

COMPUTER PROFICIENCY AND GENDER AS DETERMINANTS OF ACADEMIC ACHIEVEMENT AMONG DISTANCE LEARNING PRE-SERVICE TEACHERS IN YORUBA ORTHOGRAPHY

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Abstract

The advent of computers has activated a revolutionary change in the world of information technology. Computers are being used almost by everyone due to its numerous advantages in every facets of human interaction. One should be equipped with the basic knowledge of computer, its operations and applications as this will contribute greatly to academic achievement. Therefore, this study investigated how computer proficiency and gender can determine academic achievement of National College of Education distance learning students in Yoruba Orthography. Selected participants for the study were 270 distance learning 200 level students of Emmanuel Alayande College of Education, Oyo, Oyo State. They were purposively selected from the three Senatorial Districts of the state. The study adopted a pre test, post test control group quasi experimental design. The following research instruments were developed and used for the study. (i) Mobile Phone-Based Instructional Strategy Package (MPBISP); (ii) Computer-Based instructional Strategy Package (CBISP); (iii) Students Computer proficiency (SCPT); (iv) Yoruba Orthography Achievement Test (YOAT). Research work covers a period of twelve week. The data collected were analysed using analysis of covariance (ANCOVA). The finding of the study reveals that gender had no significant effect on student's achievement in Yoruba language; in effect, the achievement of male students is $\bar{x} = 14.43$ while that of the female is $\bar{x} = 14.310$, and the difference is not significant. The finding also revealed there was no significant effect of computer proficiency on students' achievement in Yoruba orthography. The achievement mean score of students with low computer proficiency is $\bar{x} = 14.35$ while students with high computer proficiency is $\bar{x} = 14.39$ the difference is not

statistically significant. The finding of this study also revealed that mobile phone and computer based strategies as tools can be employed to maximize students', particularly distance learning students', academic achievement in Yoruba language. It can enhance their positive attitude in the subject. The study concluded that Information Communication Technology ICT is thus a powerful tool for providing educational services for both male and female. In effect, there is a need to consider the level of proficiency in computer skills as one of the criteria for employment of lecturers in Yoruba Orthography.

Introduction

Lack of competence in reading and writing of any language could reasonably be expected to present an obstacle to effective and efficient formal education. Similarly, student's lack of competence in Language can lead to their dropping out of schools. The poor academic achievement of students in Yoruba language has continued to be a major cause of concern to stakeholders in the education sector. The teaching and learning of Yoruba language in secondary schools have continued to suffer setbacks. This is reflected in the poor performance of the students in the subject. Parents also contribute to the failure of students. Most of them neglect and discourage their children from speaking and writing Yoruba as the language is regarded as a vernacular, a language spoken by the ordinary people of a place or region (Taiwo, 1980).

In 2007, November/December West African Senior School Certificate Examination (WASSCE), the Chief Examiners report that candidates did not know how to answer questions and they did

not make a serious attempt to demonstrate a thorough understanding of the passages. Lasisi (2003) noted that persistent poor performance of learners in English Language could be attributed to students' inability to read and understand comprehension passages, summary writing and even wrong interpretation of essay topics which also applies to Yoruba Language.

The government has not considered it to be in the interest of national development that there should be concrete National Policy on Education (NPE) regarding indigenous language education in tertiary institutions, especially, colleges of education and universities as laid down for primary and secondary schools. Notably, there has been a declining performance of students in Yoruba language, one of the indigenous languages; even in the language speaking areas (see Table 1 below). The declining performance now witnesses a recurrent feature of poor performance in the language.

