

# **Impact of Selected ICT Presentation Modes on Students' Performances in Secondary School Economics in Oyo State, Nigeria**

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## **Abstract**

*This study investigated the impact of ICT presentation modes on learning outcomes of secondary school students in economics. It also examined students' attitude to economics as a subject and attitude to ICT presentations. Through purposive sampling method, 150 senior secondary school students from three schools were selected from Ibadan metropolis of Oyo state in Nigeria. The study was a pre-post-test control quasi-experimental study. Two instruments: Students' economics achievement test consisting of 25 items and 20-item Attitude questionnaire were used for data collection after validation. ANCOVA was used to analyse the collected data with pre-test scores serving as co-variables. The result of the study revealed that ICT presentations had significant impact on students' performances ( $F(1, 149) = 45.641, p < .001$ ). The students exposed to PowerPoint presentation performed more significantly better ( $x = 20.62, S.D = 2.11$ ) than the students exposed to Video media presentation ( $x = 16.76, S.D = 4.22$ ) who also performed significantly better than the students exposed to conventional teaching method only ( $x = 14.30, S.D = 2.99$ ). Gender and ICT mode combined to have significant effect on students' achievement when thought with PowerPoint presentation ( $F(1, 149) = 4.143, p < .05$ ). Based on the findings, the study recommends the adoption of ICT presentation modes for instructional delivery in Nigerian secondary schools.*

**Key words:** Information Communication Technology\* PowerPoint\* Video/Tv\* Economics\*

## **Overview**

As the world population grows, so are the educational demands of its inhabitants including those in Nigeria. The increase in demand for education especially formal schooling occasioned by population growth requires greater preparations in both methods and means of curriculum delivery. According to Osasona (1987), any country who desires economic advancement through her educational system must ensure that her students at all levels learn more in less time without sacrificing quality. This, the researcher argued, entails adopting new methods for instructional delivery at all levels.

Information and communication technology (ICT) since its emergence has revolutionized our world in many fronts; from entertainment, sports, broadcasting, administration and education; in fact, it is becoming a natural part of our daily lives (Yusuf, 1997). According to Ene (2001) and Yuloye and Adekawonishile (2005), ICT with its rapid development is changing the world and creating unprecedented opportunity in the field of education and have had an intense effect on the way information or instruction were been disseminated to learners.

Literature has indicated that when ICT is appropriately used, it constitutes potent tools for enriching and improving traditional means of teaching and learning. According to Yusuf (1997), ICT has the capacity to improve the quality of teaching and learning in many educational environments. ICT encompasses the computer hardware, software, the network and other devices (Video, audio, photography, camera, etc) that convert information (text), images, sounds, motions, and so on into digital forms. Economics as

a subject at the senior secondary school level is a prerequisite for admission into many courses of study at the post-secondary institutions in Nigeria. Despite the availability of N.C.E. and University graduate teachers of economics, economics textbooks and other learning materials to students, their performances in the subject have rather remained largely unstable. (Tijani, 2007).

Basically, Nigeria's ICT uptake for curriculum delivery over the years has remain slow making the methods of teaching and learning in our secondary schools mostly traditional. As opined by Obemeata (1995) in Ibode (2004), that if existing teaching methods is not yielding expected results in terms of students' performances, then efforts should be geared towards adopting modern technology to aid instructional delivery for better students' performances. Already, studies such as Marvarech (1993) and Wilson (1993) hold in doubt the efficacy of conventional methods of teaching. Afolabi et al. (2005) submitted that the facilities that make up the ICT family include: The Computer, Television, Radio, Video tapes and VCD, projectors etc. In view of this, this study therefore investigated the impact of selected ICT presentations (Power point and Tv/Video media presentations) on students' performance in senior secondary economics in Ibadan metropolis.

