency for effective teaching of business studies in junior secondary schools?

The data gathered were analysed and presented in Table 2

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Table 2:
Level of methodology competencies possessed by Business NCE graduate Business studies teachers.

S/N	Methodology Competencies	Government				Private				Overall		
		Rural		Urban		rural		urban				
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Remark
18	Ability to source information from the internet for ICT based Lesson	3.55	1.64	2.63	1.69	2.53	1.60	2.76	1.69	2.82	1.69	MC
19	Ability to formulate lesson objectives using ICT facility	3.20	1.50	2.66	1.67	2.38	1.45	2.87	1.80	2.73	1.62	MC
20	Ability to apply illustration in lesson plan in electronic form	3.03	1.61	3.14	1.54	2.20	1.20	2.65	1.67	2.69	1.53	MC
21	Ability to apply set induction in lesson plan Electronically	2.91	1.45	2.97	1.37	2.13	1.30	2.92	1.75	2.66	1.51	MC
22	Ability to use e-mail to communicate with the students	2.86	1.66	2.74	1.82	2.31	1.57	2.81	1.75	2.64	1.69	MC
23	Ability to prepare students results using excel or word processing software	3.32	1.70	2.63	1.67	2.16	1.25	2.41	1.60	2.57	1.58	MC
24	Ability to conduction exams and assessments with ICT facilities	3.03	1.45	2.40	1.60	2.35	1.50	2.49	1.68	2.54	1.57	MC
25	Ability to use examples in electronic based lesson plan	2.91	1.61	2.60	1.60	2.05	1.33	2.71	1.73	2.51	1.58	MC
26	Ability to use scanner	2.80	1.52	2.43	1.64	1.98	1.33	2.44	1.44	2.36	1.49	FC
27	Ability to use opaque projector in the classroom	2.83	1.53	2.40	1.62	1.73	1.14	2.44	1.61	2.27	1.51	FC

Table 2 showed that the respondents were moderately competent in the use of ICT to enhance

teaching methods in 80% of the items tested while they are fairly competent in the remaining 20% of the items.

Hypothesis 1:
There is no significant difference between the mean responses of business studies teachers in government and private junior secondary schools in Enugu state regarding the level of ICT technical competencies they possessed for effective teaching of business studies.

The data analysis with respect to hypothesis 1 is presented in Table 3.

Table 3:
ICT Technical Competencies possessed by Business studies teachers in Government and Private Schools

Item	Type of Ownership	N	Mean	Std. Deviation	Std. Error Mean
ICT Methodology Competency	Government schools	139	48.40	25.05	2.12
	Private schools	185	43.24	23.49	1.73

		Levene's Test for Equality of Variances			t-test for Equality of				
		Sig.			Sig. (1-tailed)	Mean Dif.	Std. Error Diff.		Alpha-value
		F	t	df					
Technical Competency skills	Equal variances assumed	2.71	.10	322	.03	5.15244	2.71	.	05
	Equal Variances Not assumed	1.90 1.88	286	.73	.03	5.15244	2.74	.05	

The null hypothesis was tested with independent (1-tailed) t-test. The p-value of .03, implies that the difference in mean values is statistically significant at the .05 alpha level. The null hypothesis which states that there is no significant difference between the mean responses of business studies teachers in government and privately owned junior secondary schools regarding the level of ICT technical competency possessed by the teachers for effective teaching of business studies in Enugu State is rejected.

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The result of the test of hypothesis 2 was presented in Table 4.

Table 4:
Level of ICT Methodology Competency possessed by Business studies teachers in urban and rural schools

	school location	N	Mean	Std. Deviation	Std. Error Mean
ICT Methodology Competency	rural schools	143	28.28	13.55	1.13
	urban schools	180	23.68	13.90	1.04

		Levene's Test for Equality of Variances		t-test for Equality of					
`		F	Sig	T	df	Sig. (1-tailed)	Mean Dif.	Std. Error Diff.	Alpha-Level
Technical Competency skills	Equal variances assumed	.03	.87	2.99	321	.02	4.60	1.54	.05
	Equal Variances Not assumed			2.99	307.97	.02	4.60	1.54	.05

The null hypothesis was tested with independent 1-tailed t-test. The p-value of .02 implies that the difference in mean values of the two groups is statistically significant at the .05 alpha level. The null hypothesis is rejected and this means that there is significant difference between the mean response of urban and rural business studies teachers regarding the level of ICT methodology competency skills possessed by the teachers for effective teaching of business studies in Enugu State.