Table 1: Students' Performance in Yoruba Language in the Senior School Certificate Examination conducted by WAEC between 2001-2008

Year	Total Entry	Total No of Candidates	Total Credit and Distinction	Passes (D7 & D8)	Failure (F9)
2008	370,401	341,805 (92.279%)	72,954 (21.34%)	61,021 (17.85%)	205,622 (60.15%)
2009	352,009	345,304 (94.05%)	69,343 (23.4%)	44,691 (18.58%)	231,270 (61.15%)
2010	301,511	277,026 (91.87%)	76,314 (27.54%)	135,112 (48.77%)	65,600 (23.68%)
2011	287,714	269,432 (91.87%)	58,607 (21.75%)	140,447 (59.93%)	40,455 (18.03%)
2012	235,818	224,320 (95.12%)	42,901 (19.12%)	140,447 (59.93%)	40,455 (18.03%)
2013	210,591	195,698 (92.92%)	100,488 (51.34%)	42,809 (21.87%)	52,401 (26.77%)
2014	182,098	18298 (100%)	114,89 (62.7%)	34,214 (18.8%)	33,795 (18.6%)
2015	160,256	160,256 (100%)	92,815 (58.0%)	52,089 (20.0%)	35,353 (22.0%)

Source: WAEC Annual Report, WAEC Head Office, Yaba, Lagos State

It is evident from Table 1 that many students failed Yoruba language every year while only few obtained credit pass in the subject. Those that got D7 and D8 are regarded as failed because the grades cannot be utilised to gain admission into any tertiary institutions, especially, the Universities in Nigeria.

Commenting on the students' performance in Yoruba Language, the 2006, West African Examinations Council Chief Examiner's Report states:

The questions are well written within the experience of the average 16-18 years old for whom the paper is designed... Despite this, candidates' performance was inexplicably disappointing due to their failure to master the strategies and format of the language in general P. 65.

Persistent failure in Yoruba language in West African Senior School Certificate

Examination (WASSCE) makes it a great concern to the researcher. Students' poor performance in Yoruba language as revealed in Table 1 indicates that Yoruba language might be heading for a crisis and total extinction unless the schools and education authorities provide immediate intervention to arrest the deteriorating situation.

It is not impossible to infer that the poor performance of secondary school students in WASSCE in Yoruba Language, as revealed in Table 1 is a clear indication of or a combination of the following: lack of adequate preparation on the path of the students, lack of a stimulating learning environment and shortage of qualified and pedagogically equipped teachers. The pioneering efforts on teaching in the mother tongue by Fafunwa (1974) and others, otherwise called "Ife Primary Education Research Project" actually revealed that educating Nigerian Pre-primary and early primary school children in foreign languages

had the potentials of disrupting their "cognitive equilibrium" Fafunwa (1974).

For effective teaching of Yoruba Language, the importance of qualified or skilled teachers and adequate teaching facilities cannot be over-emphasized. Also, researchers have discovered that learning becomes effective when students are allowed to learn by doing and through interaction (Brown & Cocking, 2002; Chang, Chen & Sung, 2002).

Various researches have suggested that technology as a tool can provide alternatives for students to learn. A survey conducted in Oregon City in the United States of America (USA) revealed that technology can support and extend learning in much valuable ways. It can increase educational opportunities when used appropriately by teachers (Robert, 2001). When used appropriately, technology applications can further support higher-order thinking by engaging students in authentic collaborative learning contexts (Means, Blando, Middleton & Zorfass, 1993). Hence, technology can be an appropriate vehicle for promoting meaningful learning. Technology has been used to develop a broad range of educational resources. Balogun and Abimbade (2005) classified the broad range of educational resources into two broad categories: resources by design such as overhead projectors and interactive whiteboards; and resources by utilisation such as multimedia projectors and computers.

Information Communication Technology (ICT) should, therefore, be introduced as a platform to facilitate the teaching of Yoruba language particularly, those items that can improve and increase reading, and writing skills; develop language vocabulary of the students so as to make them comfortable in the learning of the Yoruba language. We should understand that the integration of technology into the

classroom brings changes to teacher's instructional roles in the classroom. The teacher's roles in a technology-infused classroom often shift to that of a facilitator or coach rather than a teacher or lecturer (Pearson, 2003).