### **The problem**

The multiplicity of problems facing Nigerian schools today is well known, some of which are Poor infrastructure, low number of qualified teachers, large number of students per class, inadequate funding, lack of interest in the endeavor of learning, ineffective methods of teaching, high pupil-teacher ratio and poor or ineffective methods of lesson delivery among others. In lieu of this, there are several opportunities opening for ICT in education which can be exploited in transforming the teacher-learner relationship in terms of lesson delivery. A cursory look at the traditional methods of lesson delivery in Nigeria secondary school will reveal its inefficiency and inadequacy in terms of quality and for Nigeria school children to possess academic competencies which will place them on the same pedestal with their counterparts elsewhere around the world, there is the need for the country to review this current situation in all the schools and embrace ICT as a medium of lesson presentations.

Good as every educational instruction may seem, it must have a correct and proper medium of presentation for it to have desired impact on the students i.e. improved learning outcomes. Researchers have shown the importance and role of ICT in education as regards information gathering and instruction packages (Yoloye and Adekanwonishe, 2005) but it is also pertinent to examine the impact when used as the vehicle for lesson or instruction presentations. This study therefore investigated whether the use of selected ICT presentations such as Power point presentation and Tv/Video media presentation would have any significant impact on students' learning outcomes in secondary school economics, using Ibadan metropolis as a case study.

### **Objectives of the Study**

The objectives of the study were to investigate:

1. Influence of students' attitude to economics and ICT presentation.
2. Impact of ICT presentation modes on students' learning outcomes.
3. Gender influence on students' learning outcomes when ICT are used for lesson presentations.

4. Interaction effect of gender and type of ICT presentation modes on students learning outcomes

### **Research questions**

1. Will students' attitudes to economics and ICT presentation have any significant influence on students' performances?
2. Will ICT presentations have any significant impacts on students' learning outcomes?
3. Will there be any significant difference in the learning outcomes of male and female students when ICT is used for lesson presentation?
4. Will there be any interaction effect based on gender and the type of mode when ICT is used for lesson presentations?

Based on the above stated research questions, the following null hypotheses were tested in the course of the study.

H<sub>01</sub>: There is no significant impact of main treatment (Power point and Tv/video presentations) on students' learning outcomes in economics.

H<sub>02</sub>: There is no significant impact of power point presentation on students' learning outcomes in economics.

H<sub>03</sub>: There is no significant impact of TV/Video media presentation on students learning outcomes in economics.

### **Operationalization of terms**

The following words were defined operationally in the study for clarity.

ICT presentation modes: PowerPoint and Tv/Video packages developed and used to teach selected secondary school economics topics in the study.

Impact: students' test scores after taken the students economics achievement tests

### **Literature Review**

Several measures have been suggested as panacea for enhanced students' academic performances in Nigerian secondary schools. According to Oyediji (2002) measures such as adoption of appropriate teaching methodologies and intense use of instructional media must be quickly adopted if improved students' performances are to be achieved. The efficacy of instructional media in teaching and learning situations is not in doubt; researches have proved the facilitative potentials of instructional media in enhancing students' academic achievements and also in enriching classrooms instruction (Yusuf, 1997). Schramm (1977) referred to Instructional media, as basic channel of communication in the classroom for the purpose of bringing about effective teaching and learning. In other words, instructional media are those materials or objects that help the teachers in disseminating learning instructions and at the same time making the instruction more interesting to the learners.

Similarly, Abimbade (1997) while commenting on the importance of instructional media in a teaching and learning situation stated that using instructional media makes students learn more and better sustain their retentive abilities and interests. The researcher went further by categorising instructional media into three; print, non-print and electronic media. Printed media are materials such as, books, maps, texts, journals, while non-print media are largely projected materials and they include films, slides, film

strips. Electronics media on the other hand consist visual, audio, audio-visual materials. These categories of media however rely on electricity to be able to function effectively (Abimbade, 1997).

