

## EFFECTS OF MULTIMEDIA TECHNOLOGY ON INSTRUCTIONAL DELIVERY IN COMMERCE IN SELECTED SECONDARY SCHOOLS IN BIDA METROPOLIS

OGHOMWEN JOHN SMITH

(08035726075) [smithoghomwen24@yahoo.com](mailto:smithoghomwen24@yahoo.com),

&

ABDULLAHI ABDULKADIR NDAWANCIN

(08032884602) [aawancin@yahoo.com](mailto:aawancin@yahoo.com),

&

KOLO JUSHUA

(08032618217) [josnynkolo@yahoo.com](mailto:josnynkolo@yahoo.com)

&

KARICKSON PETER KAMBAI

Department of Office Technology and Management,

The Federal Polytechnic, Bida

(08063157991) [peterkarickson@yahoo.com](mailto:peterkarickson@yahoo.com)

### Abstract

*This paper investigated the effects of multimedia technology on instructional delivery in commerce in senior secondary schools in Bida metropolis. The sample consisted of forty-nine (49) students selected for the study. Quasi experimental design was adopted for the investigation and intact classes were used for data for both the experimental and control groups. The instrument used for data collection was Commerce Achievement Test (CAT) which was validated by experts from (NECO) and Industrial and Science Education Department, Federal University of Technology Minna. The reliability coefficient was 0.57 for pre-test and 0.68 for post-test respectively. One research question and one corresponding hypothesis were stated. Mean and standard deviation was used to analyze research question 1, while t-test was used to test and analyze the only hypothesis. The finding revealed that experimental group performed significantly better than the control group. Based on the findings it was recommended among other things that governments should make a deliberate policy on the integration of Multimedia Technology in teaching Commerce in Secondary Schools.*

**Keywords:** Effects, Multimedia technology, Instructional delivery, Secondary schools, Bida metropolis.

## **Introduction**

Commerce is a core subject at the Senior Secondary School level in Niger state and indeed in Nigeria. Commerce can simply be described as the hub of all business activities of any nation state hence the study and the teaching of the subject is very vital beginning from Junior Secondary School level where it is studied as a Component of Business Studies and to the Senior Secondary School where it is taught as a single subject, even though it is taken as elective. Eventually, all students will encounter the world of commerce wherever they may find themselves working and no matter their disciplines. Therefore, students must be prepared to engage in commercial activities with confidence and competence. They need to understand how business and commerce function, the role they play in our society, the opportunities they generate, the skills they required and the impact they can have on their lives and their society today and in the future.

According to FME (2007), Commerce is central to human existence. Therefore, there is the need for students to be aware of the rudiments of commerce so as to fit into the community as well as the future career with respect to choice and development.

The general objectives of education in commerce at Senior Secondary School level are as follows:

- To acquire the basic concepts of Commerce.
- To examine the relationship between commerce and other related, business subjects
- To apply the principles of commerce in Nigeria
- To appreciate modern, dynamic and positive changes in commercial activities ( JAMB 2010/17)

Azuka, (2005); Olise, (2009); Okoli, (2012) and Ibelegbu (2012), identified ineffective teaching method strategies and poor teaching method especially predominant use of lecture methods or traditional teaching method as some of the problems the militating against the effective teaching of Commerce in Secondary Schools.

Therefore, it is evident that the use of traditional method, that is, chalk and talk method can no longer suffice in the teaching of Commerce.

Research has shown that when Multimedia technology is adequately and appropriately integrated into teaching and learning, it has strong positive impact on students' achievement through test scores and the acquisitions of 21<sup>st</sup> century skills, Oghomwen, 2015.

A number of empirical studies have investigated the link between instructional multimedia use in Subjects such as Mathematics, Biology and Physics just to mention a few but not much investigations has been done on the linkage of Instructional Multimedia and Learning achievement in Commerce in Secondary Schools in Nigeria.

Hence, it has become pertinent to investigate the effects of Instructional Multimedia on Commerce in Secondary Schools in Niger State.

### **Multimedia in Education**

Multimedia has been defined in several ways by different educators but basically, they all seem to be saying the same thing. Common to all is the fact that Multimedia involves the combination of various digital types such as text, sound, video to disseminate information for better understanding of audience. According to Oghomwen (2016), described Multimedia as the combination of various digital media types such as text, image and video integrated Multimedia sensory interactive applications to convey a message or information to an audience.

Multimedia, according to Bartch, (2009) and Mayer (2001) involves the use of two or more different types of instructional media in presentation. Mayer noted that an instructional delivery involving the use of VCD/DVD or power point or 16mm film, for example is a multimedia presentation because still pictures, text, graphics, motion pictures, background sound as well as some narrations are synchronized and are combined at the same time to enhance learners' understanding of concepts.