Computers can be used in appropriate ways that are beneficial to learners. Burns (2002) also stressed that students' learning through conventional method can be improved upon via the use of new tools such as computer and Internet. Means, (1994), described four major functions of computer technology in learning: Computer technology can be used as a tutor. This is evident in computer-assisted instruction and webinars; (ii) means to explore. CD-ROM, encyclopedias, network search tools, and micro-computer-based laboratories; (iii) a tool to create, compose, store and analyze data; examples here are word processing, spread sheet software, database management programmes, graphic software, and desktop publishing systems; and (iv) a means to communicate with others. Here, we have e-mail, computer and modem, mobile phones, interactive distance learning through satellite systems and cable links.

Computers provide students a private place for practice while learning, without fear of public failure. Students can learn "from" computers—where technology is used essentially as tutors and serves to increase students' basic skills and knowledge; and can learn "with" computers—where technology is used as a tool that can be applied to a variety of goals in the learning process. They can serve as a resource to help develop higher order thinking, creativity and research skills (Reeves, 1998; Ringstaff & Kelley, 2002). According to Abimbade, Aremu and Adedaja (2003), the application of computer based tools would go a long way

in enhancing teaching and learning processes. It will also provide the teacher access to the use of strategies which are less stressful. In this case, students would naturally work on their own or in-groups without teacher's direct intervention.

UNESCO (2002) concluded that a common need in many countries is to upgrade teachers' knowledge and competence using new ICTs, especially the rich instructional and information resources available on the web. It is also very appropriate to use the new technologies in the training programme for teachers. Crawford and Vahey (2002) - early evaluators of learning with mobile devices - have suggested that a wide range of learners respond to learning with mobile devices favourably. Suzuki (2002) comments that there are many Japanese websites offering learning materials to i-mode users (i-mode is a Japanese mobile Internet service). In December 2001, it was estimated that there were 30 million i-mode users. Townsend (2000) further suggests that in future, the use of "smart phones" which have voice recognition will benefit members of the world population who have no ability to read and write.

It appears that there is a dearth of literature on mobile learning in relation to computer based learning in general and distance learning students in particular. No conclusive investigation seems to have been conducted in this regard, particularly in Africa. In view of the foregoing, the researchers intend to investigate the value of the utilisation of ICT-based modes in delivering instruction, especially, via computer and mobile phones. This study will specifically use two modes of ICT based strategy, namely: mobile phones and computers to investigate learning of Yoruba orthography. The principle relies on

exposing students to instructional content and obtaining feedback via these ICT based delivery mediums.

In addition to computers, many other types of technology can be used to support and enhance learning. The setting and the purpose as well as the developmental stages of the children will help decide the best choices for a particular situation. The technology available and commonly used in the community may also influence the choice (Ellis 2001). According to Marshall (2002), everything from multimedia production to laptop computing and handheld technologies has been used in classrooms, even the cell phones that many students now carry about with them can be used to learn (Prensky, 2005). Various technologies deliver different kinds of content and serve different purposes in the classroom. Technology use also tends to foster collaboration among students (Pedgrum, 1998 & Voogt, 2000). According to National Science Council, Taiwan (2007), the World Wide Web provides an excellent environment for interaction between teachers and students. Web-based tele-education environments are becoming important aspects of delivering content over the web. Therefore, the network and multimedia are useful tools for developing the learning environment.

It might not be out of place to note that distance education provokes skepticism about its effectiveness and quality from some scholars. The programme have been marked by high dropout rates and criticized for leading to rote learning. However, there are some data on its appropriateness and effectiveness for teacher education; it has been quite successful in expanding the number of trained teachers in classrooms. Besides, efforts to meet the new and challenging problems demand for education and training. Open and distance learning

may be seen as an approach that is at least complementary and under certain circumstances an appropriate substitute for face-to-face methods which still dominate most educational systems. This growth has been stimulated by interest among educators and trainers in the use of new internet web-based information technologies.

