Gist Education and Learning Research Journal. ISSN 1692-5777.
No. 8, (January - June) 2014. pp. 11-28.

Effectiveness of Computer-Assisted Pronunciation Teaching and Verbal Ability on the Achievement of Senior Secondary School Students in Oral English[1]

La Efectividad de la Enseñanza de la Pronunciación Asistida por Ordenador en el Logro de la Capacidad Verbal en Inglés de los Estudiantes de la Escuela Secundaria Superior

Amosa Isiaka Gambari, Amina Usman Kutigi, and Patricia O. Fagbemi[2]*
Federal University of Technology, Justice Fati-Lami Abubakar College of Arabic & Islamic Legal Studies, FCT College of Education, Nigeria

Abstract

This study investigated the effectiveness of a computer-assisted pronunciation teaching (CAPT) package on the achievement of senior secondary students in oral English in Minna, Nigeria. It also examined the influence of CAPT on verbal ability and gender. The sample consisted of sixty senior secondary school students drawn from two coeducational secondary schools within the Minna metropolis. Stratified random sampling was used to select 60 students from each school: 15 males and 15 females; 10 high, 10 medium and 10 low verbal ability students. The Oral English Achievement Test (OAT) consists of 50-items of multiple-choice items, validated by experts, and administered to students as a pre-test, post-test and delayed post-test. The data obtained were analysed using t-test statistics, one-way ANOVA, and Scheffe's post-hoc test. The results

[1] Received: December 11, 2013 / Accepted: March 20, 2014

[2] gambari@futminna.edu.ng, Aminaabubakarpanti01@yahoo.com, patsegun_2007@yahoo.com

revealed that students taught oral English with the CAPT package performed and retained the concepts of oral English better than those taught with the traditional teaching method. Students with high verbal ability performed better than medium and low verbal ability students respectively. However, there was no significant difference in the post-test mean achievement scores of male and female students taught using the CAPT package. These findings indicate that oral English concepts could be taught and learned better through the resourceful integration of a computer- assisted pronunciation teaching package.

Keywords: computer-assisted pronunciation, oral English, retention, verbal ability, gender

Resumen

En este estudio se investigó la efectividad de la Enseñanza de la Pronunciación Asistida por Ordenador (EPAO) en el logro de la capacidad verbal en inglés de los estudiantes de la Escuela Secundaria Superior en Minna, Nigeria. También examinó la influencia de la Enseñanza de la Pronunciación Asistida por Ordenador (EPAO) teniendo en cuenta el género y la capacidad verbal de los estudiantes. La muestra consistió en sesenta estudiantes de secundaria de dos escuelas secundarias mixtas dentro de la metrópoli de Minna. Se utilizó muestreo aleatorio estratificado para seleccionar a los 60 estudiantes de cada escuela; 15 hombres y 15 mujeres; 10 estudiantes con nivel alto de inglés, 10 estudiantes nivel intermedio y 10 estudiantes nivel bajo. La prueba de inglés consistió en 50 preguntas de selección múltiple, validadas por expertos y aplicadas a los estudiantes como pre-prueba, post-prueba y un cuestionario posterior a la prueba. Los datos obtenidos fueron analizados mediante el análisis estadístico t test, análisis de varianza (ANOVA) y la prueba post-hoc de Scheffe. Los resultados revelaron que a los estudiantes que recibieron clases de producción oral en inglés usando el paquete EPAO se desempeñan y retienen los conceptos orales de ingles mejor que aquellos a quienes se les enseñó con el método de enseñanza tradicional. Estudiantes con alta capacidad verbal se desempeñaron mejor que los estudiantes de media y baja capacidad verbal respectivamente. Sin embargo, no existía ninguna diferencia significativa entre los puntajes medios de rendimiento de las pruebas posteriores aplicadas a hombres y mujeres usando el paquete de enseñanza de pronunciación asistida por ordenador (EPAO). Estos resultados indicaron que los conceptos orales de inglés pueden ser enseñados y aprendidos mejor mediante la integración de un conjunto de recursos de enseñanza de pronunciación asistida por ordenador.