Discussion

The results of the analysis showed that NCE graduate business studies teachers in junior secondary schools Enugu East Senatorial Zone moderately possessed ICT technical, methodology competencies for effective teaching of business studies.

The findings also reveal that there is statistically significant difference between the mean responses of business studies teachers in government and private schools regarding the

level of ICT technical competencies possessed by them for effective teaching of business studies. It was found that teachers in government schools are more competent than teachers in private schools. There is also statistically significant difference between the mean responses of business studies teachers in urban and rural schools regarding the methodology competencies possessed by them for effective teaching of business studies. It was further found that business studies teachers in urban school are more ICT competent than their counterparts in rural schools. The findings were in agreement with the findings of Richard and Augustine (2011) which showed that teachers in Zimbabwean secondary schools lacked the necessary skills and knowledge of computers and related technology. They were equally in agreement with the findings of Tariq, Ayed and Tayseer (2007); Egboka (2010) and Abdul-Salaam (2007) which indicated that vocational teachers moderately possessed the listed ICT skills necessary for their teaching.

Conclusion

From the findings of the research, the researcher concluded that business studies teachers in Enugu State do not possess enough ICT competencies for effective teaching. Therefore, if nothing is done to enhance their ICT competencies, they will produce half baked students that cannot compete globally. This will affect the development of the state because children are the future hope and leaders of tomorrow.

Recommendations

The under listed recommendations were made with regards to the finding of the study.

1. Government should organise workshops, seminars and conferences for secondary school business studies teachers to enhance their ICT competencies.
2. Government should also grant study leave with pay to business studies teachers to enable them embark on ICT refresher programmes.
3. The secondary school management should ensure that the secondary schools in the state have effective computer laboratories. The management would further ensure that the laboratories are supplied with steady electricity for effective use of the laboratories whether in rural or urban location.
4. The post secondary school management board should use the extent of ICT competency level of teaching as a means for their promotion. This step would spur the teachers for greater achievement in ICT competency acquisition.

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REFERENCES

Abdul-Salaam, A. O. (2007). The role of information and communication technologies in Nigerian educational system. *Journal of Science and Science Education, 1(2),* 177 186.

Adeshina, T. J; Udo, A; Udomi, B. & Aliyu, M .(2012). Impact of information technology skills of male and female secretarial teachers in Nigeria colleges of Education on utilization of internet for effective lecture delivery. *Educational Research, 3 (8),* 632 635.

Ajaero, O. (2010). Enhancing accounting education in tertiary institutions in Nigeria. The role of ICT. *Book of readings in Business Education, 1(10),* 34 40

Dlodlo, N.& Sithole, N, (2001). The internet as a tool for a revolution in education in Africa. A dream or reality. *World conference on educational multimedia, Hypermedia and Telecommunication, 2001(1),* 425 430, retrieved November 14, 2013 from http//dl. Aace. Org/8489.

Egboka, P. (2012). The status of information and communications technology (ICT) in empowering policy implementation in universities in south east zone of Nigeria. *International Journal of Educational Research and Development, 4(1),* 231 236.

Enguage, B. (2002). *The uses of ICT in Education,* http://en Wikibooks. Org/wiki/ICT in Education. Retrived march 27,2013

Iji, C. O. (2005). Information and communication technology (ICT) in school mathematics implication for primary schools. *Stand 44th Annual Conference Proceedings* pp 172 176

Laudon, K. C ; Laudon, J. P. (2000). *Management information system* New Jersey Prentice Hall Inc.

Ojaleye, O. (2002). Promoting the utilization technology education in mathematics class among pre service teachers. *A paper presented at the mathematics education summit held at NMC* Abuja.

Richard, I.O. (2011). Innovations in teaching and learning experiences. *The Educational Psychologist, 5(1),*1-12.

School Net (2007). Teacher competencies for ICT integration; available at www.schoolnet.edu.lb/exams.htm

Tarig, Y. J; Ayed, H. E. & Taysee, M. K. (2007). Vocational education teachers' adoption of information and communication technology (ICT) in the Jordaanian secondary vocational schools *Journal of Educational and Social sciences and Humanities, 19(2),* 13 54

UNESCO. (2002). *Information and communication technologies in development of UNESCO perspective.* Paris: I TU/UNESCO 1996 IV, 30cm (cii 96/ws/6 Retrieved on 10/10/2013

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