In the high-population countries of the developing world, like Nigeria, open distance learning has been seen to offer very significant opportunities for education and training (UNESCO, 2003). Many countries are looking at open and distance learning as a major strategy towards expanding access, raising quality and ensuring cost-effectiveness. Other opportunities of distance learning programmes include: (i) allows upgrading of skills; (ii) increases productivity and development of a new learning culture; (iii) sharing of costs; (iv) increased portability of training; (v) balancing inequalities between age groups; (vi) extending geographical access to education; (vii) offering the combination of education with work and family life; (viii) developing multiple competences through recurrent and continuing education.

Hence, a particular advantage of distance education is that it makes educational programmes accessible to people located in remote or rural areas who do not have convenient access to higher education institutions. This is the reason the researchers want to investigate the effect of two ICT-based modes, particularly, mobile phone and computer based instructional strategies among distance learning students. Nigeria witnesses an era where many students are finding it difficult to gain admission into institutions of higher learning due to lack of space and facilities for face to face based teaching, online education could

be made available to these students. Allan (2002) said it is obvious that open and distance learning will be an important element of future education and training systems. In higher education, except realistic interventions are set in place, inequality in opportunities is expected to continue, especially, in view of projected population growth (UNESCO, 2000).

Rapid demand in work place now changes for fast and adaptive knowledge and skills updating medium. It is unrealistic to expect traditional educational structures to provide an adequate basis - for this updating development. A developing country has to find new methods that will dramatically improve both its children's education and its continuing education system (Moore and Alan 2002). Distance learning education is not without challenges. The National Open University of Nigeria (NOUN) which admitted its first set of students in 2004 almost ran into trouble due to lack of fund to print study materials. Student population in NOUN which relies heavily on print medium is 31,000 whereas in the Open University, United Kingdom (OU) that relies more on internet-based platform, student population soars above 200,000. It is internet-based platform that this researcher intends to adopt in view of the fact that it can conveniently integrates into other phases. It can also enable teacher-student interaction (TS), teacher-student-student interaction (TSS) and (S-S) student-student interaction in real time with feedbacks.

There is the need to consider the effect of gender on learning outcomes of students. Gender differences are common phenomena in human characteristics and they have also been noted to have effect on the academic achievement of students in Yoruba Language. Studies on gender and academic performance are divergent; some

researchers have found that males perform better than females while in some researches the reverse is the case. Brolwich (1972) affirmed that since girls mature earlier than boys, there is the tendency for girls to develop certain abilities faster than boys. However, Ayodele (1978), Adegbile (1998) and Agboola (2004) agree that girls have been found in many Nigerian researches to have only a slight positive but statistically insignificant edge over boys in language performance.

It is generally believed that gender correlates with academic achievements. Ogunniyi (2001) asserted that gender differences in writing style and reading choice generally are evident. Meanwhile, research carried out by Jibowo (1997) notes that gender as a variable does not have much significant influence on the students' performance. This is also supported by Animashaun (2005) and Oyinloye (2007). These scholars found that gender is not a significant factor in students' academic language achievement education.

Hypotheses

Based on the stated problems, the following null hypotheses are tested in this study.

Ho₁: There is no significant main effect of computer proficiency on students' academic achievement in Yoruba orthography.

Ho₂: There is no significant main effect of gender on students' academic achievement in Yoruba orthography.

Ho₃: There is no significant interaction effect of computer proficiency and gender on students' academic achievement in Yoruba orthography.

Methodology

Population and Sample

The participants for the study were

270 distance learning 200 level students of Emmanuel Alayande College of Education, Oyo, Oyo State. They were purposively selected from the three (3) Senatorial Districts of the state. The conditions that guided the selection are: the study centre must be mixed, that is having both male and female students; teacher must be a degree holder; the study centre location must be far from each other in order to prevent interaction of the participants; the study centre must have been teaching Yoruba Language from 100 Level.