### **Information and Communication Technology (ICT) and Education**

Information is seen as idea conceived in the human mind, while communication is the transfer of that information from the original source to the destination where it is needed with the intention of producing a change in behaviour (NCET, 1995; Adekomi, 1999). There are as many definitions of ICT as ICT researchers. Badru (2002) defined ICT as the science and activity of processing, storing, and sending information by using computer. According to the Nigeria National Policy for information technology (2001), ICT means any equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission or reception of data or information.

In the same vein, Yolo and Ademokoya (2005) defined ICT as computer based tools used by people to work on the information and communication processing needs of an organization. To the researchers, ICT basically encompasses the computer hardware and software, the network and several other devices (video, audio, photography, camera etc) that convert information (text), images, sound, and motion into common digital forms. It is an application of the combination, computing, communication, telecommunication and satellite technology

The importance of ICT in the education cannot be overemphasised, it can be likened to important utility such as water and electricity in our everyday lives. It constitutes potent tools for enriching traditional means of teaching and learning when used appropriately. ICT provides innovative teaching and learning opportunities to both teachers and students. As expressed by Yolo and Adekawonishile (2005), ICT can make the school more effective and productive thereby engendering a variety of tools to enhance and facilitate teachers' professional activities. ICT can enhance teaching and learning through dynamic, interactive and engaging content. It can also provide real opportunity for individualized instruction.

Other importance of ICT in education includes:

- Ability to transform teaching and learning situations thereby making it more effective.
- It helps in the organisation and presentation of learning contents to achieve maximum expected impact.
- It enables learners to be bolder, more productive and more confident in the endeavour of learning and information gathering.
- It increases interactivity in the instructional program thereby enhancing students' performances (Yusuf, 1997; Yolo & Adekawonishile, 2005).

### **PowerPoint presentation and Education.**

PowerPoint is a computer presentation software used to present information to audiences through slides shows which may contain pictures, video and audio files. Although the software is mainly used in business world, it can also be adopted for instructional delivery. In this wise, the content or topic to be learnt will be analyzed and broken down into slides before being delivered to learners. PowerPoint allows the teacher to build, save and deliver his instructions but such presentation has to be delivered at once. PowerPoint presentation can also be delivered in printed form but it is only on-screen presentation that can allow the teacher or presenter to use full range of point features (Cindy, 2002; Randanor, 2008).

Advantages of PowerPoint presentation in education includes:

- It enables the teacher to present interesting instructions or lessons.
- It is capable of appealing to all categories of learners.
- With PowerPoint presentation, students' note taking abilities could be improved.
- With PowerPoint, teachers can prepare their lesson ahead of class time (Leen, 2009)

## Methodology

A pretest-posttest-control group-quasi-experimental design was used in this study, it has three groups and it is represented thus;

Experimental group 1	01	x1	04
Experimental group 2	02	x2	05
Control group	03	x3	06

Where 01, 02, and 03 were pre-test measures of experimental groups 1, 2, and control group respectively. Also, 04, 05, and 06 were post-test measures for experimental groups' 1, 2, and control group respectively. Similarly, X1, x2, and x3 were the various treatments given to the groups respectively i.e. Power point, Video media and conventional method of teaching (control).

## Variables in the study.

The frame work in shows one Independent variable at two levels (i.e. PowerPoint and Video media presentations) which is the instructional strategy (treatment).

These treatments were at two levels;

PowerPoint presentation experimental group i

Video media presentation experimental group ii

The dependent variable was students' learning outcomes in Economics i.e. Achievement and students' Attitude towards ICT presentations.

All senior secondary school 1 students in Ibadan metropolis in Oyo state of Nigeria constituted the population of the study. The schools were of two categories (i.e. public and private schools). Only public school students participated in the study. A stratified sampling strategy was used to group the schools into public and private schools as earlier stated. Judgemental sampling was further used to select schools that were eligible to participate in the study. To be eligible for whatever group, a school must have: (a) A full time University graduate (B.Ed or B.Sc. (ed.), PGDE or its equivalent) as the Economics teacher (b) Presented candidates for senior secondary school certificate examination (SSCE) in Economics for at least four years consecutively (c) Both Male and Female students in attendance so as to control for gender (d) Adequate electricity supply (e) Computer systems with or without laboratories and (f) Easily accessible and motor able roads.