Palabras clave: Pronunciación asistida por computador, inglés oral, retención, habilidad verbal, género

Resumo

Este estudo pesquisou a efetividade do Ensino da Pronúncia Assistida por Computador (CAPT) no aproveitamento da capacidade verbal em inglês dos estudantes da Escola Secundária Superior em Minna, Nigéria. Também

examinou a influência do Ensino da Pronúncia Assistida por Computador (CAPT) considerando o gênero e a capacidade verbal dos estudantes. A amostra consistiu em sessenta estudantes de secundária de duas escolas secundárias mistas dentro da metrópole de Minna. Utilizou-se amostragem aleatória estratificada para selecionar os 60 estudantes de cada escola; 15 homens e 15 mulheres; 10 estudantes com nível alto de inglês, 10 estudantes nível intermédio e 10 estudantes de nível baixo. A prova de inglês consistiu em 50 perguntas de seleção múltipla, validadas por expertos e aplicadas aos estudantes como pré/pós-teste, e um teste posterior ao diagnóstico. Os dados obtidos foram analisados mediante a análise estatística de teste, análise de variação (ANOVA) e a prova post-hoc de Scheffe. Os resultados revelaram que os estudantes que receberam aulas de produção oral em inglês usando o pacote CAPT se desempenham e retêm os conceitos orais de inglês melhor que aqueles aos quais foram ensinados com o método de ensino tradicional. Os estudantes com alta capacidade verbal se desempenharam melhor que os estudantes de média e baixa capacidade verbal respectivamente. Entretanto, não existia nenhuma diferença significativa entre as pontuações médias de rendimento das provas posteriores aplicadas a homens e mulheres usando o pacote de ensino de pronúncia assistida por computador (CAPT). Estes resultados indicaram que os conceitos orais de inglês podem ser ensinados e aprendidos melhor mediante a integração de um conjunto de recursos de ensino de pronunciação assistida por computador.

Palavras chave: Pronúncia assistida por computador, inglês oral, retenção, capacidade verbal, gênero

Introduction

The importance of the English language as a medium of communication cannot be over-emphasized. As far as English remains Nigeria's official language and the language of instruction in our schools, it will continue to be ranked as the most important subject in our educational system (Gambari, Gbodi & Olumba, 2012). The significance of English to nation building has led the federal government of Nigeria to make it a core subject offered to all students from primary to secondary education (FRN, 2008). In spite of the importance of English language among Nigerian students, performance at the senior secondary school level had been poor (NECO, 2011; WAEC, 2012).

A close examination of the performance of Nigerian students in English language in the West African Senior Secondary Certificate Examination (WASSCE) results of eight consecutive years revealed that the majority of students failed the subject. For instance, in 2005, 25.64% passed at credit level, 32.48% in 2006, 30.32% in 2007, 35.02% in 2008, 41.52% in 2009, 38.9% in 2010, 42.05% in 2011 and 40.82% in 2012 (WAEC, 2012). Results of previous research on oral reading fluency by Hoofman (2003) and Kuhn and Stahl (2000) showed that good fluency in oral reading had the potential of influencing students' development in literacy. Oral English has been identified as one of the concepts that students find difficult to pass at national examinations (Enyeazu, 2001; NECO, 2011; WAEC, 2012).

The desire to know the causes of the poor performance in English language has been the focus of researchers for some time now. It has been observed that poor performance in English language is caused by the poor quality of English language teachers, poor teaching methods, overcrowded classrooms, and lack of suitable and adequate language laboratories, among others (Gambari, Gbodi & Olumba, 2012; Iyela, 2000; Otegbayo, 2006).

The potential benefits of Computer Assisted Instruction (CAI) cannot be underestimated in the contemporary world. Computer-Assisted Language Learning (CALL) is the use of technology enhanced methods and techniques in language learning and teaching (Gruba, 2006; Kedrowicz & Watanabe, 2006). One aspect of CALL is Computer-Assisted Pronunciation Teaching (CAPT), which is based on the use of technology for learning and teaching the segmental and suprasegmental features of the sound system, and is described by Rostron and Kinsell (1995) as the use of digitized speech for improving language pronunciation. Computers are used in teaching pronunciation to achieve two purposes: a) diagnosing the student's deviation in pronunciation; and b) assisting students in correcting such deviations (Machovikov, Stolyarov, Chernov, Sinclair, & Machovikova, 2002).