Emmanuel Alayande College of Education, Oyo has 30 study centres across the state out of which nine (9) centres were selected through stratified sampling technique. Three (3) centres were randomly selected from each of the three existing senatorial districts in Oyo State.

Each Senatorial District area of Oyo state selected was randomly assigned to treatment such that the two study centres in the senatorial district are for the same treatment group. In view of this, two study centres were assigned mobile phone based instructional package and computer -based instructional package respectively, while the remaining study centre in the Senatorial District is for control.

Instrumentation

The following research instruments were developed and used for the study. They are: (i) Mobile Phone-Based Instructional Strategy Package (MPBISP); (ii) Computer-Based instructional Strategy Package (CBISP); (iii) Students Computer proficiency (SCPT); (iv) Yoruba Orthography Achievement Test (YOAT).

Mobile Phone-based Instructional Strategy Package (MPBISP)

This instrument was developed by the researchers. It is a set of instructional

packages designed for mobile learning, based on mobile device capabilities. It contains audio-book which serves in the delivery of the contents to the students. It embodies the course content in a lesson format and short message system evaluation package assigned to each week's lesson to provide feedback to tutors. It is Java-based and functional on mobile telephony devices with Mp3. There are two packages woven into one: Audio-book package and Mobile quiz package. The package can be delivered to the learners via Bluetooth.

Computer-based Instructional Strategy Package (CBISP)

This package is another web-based instructional facility, called Learning Management System (LMS). It is software that serves as virtual learning platform and facilitates classroom interaction and administration (Ellis, 2009). It is also a prominent open source of Modular Object Oriented Dynamic Learning Environment (MOODLE) developed by Martin Dougiamas to help educators create online courses. The platform is configured and hosted by the researchers.

The researchers erected a webinar, a web-based seminar on the platform. The webinar contains the presenter, the researchers and their presentation with animation simultaneously. The course content overview was made of five modules and each provided two webinars. Two webinars in form of lessons were delivered each week for five weeks. The participating students were expected to have little knowledge of desktop publishing. The groups of students for this treatment were expected to have a computer system where these free applications may be downloaded for the benefit of an online courseware that could be integrated into the learning system

to provide study support for students online.

Student Computer Proficiency Scale (SCPQ)

Towards the realization of these objectives, the researchers adopted and also invalidated Greene County Public Library Basic Computer Skills Assessment. The instrument is divided into two sections, A and B. Section A consists of the personal data of the participants containing the age, gender and name of study centre. Section B consists of 20 questions of both fill-in-the gap, multiple choice and true or false options. This was developed by the researchers to measure the pre-service teachers' level of proficiency in the handling of computer. The instrument was validated using expert review and the interval consistency reliability measures was calculated using KR-20 formula, this yielded a reliability value of 0.72 through a pilot study conducted.

Yoruba Orthography Achievement Test (YOAT)

This instrument was designed to test students' performance in Yoruba orthography. It consists of 20 items and used for pre- and post-tests. This was developed by the researchers so as to know the entry level and the performance of students in Yoruba orthography knowledge. The instrument was validated using experts' review in the language department and the interval consistency reliability measure was calculated using KR-20 formula. The reliability coefficient was 0.75 through a thorough pilot study conducted.

Data Collection and Analysis

The data collected were analysed using analysis of co-variance (ANCOVA) to determine the main and interaction effects

with pre-test scores as co-variants. The Multiple Classification Analysis (MCA) was used to determine the magnitude of the differences among the groups. The Scheffe post hoc analysis was used to identify the sources of significant treatment effects. The hypotheses were tested at 0.05 alpha-level of

significance.

RESULTS AND DISCUSSION

Ho₁: There is no significant main effect of computer proficiency on students' academic achievement in Yoruba orthography.