Eventually, eight schools were eligible. Next, simple balloting was used to select three out of the eligible schools as participatory schools by the researcher. S.S.1 classes were selected from these schools for the purpose of the study and all the students in the selected classes were part of the study sample. In all, the study sample consisted one hundred and fifty (150) S.S.1 students (87 male students and 63 female students) with mean age of 14.5 years and S.D of 0.82. The selected schools, using simple balloting system were further grouped into three groups of two experimental groups and one of control group. Simple random sampling was used to pick one s.s.1 arm each from the selected schools to participate in the study (intact class) in all, samples were drawn from 3 co-educational schools.

Two research instruments were developed, validated and used for data collection in the study; these were Students' Economics Achievement Test (SEAT) and Students' Attitude Questionnaire (SAQ). The SEAT was developed by the researcher to determine the achievements of students in Economics with reference to lesson objectives specified for the treatment. It was a twenty-five (25) items multiple choice test with four alternatives A—D for each item. When constructing the instrument, the researcher consulted the current approved economics syllabus for S.S 1; this afforded the researcher the opportunity to know the topics slated to be taken at this level of education in the country, among from which the topics for this instrument was drawn. Also consulted by the researcher were the current approved economics text books for senior secondary school in the country. Questions were also adapted from past SSCE question papers used by WAEC and NECO. The selected topics from which the questions that make up of the instrument were drawn were Theory of Demand and Theory of Supply. The choice of these topics was informed by the fact that, they are central topics in economics at this level.

The SAQ was a 20-item instruments based on Likert scaling procedure from strongly agrees (SA) to strongly disagree (SD). Students were expected to indicate their level of agreement or otherwise to the statements contained in the instruments based on this scale. The scale was developed from statement describing attitude towards economics as a subject and ICT presentations. Some of the items connote positive attitude and the others connote negative attitude towards economics and ICT presentations but were adequately catered for during data analysis. The instrument consisted of three parts: Students background information (as section A) Attitude to Economics (as section B) and Attitude to ICT presentation (as section C). The student's background information deals with such variables as demographic information about the students in terms of student's gender, age, and school. This section contains 3 items, while sections B and C contained questions concerning the disposition of the students towards Economics and ICT presentations. The respondents indicated the extent of their agreement or disagreement with each item on a four-point modified Likert scale.

The PowerPoint package used in the study was designed by the researcher and validated by one Educational technology lecturer and two Ph. D. students from the department of teacher education, university of Ibadan, Nigeria. Similarly, the Tv/video packaged was designed by the researcher and validated by two educational technologists and two secondary school economics teachers. The experts' observations and corrections were properly implemented to produce the final copies of the packages.

Both packages (PowerPoint and Tv/video) were taken to a public secondary school within the study location for validation. 20 S.S.1 students were selected to view the PowerPoint package, while another set of 20 students of the same school were also selected to view the TV/video instructional package after allowing them to respond to both the SEAT and the SAQ as pre-test measures. With an interval of two weeks, the researcher returned to the same school to administer the instruments (the SEAT and the SAQ) to the same set of students as post-test measures. To determine the reliability of the instruments, Pearson Product Moment Correlation Coefficient was used to analyse students' responses to the achievement test and attitude questionnaire. Reliability values of 0.79 for SEAT and 0.86 for SAQ were recorded respectively. Therefore, the instruments were adjudged to be reliable for the study.

The data generated in this study were analysed using analysis of covariance (ANCOVA) with pre-test scores serving as co-variates. The ANCOVA was to correct for any initial differences in the dependent variables and other extraneous factors that could confound the treatment effects.