In learning and teaching different aspects of pronunciation, CAPT offers a variety of interactive software packages for providing English as Foreign Language (EFL) learners with the opportunity to perceive and practice pronunciation. Computer-Assisted Pronunciation Teaching (CAPT) offers many advantages which are not usually available in conventional contexts. For example, Neri, Mich, Gerosa and Giuliani (2008) pointed out that digitized pronunciation software allows students to access unlimited and realistic language input through different channels individually and provide individualized feedback automatically and instantaneously. Computers also offer learners a

chance to use many prerecorded materials. Digitized pronunciation software packages afford high-quality sound and video clips of speakers, which give the learner the opportunity to look at articulatory movements that are used in producing sounds (LaRocca, 1994). A person may also compare his or her voice to a model made by a native speaker. Shirer (2005) confirms that it has become possible to use computers, speech technology, and linguistics together to enable learners to hear a voice of a native speaker who has mastered Standard English. Students may then compare their performance to that model, sound by sound, and track their progress over time.

Literature Review

Many researchers, such as Stenson, Downing, Smith & Smith (1992), Rostron & Kinsell (1995), Dekaney (2003), Hirata (2004), Seferoglue (2005), AbuSeileek (2007), and Neri, Mich, Gerosa & Giuliani (2008) compared the effects of CALL on other forms of traditional instruction and found that students taught with CAPT performed significantly better than those taught with traditional teaching methods. In addition, those taught with CAPT were able to work at their own pace. However, Andrew (2011) reported that analysis of the post-treatment data showed no significant difference between experimental and control groups.

Students' performance in various courses may not be unrelated to their retention abilities. Retention is the ability to reproduce the learnt concept when the need arises (Achebe, 2008). Students' interests and retention could be aroused and retained through the use of appropriate instructional material like a computer-assisted pronunciation teaching package for oral English. However, studies that show how CAPT is retained are uncommon.

Verbal ability encompasses the skills needed for language comprehension and expression and is profoundly important in oral reading. In the Nigeria school setting, it is a common feature in the conventional classroom to find students of mixed ability (high, medium and low) lumped together to be given the same treatment as if they have everything in common. Aimumnondion (2008), Fagbemi (2013), Nwosuk (2002), and Odiaka (2002) in their respective studies reported that high verbal ability students achieved better than low verbal ability students. However, studies on how verbal ability will influence students' achievement in oral English with a computer-assisted pronunciation teaching package calls for investigation. Thus, part of this study examined the influence of verbal ability on students' performance in oral English.

Gender has also been identified as one of the factors influencing students' performance at all levels of education. Gender disparity in the Nigerian education system is attributed to socio-cultural and traditional reasons (Wasagu & Muhammad, 2007). Adamu (2008), Kutigi, Gambari and Gana (2010), and Gambari, Gbodi and Olumba (2012) reported that there was no difference in the performance of male and female students taught oral English and phonetics using the Digital Audio Instructional (DAI) package, Digital Video Disc (DVD) instructional Package, Digital Audio and Digital Video Instructional packages respectively. On the contrary, Otegbayo (2006) examined the effect of an audiotape and film package on the teaching and learning of phonetics in junior secondary schools in Minna. This study revealed that female students performed better than male students. Research on gender disparity, however, has not been established. Therefore, part of this study examined the influence of gender on a computer assisted pronunciation package in Nigerian secondary schools.

Most of the research on the use of computer-assisted language learning instruction cut across different levels of education in Nigeria. The present researchers have not realized the paucity of studies on the use of computer assisted pronunciation teaching in English language for retention (long term memory) and verbal ability. It is against this background that this study investigated the effectiveness of computer-assisted pronunciation teaching and verbal ability on the performance of senior secondary students in Oral English, in Minna, Nigeria.

Research Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance:

1) There is no significant difference between the mean achievement scores of students taught oral English with CAPT package and those taught with conventional method.

2) There is no significant difference between the mean retention scores of students taught oral English with CAPT and those taught with conventional method.

3) There is no significant difference in the mean achievement scores of high, medium and low verbal ability students taught oral English with CAPT package.

4) There is no significant difference in the achievement of male and female students exposed to CAPT package.