The results are presented in table 1:1 below

Table 1.1: Analysis of Covariance (ANCOVA) on Treatment and Academic Performance of the Students

Dependent Variable: post-achievement score

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1616.607	12	134.717	81.873	.000	.793
Intercept	1079.064	1	1079.064	655.790	.000	.718
PRESCORE	951.292	1	951.292	578.138	.000	.692
TRETMNT	550.659	2	275.330	167.329	.000	.566
GENDER	.852	1	.852	.518	.472	.002
COMPPROF	7.515E-02	1	7.515E-02	.046	.831	.000
TRETMNT* GENDER	5.371	2	2.685	1.632	.198	.013
TRETMNT* COMPPROF	1.109	2	.555	.337	.714	.003
GENDER * COMPPROF	7.487	1	7.487	4.550	.034	.017
TRETMNT*GENDER* COMPPROF	15.271	2	7.635	4.640	.010	.035
Error	422.878	257	1.645			
Total	57309.000	270				
Corrected Total	2039.485	269				

a. R Squared = .793 (Adjusted R Squared = .783)

Table 1.1 reveals there is no significant main effect of computer proficiency on students' achievement in Yoruba orthography ($F_{(1,257)} = 0.046$; $p > 0.05$), therefore, Ho₂ is accepted. Table 1.2 also reveals that the achievement mean

score of students with low computer proficiency is 14.35 while that of students with high computer proficiency is 14.39. The difference between these mean scores (0.04) is not statistically significant.

Table 1.2: Estimated Marginal Means on Academic Achievement across the Variables

Variables	Mean	Std. Error
Grand Mean		
Pre-score	11.578	-
Post-Score	14.372	0.85
Treatment		
Experimental I (web-based Strategy)	15.531	.140
Experimental II (Mobile Learning)	15.498	.142
Control (conventional)	12.086	.158
Gender		
Male	14.433	.132
Female	14.311	.106
Computer Proficiency		
Low	14.354	.105
High	14.390	.133

Ho₂: There is no significant main effect of gender on students' academic achievement in Yoruba orthography. Table 1.1 reveals there is no significant main effect of gender on students' achievement in Yoruba orthography ($F_{(1,257)} = 0.518$; $p > 0.05$), therefore, Ho₂ is not rejected. Table 1.2 also reveals that the achievement mean score of male students is 14.43 while that of female is 14.31. The difference between these mean scores (0.12) is not statistically significant.

H_{o3}: There is no significant interaction effect of computer proficiency and gender on students' academic achievement in Yoruba orthography.

Table 1.1 reveals there is a significant interaction effect of gender and computer proficiency on students' achievement in Yoruba orthography ($F_{(1,257)} = 4.55$; $p < 0.05$), therefore, Ho₃ is rejected. Figure 1.3 shows the type of interaction that exists between gender and computer proficiency.