### Data presentation

Research question 1: Will students' attitudes to economics and ICT presentations have any significant influence on students' performances?

The results in table 4.1 revealed that the differences in the covariates of pre-test scores ( $F(1, 149) = 30.634, p < .001$ ) and attitude towards economics ( $F(1, 149) = 5.934, p < .05$ ) significantly influence and contributed to students' performance on the post-test achievement scores while attitude towards ICT presentations ( $F(1, 149) = 1.112, p > .05$ ) did not significantly influence the post-test economics achievement performance scores.

Research question 2: Will ICT presentations have any significant impacts on students' learning outcomes?

This question was answered by comparing the pre-test and post-test scores of the secondary school students who were participants in the study. The analysis partialled out the effect of learning, attitude towards economics and attitude toward ICT presentations using 2x2 ANCOVA. The results are presented in table 1, 2 and 3:

**Table 1**

**Summary of 2x2 ANCOVA showing effect of gender and exposure to ICT presentations on students' performance on post-test economics achievement test**

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Pretest	249.805	1	249.805	30.634	.000
Attitude to economics	48.388	1	48.388	5.934	.016
Attitude to ICT presentations	9.066	1	9.066	1.112	.293
Treatment groups	744.341	2	372.170	45.641	.000
Sex	10.797	1	10.797	1.324	.252
Treatment groups * sex	67.572	2	33.786	4.143	.018
Error	1149.766	141	8.154		
Corrected total	2548.293	149			

a R Squared = .549  
(Adjusted R Squared = .523)

**Table 2**

**Descriptive statistics showing the mean difference on performances in post-test economics achievement test.**

Grp	Sex	Mean	Std. Deviation	N
Video/Tv group	Male	16.0645	4.67572	31
Video/Tv group	Female	17.8947	3.14280	19
	Total	16.7600	4.22123	50
PowerPoint	male	20.0000	2.36352	30
PowerPoint	female	21.5500	1.23438	20
	Total	20.6200	2.11785	50
Control group	male	15.1154	2.70299	26
Control group	female	13.4167	3.10563	24
	Total	14.3000	2.99830	50
Total	male	17.1379	4.01790	87
	female	17.3492	4.32233	63
	Total	17.2267	4.13553	150

While the effect of the covariates were controlled for or partialled out, the study found that learning outcomes were significantly better when learning was undertaken through ICT presentations ( $F(1, 149) = 45.641, p < .001$ ). The students exposed to PowerPoint presentation ( $x = 20.62, S.D = 2.11$ ) significantly performed better on the post-test economics achievement test than the students exposed to Tv/video media presentation ( $x = 16.76, S.D = 4.22$ ) and students in the Control group ( $x = 14.30, S.D = 2.99$ ). Based on these findings, it could be said that the treatment (i.e ICT presentations) these experimental group 1 and 2 were exposed to, had significant effect on their achievements in economics and that ICT presentations significantly influence learning outcomes among senior secondary school students in this study.

Research question 3: Will there be any significant deference in the learning outcomes of male and female students when ICT is used for lesson presentation?

This question was also answered using the analysis in table 4.1 and 4.2.