Methodology

Research Design

The research design adopted for the study is pre-test, post-test and delayed post-test design. Two levels of independent primary variable (one treatment and a control), two levels of gender (male and female) and three levels of verbal ability (high, medium & low) were investigated on students' performance in oral English. The design layout is as shown in Table 1.

Table 1. Research design layout

Groups	Pre-test	Treatment	Post-test	Delayed Post-test
Experimental Group (EG)	0_1	CAPT	0_2	0_3
Control Group (CG)	0_4	CTM	5_0	0_6

Participants

Based on the nature of this research, three stage sampling techniques were adopted. Firstly, a purposive sampling technique was adopted to obtain two secondary schools in Minna metropolis, Niger State, Nigeria. These schools were purposively sampled based on facilities and manpower, school type (public schools) and gender composition (coeducational schools). The two schools were randomly assigned to an experimental group (CAPT) and control group (CTM) respectively. Finally, a stratified sampling technique was used to select the 60 SSII students. Each of the group had 30 students comprised of 15 male and 15 female: 10 high achievers, 10 medium achievers and 10 low achiever students.

Data Collection Instruments

Treatment instrument. The Computer Assisted Pronunciation Teaching (CAPT) package was developed for this study. The package consists of four topics in oral English: vowel sounds, consonant sounds, rhyme and emphatic stress. The necessity for a researcher-made CAPT package was based on the fact that commercially produced instructional packages are not common. Even if they were available, they may not be directly relevant to the topic or objectives to be achieved in this

study. As a result of this, developing a CAPT package for this study was inevitable.

CAPT was written in "Macromedia Dreamweaver 8" as the overall platform. Macromedia Flash utilizes the script symbolic instructional code (language) and animation that accommodates the interactive instructional process. Other computer programmes and applications that were also utilized during the development process were Microsoft Word and Macromedia Fireworks 8. Macromedia Flash 8 was used for texts and graphics, Macromedia Fireworks also used for specific texts, graphics, and for buttons while Macromedia Flash was used for the Animation. The package consists of an Introduction to the Package, Students' Registration, List of Lessons, and Next, Previous and Quit buttons. Each lesson starts with objectives of the lesson. The interactivity features of CAPT allowed students to navigate from one link to another. There are Home, Next, Back, Click Animation, and Exit buttons in the contents and quiz pages. The scripts and voicing of CAPT was done by an oral English native teacher.

CAPT with oral English concepts was produced on a CD-ROM and installed in the system. Students in the experimental group selected a topic from the main menu, read the objective of the selected topic and proceeded to the content of the topic. Students clicked on the animation button, and watched and listened to the mode of pronunciation. They could only proceed to the next unit if they correctly answered the questions correctly. However, students in the control group were taught the same topics using conventional teaching method. CAPT was validated by English language experts, computer programmers and educational technology specialists. The package was field tested on some selected students within the population but outside the sampled schools. A reliability coefficient of 0.92 was obtained using Kuder Richardson (KR-20).

Verbal ability instrument. The conventional measure of mental ability via Intelligent Quotient (IQ) and Verbal Quotient (VRQ) are not available in Nigerian Secondary Schools (Yusuf, 1997 & Fajola, 2000). On this basis, the Australian Council for Education Research Higher Test (A.C.E.R. Higher Test) was adopted to measure the verbal ability of the students. The ACER Higher Test contains questions of different kinds for testing Intelligent and Verbal Quotients of secondary school students who were of the same level with Australian students. It was made up of 46 items; each item of the instrument is an objective multiple-choice question with five options (A - E) as plausible answers to the question. In testing the IQ and VRQ, students were required to indicate their correct answers by ticking on the letter (A - E) that

corresponds to the correct option in each item. Only one of the five options was the correct answer. The ACER Higher test was validated by Obemeata (1974) and utilized by Abimbade (1987), Ojogun (1990) and Fajola (2000). The validity of the ACER Higher test was confirmed through a construct related test by Fajola (2000), and it yielded a coefficient of 0.57 while a reliability coefficient of 0.68 was obtained using KR-20. The data obtain from the administration of this instrument were used to classify the students into high and low ability levels in this study.