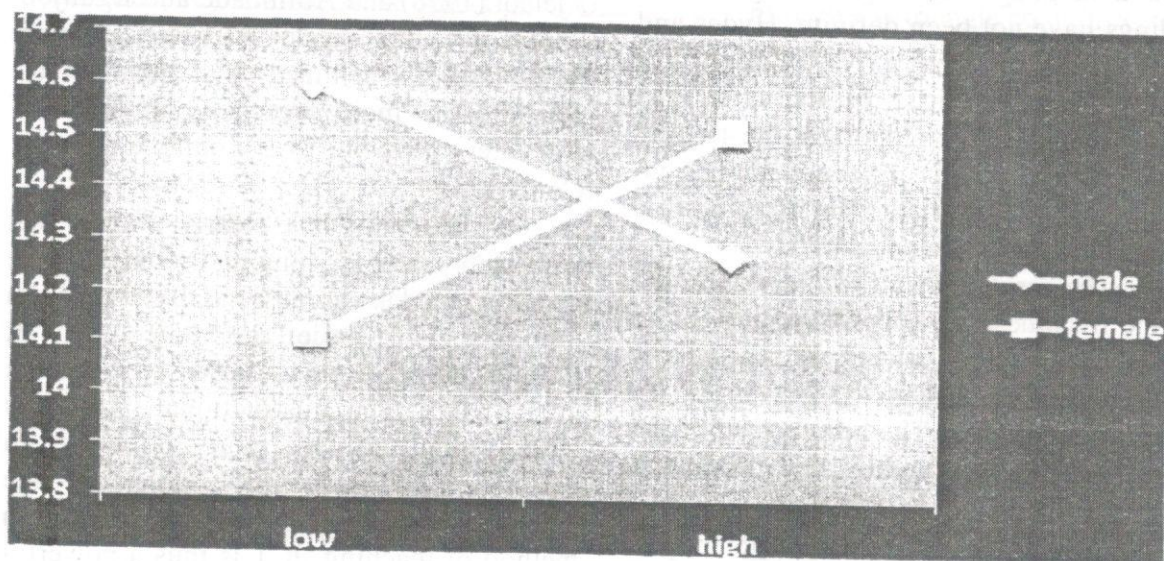


Fig. 1.3: The Interaction between Computer Proficiency and Gender

Figure 1.3 reveals there is disordinal interaction between computer proficiency and gender. The graph shows that of all the students with low computer proficiency, male students scored higher in the achievement test while of all the students with high computer proficiency, female scored higher in the achievement test.

Discussion

The result obtained from testing the second hypothesis reveals that gender had no significant main effect on students' achievement in Yoruba language. The achievement of male students is 14.43 while of the female is 14.310; the difference is not significant. The above result gives support to the finding of Jibowo (1997) that gender as a variable does not have much significant influence on students' performance. The above finding also corroborates the finding of Animasaun (2005) and Oyinloye (2007) that being boys or girls has no effect on attitude towards academic achievement, especially, in Yoruba language learning. Though, some findings have not been definite, Hydes and Linn (2008) favoured boys while Butler (2007) favoured girls. Furthermore, the above finding gives support to the finding of McNamara (2007), that gender has no effect on attitude towards academic achievement.

The result obtained from testing the second hypothesis reveals that there was no significant main effect of computer proficiency on students' achievement in Yoruba orthography. The achievement mean score of students with low computer proficiency is $\bar{x} = 14.35$, while that of students with high computer proficiency is $\bar{x} = 14.39$. The difference is not statistically significant.

The result obtained from testing the third hypothesis reveals that there was a significant interaction effect of gender and computer in Yoruba orthography. There is a disordinal interaction between gender and computer proficiency. The graph shows that of all the students with low computer proficiency, male students scored higher in the achievement test while out of all the students with high computer proficiency, female students scored higher in the achievement test. However, there is the intervening effect of gender on the achievement of learners exposed to ICT-based instructional strategies in this study. This finding is, therefore, indicating that we cannot reiterate outright that gender may not be considered as a factor influencing learning through the various instructional strategies. The above finding is consistent with the finding of Brolwich that since girls mature earlier than boys, there is the tendency for girls to develop certain abilities faster than boys. The above finding also corroborates the finding of Ajelabi (1998) and Abimbade and Egunjobi (2003) and that male learners are more technologically inclined than their female counterparts, most especially, in terms of computer operation.

Conclusion

The study has clearly shown that both web-based learning and mobile phone learning models are essentially free from limitations of space and time while it reaches students around the world with great ease. The instructional strategies were found to be more effective in enhancing cognitive achievement of the learners than the conventional classroom method of teaching. ICT is thus a powerful tool for providing educational services for both male and female. ICT also offers

possibilities to learners, not only in distance learning programmes but also e-commerce, e-governance and all other aspects of developmental activities. In conclusion, it can be said that the mobile phone and computer base strategies as useful tools, can be employed to maximise students' ICT learning, particularly the distance learning students. Also, students' academic achievements in Yoruba language are enhanced by their positive attitude in the subject.

Therefore, Nigeria's education policy makers should take into consideration the importance of proficiency in computer skills as one of the criteria for employment of teachers especially at NCE level. In other words, lecturers at the study centres must be ascertained to be computer literate before employing them.

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