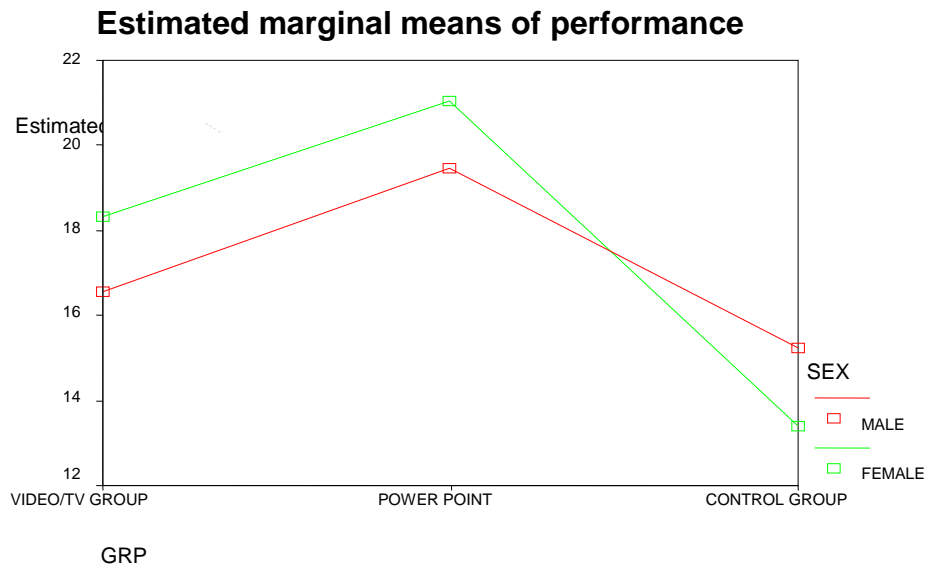
The results revealed that, if the significant influence of the covariates of pre-test scores ( $F(1, 149) = 30.634, p < .001$ ) and attitude towards economics ( $F(1, 149) = 5.934, p < .05$ ) and the non- significant influence of attitude towards ICT presentations ( $F(1, 149) = 1.112, p > .05$ ) were controlled for or partialled out , gender did not significantly influence learning outcomes when ICT presentations was introduced ( $F(1, 149) = 1.324, p > .05$ ). Though, the female students ( $x = 17.34, S.D = 4.32$ ) slightly performed better than male students ( $x = 17.13, S.D = 4.01$ ) on the post-test achievement test, this difference did not reach any level of statistical significance. This research question is thus, not supported.

Research question 4: Will there be any interaction effect based on gender and the type of mode when ICT is used for lesson presentations?

This question was also answered using the results in table 4.1 and 4.2. The results indicated that, if the significant influence of the covariates of pre-test scores ( $F(1, 149) = 30.634, p < .001$ ) and attitude towards economics ( $F(1, 149) = 5.934, p < .05$ ) and the non- significant influence of attitude towards ICT presentations ( $F(1, 149) = 1.112, p > .05$ ) were controlled for or partialled out , there was significant interaction effect of gender and ICT presentations mode on post-test economics achievement performance of



senior secondary school students 1 ( $F(1, 149) = 4.143, p < .05$ ). Female students who were exposed to PowerPoint presentation reported better performance than males in the PowerPoint presentation group, females and males exposed to Tv/video media presentation and male and female students in the control group on the post-test economics achievement test. This suggests that the gender and type of ICT presentation mode combined to influence the performance of the secondary school students. This research question is thus supported.



**Fig.1: Graphical analysis showing the interaction of gender and ICT presentations on posttest performance of students' on economic achievement test.**

### Hypotheses

Hypothesis one ( $H_{01}$ ): There is no significant impact of main treatment (i.e ICT presentations) on students' learning outcomes in economics.

This hypothesis was analyzed using the ANCOVA and the result was presented in table 1. The result revealed that learning outcomes were significantly better when learning was undertaken through ICT presentations ( $F(1, 149) = 45.641, p < .001$ ). The students exposed to PowerPoint presentation ( $x = 20.62, S.D = 2.11$ ) significantly performed better on the post-test economics achievement test than the students exposed to Tv/video media presentation ( $x = 16.76, S.D = 4.22$ ) and students in the Control group ( $x = 14.30, S.D = 2.99$ ). Based on these findings, it could be said that ICT presentations significantly influence learning outcomes among secondary school students in this study. Based on 0.5 rule adopted for this study, the null hypothesis is thus rejected and alternative hypothesis accepted.

Hypothesis two ( $H_{02}$ ): There is no significant impact of PowerPoint presentation on students' learning outcomes in economics.