Testing instrument. The instrument used in collecting data for the study was researchers' adopted Oral English Achievement Test (OAT). The OAT consists of 50 objective multiple choice items with five options (A–E) adapted from past examinations of the West African Examination Council (WAEC, May/June, 1988-2011) and the National Examination Council (NECO, June/July, 2001-2011). The OAT was validated by experts in English language as well as test and measurement experts, and its reliability coefficient determined as 0.89 using Kuder Richardson (KR-20).

The treatment was administered for four weeks. The researchers administered the Oral English Achievement Test (OAT) on sample students as a pre-test to ascertain the equivalence of the students before the treatments. Treatments were followed immediately. The control group was taught with conventional teaching method, and the experimental group with CAPT package. Thereafter, the OAT was administered to both groups as a post-test to measure their achievement. Four weeks after the treatment, the OAT was administered as a delayed post-test (retention test). The scores obtained were subjected to data analysis. The data were analyzed based on the stated hypotheses, using a t-test, One-way Analysis of Variance and Scheffe's post-hoc test. The significance of the various statistical analyses was ascertained at 0.05 alpha level.

Data Analysis and Interpretation

Hypothesis one. There is no significant difference between the mean achievement scores of students taught oral English with CAPT packages and those taught with the conventional method.

Pre-tests of both CG and EG, and post-tests of both CG and EG were compared separately to determine the effect of the methods used in this study affected students' achievement levels. The results of the analysis are presented in Table 2.

Table 2. T-test comparisons of pre-test and post-test mean achievement scores of experimental and control groups

Types of Test	Variable	N	df	Mean (X)	SD	t-value calculated	p-value
Pre-test	CG	30		20.60	2.36		
			58			0.741^{ns}	0.461
	EG	30		20.13	2.22		
Post-test	CG	30		68.80	8.21		
			58			6.335^{ns}	0.000
	EG	30		81.60	7.41		

ns = not significant P>.05. * = Significant at P<.05

From Table 2, the mean achievement score is 20.13 for the experimental group and 20.60 for the control group. The experimental group mean achievement scores was not significantly different from the control group achievement scores when both were examined using the OAT at pre-test (tcal = 0.741, df = 58, p = 0.461). This implies that the control and experimental groups had a similar knowledge level before the study.

From the same table, the mean achievement score is 81.60 for the experimental group and 68.80 for the control group. The experimental group achievement score is significantly higher than the control group (tcal = 6.335, df = 58, p = 0.000). On this basis, Hypothesis 1 was rejected. Therefore, there is significant difference between the mean achievement scores of students taught oral English with CAPT package and those taught with CTM.

Hypothesis two. There is no significant difference between the mean retention scores of students taught oral English with CAPT package and those taught with CTM.

To test this hypothesis, t-test statistics were employed as shown in Table 3.

Table 3. Analysis of the mean retention scores of experimental and control groups

Variable	N	df	Mean (X)	SD	t-value	p-value
Experimental Group (EG)	30		80.330	7.473		
		58			6.481*	0.000
Control Group (CG)	30		67.230	7.912		

ns = not significant P<0.05

From Table 3, the retention mean score is 80.330 for the experimental group and 67.230 for the control group. The experimental group score significantly differs from the control group retention scores (tcal = 6.481, df = 58, p = 0.000). The experimental group outperformed the control group. On this basis, Hypothesis 2 was rejected. Therefore, there is significant difference between the mean retention scores of students taught oral English with CAPT package and those taught with CTM favouring CAPT package group.

Hypothesis three. There is no significant difference between the mean achievement scores of high, medium and low verbal ability students taught Oral English with CAPT package.

To test this hypothesis, one way ANOVA was employed as shown in Table 4. This is to determine whether CAPT made a statistical difference between the high, medium and low verbal ability students.

Table 4. ANOVA result of high, medium and low verbal ability students

Sources of Variation	Sum of Square	df	Mean Square	F-value Calculated	p-value
Between groups	1189.226	2	594.613		
Within Group	346.222	26	13.316	44.653*	0.000
Total	153.448	28			

* = Significant at P<.05

Table 4 shows one-way ANOVA results of the mean achievement scores of students in the experimental group and control group. From the table, the results revealed that there is a significant difference in the students' verbal ability group in the three groups (Fcal = 44.653; df = 28, p = 0.000). On this basis, Hypothesis two is rejected. Therefore, there is significant difference in the verbal ability achievement scores of senior secondary students taught oral English using CAPT package.