This was examined using the least significant difference post-hoc analysis of the 2x2 ANCOVA the result in table 3.

**Table3**

**Post hoc analysis showing mean difference in post-test economics achievement test performance based on type of ICT mode**

(I)	Grp	(J) GRP	Mean Difference (I-J)	Std Error	Sig.
Video/Tv group	PowerPoint		-3.8600*	.63006	.000
			2.46000*	.63006	.000
PowerPoint	Video/Tv group		3.86000*	.63006	.000
	Control group		6.3200*	.63006	.000
Control group	Video/Tv group		-2.4600*	.63006	.000
	PowerPoint		-6.3200*	.63006	.000

Based on observed means

\*the mean difference is significant at 0.5 level

*Table 3: Post-hoc Analysis Showing Mean Difference in Post-test Economics Achievement Test Performance Based on Type of ICT Mode*

The result in table 3 revealed that PowerPoint presentation has more significant influence on learning outcomes than Control and TV/Video media presentation. PowerPoint presentation group was significantly better on the post-test economics achievement test than the TV/video media group ( $LSD = 3.86, p < .001$ ) and the Control group ( $LSD = 6.32, p < .001$ ).

Based on this, the null hypothesis is thereby rejected and the alternative hypothesis accepted that, PowerPoint presentation significantly influence learning outcomes of students in economics.

Hypothesis three ( $H_{03}$ ): There is no significant impact of TV/video media presentation on students' learning outcomes in economics.

This was also tested using the LSD post-hoc analysis. The result revealed that though the influence of the TV/Video media presentation was lower compared to the PowerPoint media group, TV/Video media presentation group significantly reported better post-test economics achievement test than the Control group ( $LSD = 2.46, p < .001$ ) but lower than the PowerPoint presentation group ( $LSD = -3.86, p < .001$ ).

Based on this, the null hypothesis is hereby rejected and the alternative hypothesis accepted that, TV/Video media significantly influence learning outcomes.

### **Discussion of results**

The findings of this study have shown significance difference among the three groups that participated in the experiment, i.e. PowerPoint group, TV/video media group and control group as shown in the tables of results presented earlier. The results obtained in this study have provided valuable insight into how to improve economics teaching and learning in Nigeria senior secondary schools. The findings also offer insight into possible ICT presentational modes which the economics teachers can employ to improve the attitude to and performance of large numbers of students offering economics under his or her care.

The findings revealed that there is significant effect of main treatment i.e. ICT presentations on students' achievement in economics. The learners exposed to ICT presentations such as PowerPoint presentation and Tv/video media presentation are clearly better in their economics achievements than those in the Conventional group (control) this is in line with the previous studies such as Ibode, (2004). Having noted

that the performance of students exposed to ICT presentations were significantly improved, the economics achievement of students instructed with PowerPoint was however better than that of TV/video media presentation group. The superior performance of PowerPoint presentation group corroborate the findings of Wilson (1993) who found that CAI in any form enhances students' achievements more significantly than the Conventional methods of instruction.

Also, findings showed that there was no significant effect of gender on the students' achievement in economics when ICT is used for instructional presentation. This finding is at variance with Osasono (1997), who noted that gender was significant in students achievement and in consonance with Ibode, (2004), who found otherwise when students are exposed to Video instructions. The insignificance effect of gender in the economics achievement of the students' in the experimental groups disagrees with the study of Wilson (1999) who claimed that male students performed significantly better than female students when exposed to any form of CAI.

Similarly, findings showed that there was significance interaction effect of gender and the type of ICT mode on students' achievements in economics as indicated in table 2. This implies that the treatments i.e ICT presentations, especially Power point presentation was sensitive to students' gender. It is however interesting that there is significant interaction effect of treatment (i.e ICT presentations especially PowerPoint presentation) and students gender on the performance of students in economics because a number of studies like Lee (1995) found no significance difference between the performance of male and female students when exposed to Computer based instruction and Conventional method of instruction. The significance interaction effect of treatment and gender on students' performances however is in agreement with study like of Wilson (1999) who stated that, male students develop more positive attitude and performed better after undergoing computer based instruction.

**H<sub>01</sub>:** There is no significant impact of main treatment (ICT presentations) on students learning outcomes in economics.

The focus of this hypothesis was to establish evidence of significant difference in the achievement of students after being exposed to instructional strategies of PowerPoint presentation and TV/video media presentation. The first evidence of significant different was established using the ANCOVA as recorded in table 2. It was revealed that PowerPoint presentation and TV/video media presentation were found to be effective in promoting better learning outcomes in economics.

There was general increase in the post-test score over the pre-test score of subjects in the experimental groups. This means that subjects in the experimental groups performed significantly better than those in control group. This finds relevance in the empirical findings of earlier studies which established positive effects of programmed instruction, whether CBI or CAI, over the conventional method of instruction. For example, previous studies such as Abimbade, (1990), Ajelabi, (1998) etc. showed that programmed instruction improves academic achievement of students. Other studies, like have also established that teaching with programmed instructional materials improved learners' confidence and performance.

In explaining hypotheses 2 and 3, tables 2 and 3 are of relevance. As stated earlier that the main treatment produced a significant different in the performance of students in the experimental groups. The performance of the students in the both PowerPoint presentation and TV/video media presentation groups was significantly better than that of their counterparts in the control group. Table 2 showed that the post-test mean score of students in PowerPoint group was higher than that of students in other groups, while

that of the TV/video media presentation was higher than that of the control group. This achievement can be attributed to the impact of ICT presentations has explained earlier in the study.

### **Summary and conclusion**

This study investigated impact of selected of ICT presentations (PowerPoint and TV/Video media) on students learning outcomes in economics. In addition, the study also observed students attitudes towards Economics and ICT presentations before and after the experiments. One hundred and fifty (150) senior secondary school students that participated in the study were selected from three public secondary schools in Ibadan metropolis. The subjects in the experimental groups were exposed to PowerPoint and TV/Video media presentations; while on the other hand, students in the control group were taught using the Conventional instructional method without programmed materials. The scores obtained from pre-test and post-tests were then subjected to statistical analysis, the summary of the findings is thus presented as follows;

There was significant effect of main treatment i.e. ICT presentations on the academic performance of students in economics. The students' taught with ICT presentations recorded higher performance in terms of academic achievements than their counterparts taught with the Conventional instructional method. Gender main effect was also found to be insignificant on the performance of students in economics, though, combined with ICT presentation mode to have significant effect on the students' performances. The female students recorded higher performance in terms of academic achievements than their male counterparts. Therefore, there was significant interaction effect of gender and ICT presentations on posttest economics achievements performance of senior secondary school students in the study. Attitude towards ICT presentations was also found to exert less significant influence on the posttest economics performance scores of the students, but students' attitude towards Economics was found to be significantly improved. Also, the three null hypotheses posted in this study were rejected based on the statistical evidence and the alternatives hypotheses accepted.

### **Recommendations**

1. Teachers of economics at the secondary schools should be encouraged by the governments and the school heads to adopt PowerPoint and Tv/ Video presentation for instructional delivery so as to improve students' attitude towards the subject.
2. Whereas gender had little influence on students' learning outcomes when ICT presentations were introduced, this influence however was not significant. Therefore, government and school authority should encourage the use of PowerPoint and Tv/Video by male and female students for learning purposes.
3. This study also revealed that female students recorded better learning performance than their counterparts in the other groups when exposed to PowerPoint, therefore, teachers should intensify their usage of this package for teaching especially among female students.
4. Since the selected ICT presentation modes (PowerPoint and Video) were found to improve students' achievement, Governments and school authorities should provide necessary conditions to encourage their use in for teaching and learning at the senior secondary schools.

**About the Author**

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