In order to ascertain the location of the significant differences among the three groups, Scheffe's Post-hoc test was conducted on the data. The result is shown in Table 5.

Table 5. Scheffe's post-hoc analyses of the groups mean scores

Groups	**Mean Scores**	**Group I (HG)**	**Group II (MG)**	**Group III (LG)**
High Group (HG)	89.40		*0.000	*0.000
Medium Group (MG)	81.80	*0.000		*0.000
Low Group (LG)	73.56	*0.000	*0.000	

* The mean difference is significant at the 0.05 level.

The data in Table 5 indicates that there was significant difference in the post-test mean scores of students in High Group (X = 89.40) and those in Medium Group (X = 81.80) in favour of high group. It also indicates that significant difference exists in the post-test scores of students in the Medium Group (X = 81.80) and those in the Low Group (73.56) in favour of the Medium Group. Significant difference was also established in the post-test scores of students in the High Group (X=89.40) and those in the Medium Group (X=73.56) in favour of the High Group.

Hypothesis four. There is no significant difference in the mean achievement scores of male and female students taught oral English with CAPT package.

To test this hypothesis, t-test statistics was employed as shown in Table 6.

Table 6. T-test results on gender using CAPT package

Variable	N	Df	Mean (x)	SD	t-value calculated	p-value
Male	15		82.27	7.285		
		28			0.486^{ns}	0.631
Female	15	80.93	7.741			

ns = not significant P>.05

From Table 6, the post-test mean achievement score is 82.27 for the male students and 80.93 for the female students. The male mean achievement score did not statistically significantly differ from the female mean achievement score when both were taught oral English using CAPT package (tcal = 0.486, df = 13, p = 0.631). On this basis, Hypothesis 3 was not rejected. Therefore, there is no significant difference between the mean achievement scores of male and female students taught oral English with CAPT package.

Results

The results of this study with respect to Hypothesis one agreed with the findings of Stenson, Downing, Smith & Smith (1992), Rostron and Kinsell (1995), Dekaney (2003), Hirata (2004), Seferoglue (2005), AbuSeileek (2007), and Neri, Mich, Gerosa and Giuliani (2008), who found that students taught with computer-assisted pronunciation performed better than those taught with conventional teaching method.

The results of Hypothesis two revealed that there was significant difference in the students' retention in favour of the group taught oral English with CAPT. This result agrees with the findings of Achebe (2008), who revealed that students taught with technological tools attained higher retention than those taught using traditional method.

The results of Hypothesis three revealed that students of high verbal ability performed better than those of medium, and low verbal ability. Similarly, students of medium verbal ability performed better than those of low verbal ability. This finding agrees with the earlier findings of Nwosuk (2002), Odiaka (2002), Aimumnondion (2008), Gambari (2010) and Fagbemi (2013), who found that high ability students achieved better than low verbal ability students.

The results of Hypothesis four supported the earlier findings of Otegbayo (2006), Adamu (2008), Kutigi, Gambari and Gana (2010), and Gambari, Gbodi and Olumba, (2012), who found that audio instructional packages enhanced performance of both male and female students in oral English and phonetics respectively. Similarly, the finding supported the findings of Gambari (2010), Fagbemi (2013), and Yusuf, Gambari and Olumorin (2012), who found that computer-assisted instruction packages stimulate both male and female students equally.

Conclusions

The paper identified poor knowledge of oral English as one of the factors responsible for poor performance in English language at national examination in Nigeria. It was observed that students exposed to computer-assisted pronunciation teaching (CAPT) performed better than their counterparts taught with conventional teaching methods. The innovative technology using CAPT seems to be the answer. It was found to be effective in teaching oral English, retained long term memory, benefits high, medium and low verbal ability students, and is also gender friendly.

From the findings of the study, the following recommendations were made for the improvement of learning Oral English at senior secondary schools in Nigeria:

1) The use of CAPT packages should be encouraged. In order to achieve this, curriculum designers should infuse the use of CAPT packages for teaching and learning of oral English into school curricula.

2) Language laboratories should be provided and adequately equipped with variety of instructional media such as commercially produced CAPT packages.

3) Methods and approaches that produce differential effects among boys and girls, especially effects that favour boys to the detriment of girls, should continue to be discouraged in the process of teaching and learning oral English.

4) Instructional packages that will appeal and meet the learning needs of learners irrespective of their ability levels should be encouraged.

References

AbuSeileek, A. (2007). Computer-assisted pronunciation instruction as an effective means for teaching stress. *The JALT CALL, 3*(1-2),10-21.

Achebe, A. E. (2008). Effect of videotape instructional package on students' achievement and retention of concepts in food and nutrition at secondary schools. *Journal of Science, Technology, Mathematics and Education, 1*(1), 33-39.

Adamu, A. (2008). *Effect of tape-recorder on learning of oral English in secondary schools in Minna, Niger State*. Unpublished M.Tech. Thesis, Federal University of Technology, Minna. Nigeria.

Aimumnondion, W. N. (2008). *Verbal ability interaction and learning in peer directed groups. Journal of Instruction and Teaching*. 24, 32-39.

Andrew, O. (2011). Comparison of the effectiveness of a CALL-based approach and a card-based approach to vocabulary acquisition and retention. *CALICO Journal, 29*(1),118-144.

Dekaney, E. (2003). The effect of computerized versus classroom instruction on the phonetic pronunciation of English. *Journal of Research in Music Education, 51* (3), 206-217.

Enyeazu, A. C. (2001). *Simplified approach: Oral English for schools and colleges*. Ibadan: Omorab Publications.

Fagbemi, P. O. (2013). Effects of computer-based multimedia tutorial mode and verbal ability on Junior Secondary students' achievement in social studies in Abuja, Nigeria. Unpublished Ph.D Thesis, University of Nigeria, Nsukka, Nigeria.

Fajola, O. O. (2000). *Effect of three modes of computer based instructional strategies on students learning outcomes in biology*. Unpublished Ph.D thesis, Department of Teachers' Education, University of Ibadan.

FRN (2008). *National Policy on Education* (Revised). Yaba Lagos: NERDC Press.

Gambari, A. I. (2010). *Effectiveness of computer-assisted instructional package in cooperative settings on senior secondary school students' performance in physics, in Minna, Nigeria*. Unpublished Ph.D thesis, University of Ilorin.

Gambari, A. I. Gbodi, B. E. & Olumba, R. N. (2012). Effects of audio and video compact disc instructional packages on students performance in senior secondary schools phonetics in Minna, Niger

State. *Journal of Science, Technology, Mathematics and Education, 9*(1) 250-261. Retreived from: http://www.jpstmed.com.

Gruba, O. (2006). Playing the videotext: A media literacy perspective on video-mediated L2 listening. *Language Learning & Technology, 10*(2), 77-92.

Hirata, Y. (2004). Computer assisted pronunciation training for native English speakers learning Japanese pitch and durational contrasts. *Computer Assisted Language Learning, 17*(3), 357–376.

Hoofman, J. V. (2003). Oral reading in the school literary council. *Reading Research Quarterly 38*(4), 510-522.

Iyela, M. K. (2000). *Towards the optimal utilization and management of resources for the effective teaching and learning of physics in schools*. In O. O. Busari (Ed), 41st Annual Conference Proceedings, Journal of STAN.

Kedrowicz, A., & Watanabe, S. (2006). Infusing technical communication and teamwork within the ECE curriculum. *Turkish Journal of Electrical Engineering & Computer Sciences, 14*(1), 41-53.

Kuhn, M. R., & Stahl, S. A. (2000). *Fluency: A review of developmental and remedial practice* Ann Arbor MI: Centre for the Improvement of Early Reading Achievement.

Kutigi, A., Gambari, A. I. & Gana, E. S. (2010). Effect of digital audio instructional package on the performance of senior secondary students in oral English in Minna, Nigeria. *Journal of Arts and Education, 4*(2),134-145.

LaRocca, S. (1994). Exploiting strengths and avoiding weaknesses in the use of speech recognition for language learning. *CALICO Journal, 12*(1), 102-105.

Machovikov, A., Stolyarov, K., Chernov, M., Sinclair, I., & Machovikova, I. (2002). Computer-based training system for Russian word pronunciation. *Computer Assisted Language Learn¬ing, 15*(2), 201-214.

National Examination Council (NECO) (2011). *Chief examiners' reports*. Research and Statistics Unit, NECO Headquarters, Minna

Neri, A., Mich, C., Gerosa B. & Giuliani, H. (2008). *Feedback in computer-assisted pronunciation training: when technology meets pedagogy.* Proceedings of CALL Conference "CALL Professionals and the Future of CALL Research", Antwerp, Belgium, 179-188.

Nwosuk, A. C. (2002). *Collaborative learning through high level verbal interaction: from theory to practice*. ERIC Clearing House, 72(1), 58 – 62.

Odiaka, A. S. (2002). *Effects of cognitive style and verbal and visual presentation in CBI*. Paper presented at the Annual Meeting of the European Educational Association (Eric Document Reproduction Service No. ED 121 082)

Otegbayo, C. O. (2006). *Effect of audiotape and film package on the teaching and learning o fphonetics in junior secondary schools in Niger State*. Unpublished M. Tech. Thesis, Federal University of Technology, Minna. Nigeria.

Rostron, A., & Kinsell, P. (1995). Learning pronunciation using CALL: Some experimental evidence. *ReCALL Newsletter, 5*(1). Retrieved August 30, 2006 from http://www.fredriley.org.uk/call/pubs/newsletter/content95.htm.

Seferoglue, G. (2005). Improving students' pronunciation through accent reduction soft-ware. *British Journal of Educational Technology, 36*(2), 303–316.

Shirer, N. (2005). My True Voice: Fundamental content, individual capability, social progress. *Arts Education Policy Review, 106*(4), 25-33.

Stenson, N., Downing, B., Smith, J., & Smith, K. (1992). The effectiveness of computer-assist¬ed pronunciation training. *CALICO Journal, 9*(4), 5-19.

Wasagu, M. A. & Muhammad, R. (2007). *Female education in science, technology and mathematics and sustainable development in the new millennium.* 50th Annual Conference Proceeding of STAN (86 - 88).

West African Examination Council (2011). *Chief examiners' report in English Language*. Lagos: WAEC.

Yusuf, M. O. (1997). *Effects of videotape and slide-tape instructions on junior secondary students' performance in social studies.* Unpublished Ph.D Thesis, Curriculum Studies and Educational Technology, University of Ilorin, Nigeria.

Yusuf, M. O., Gambari, A. I. & Olumorin, C. O. (2012). Effectiveness of computer- supported cooperative learning strategies in learning physics. *International Journal of Social Sciences and Education, 2*(2), 94-109. Retrieved from: http://www.ijsse.com.

Authors

***Amosa Isiaka Gambari** is a Senior lecturer in Educational Technology Department, School of Technology Education, Federal University of Technology, Minna, Nigeria. He had NCE (Tech. Edu), B.Ed, M.Tech. Ph.D in Educational Technology. His research interest is in Information and Communication Technologies (ICTs) application in education, instructional design, distance education and mobile learning. He is presently, the Coordinator, Centre for Open and Distance Learning, University of Ilorin. Also a member of several professional associations and he has several publications to his credit.

***Amina Usman Kutigi** is a Chief Lecturer in the Department of Education, Fati Lami Abubakar, College of Art for Legal and General Studies, Minna, Niger State, Nigeria. She had NCE (English Language), B.Ed, Language Arts Education, Master of Technolgy (M.Tech.) in Educational Technology. Her research interest is in English Language with Educational Technology, Computer in Education, and Instructional Design. She is presently the H.O.D. Education Department, and a member of several professional associations and she has several publications to her credit.

***Patricia O. Fagbemi** is a Lecturer II in Curriculum and Instruction Department, School of Education, FCT College of Education, Zuba, Abuja, Nigeria. She had NCE (Social Studies and Christian Religion Studies), B.Ed, Social Studies, M.Tech. and Ph.D in Educational Technology. Her research interest is in Educational Technology, Computer in Education, and Instructional Design. She is a member of several professional associations and she has several publications to her credit.