The goal of Multimedia in learning is to foster meaningful learning through better understanding of how we process information. The conventional media can no longer meet the needs of our instructional delivery method and hence they are gradually being replaced with Multimedia technology which has the ability of making information and objects available in learning environment with speed and practical approach. Research has shown that the utilization of instructional technology can impact tremendously on teaching and learning as it has been effective in increasing student's retention capability, stimulates their interest and attention, allows self-paced learning (Oshinaike & Adekunmisi, 2012). Multimedia technology influences both academic and job performance of students because research has shown that people remember 20% of what they see, 40% of what they see and hear but 75% of what they see, hear and do simultaneously (Oshinaike and Adekunmisi, 2012).

In the traditional teaching model, learning was teacher-centred. The teacher was the source of information and knowledge and such knowledge was delivered to the learners differently. However, with the introduction of Multimedia technology in education the roles of the teacher have shifted to that of being a facilitator and a manager of the learning process. There is no doubt that the teacher is still in control in this practice, but he allows the learners a more direct access to information and knowledge while he facilitates and organizes the learning process. Multimedia is a motivator to learners especially when it is interactive and user friendly. It fosters collaborative and cooperative learning among students; thus, better preparing them with a skill set for real-life work situations (Roblyer & Edward, 2000). Hence the application of Multimedia technology in teaching and learning Commerce in Secondary Schools will increase students' academic achievement significantly if sufficiently adopted and teachers are willing to embrace the technology.

### **Commerce**

Commerce is one of the subjects offered in Secondary Schools in Niger State.

Commerce has been defined as the study of production, distribution and exchange of goods and services aimed at satisfying human wants in order to earn a living (Anyaele, 2003).

Commerce is regarded as the whole system of an economy that constitutes an environment for business, people across the globe join the constant changing world of commerce and hence the use of Multimedia technology which has the ability to bring objectives of the subjects to thousands of kilometers away to the class for better understanding. Everybody, no matter your discipline or profession encounters commerce on daily basis.

### **Effects of Multimedia Technology on Academic Achievement of Students**

It is very vital in this age of computer to incorporate advances in the use of Multimedia technology in Instructional delivery and assess its effects on achievement measured through test scores and the acquisition of the 21<sup>st</sup> Century skills that are required for students to succeed and thrive in the "Digital Age". When Multimedia technology is adequately and appropriately integrated into teaching and learning, it has strong positive impact on students' achievement through test scores (International Society for Technology in Education, 2008). According to ISTE, results have revealed statistically significant differences in the performance of students taught with Multimedia technology and those taught with traditional approach. For example, students who participated in Multimedia class rooms have consistently outperformed their peers in a state wide Mathematics, Biology and Physics assessment. Similarly, Schroeder et al (2007), found that Instructional technology had significant positive effects on science test scores. In a study conducted by Odundo and Gumga (2013), the effects of applications of Instructional methods on learners' achievement in Business Studies in Secondary School in Kenya, the study concluded that learner-centred methods are more effective in increasing the learning achievements in business studies than the teacher centered approach of instruction. Multimedia Technology is a learner-centred approach of instruction.

Also, in a study by Ziddenet al (2013), the comparism of students' achievement showed that the treatment group had higher achievement than the control group. It was therefore concluded that there was a significant difference in the achievement scores between both groups. According to the study, students' achievement increase when Multimedia technology was used in the lesson.

### **Statement of the Problem**

Instructional delivery is a factor influencing the learning achievement of students while Instructional methods are likely to enhance learning achievement, inappropriate Instructional approaches can stifle knowledge retention and realization of learning objectives (Odundo and Gumga, 2013). Unfortunately, over the years the teaching of commerce has been traditional method which makes instruction teacher-centered. Most teacher still prefer using the chalk and talk method instructing learners although Multimedia could facilitate meaningful learning in commerce and this method is considered a good strategy for improving cognition (Mayor, 2001). A number of empirical studies have investigated the link between Instructive Multimedia used in subjects such as Mathematics, Biology and Physics just to mention a few but not much investigation has been done on the linkage of Instructional Multimedia and learning achievement in Commerce in Secondary Schools. The above situations informed the need for this study aimed at investigating such issue pertinent to the effect of Instructional Multimedia on Commerce in Secondary Schools in Niger State.

### **Purpose of the Study**

The purpose of the study was to investigate the effect of Multimedia technology on the academic achievement of students in Commerce in Senior Secondary Schools in Niger state.

### **Research Question**

What is the achievement scores of Commerce Students taught with Multimedia technology compared to those taught with traditional method in Secondary Schools in Niger state?

### **Hypothesis**

There is no significant difference in the mean achievement scores of students taught Commerce using Multimedia technology and those taught with traditional method.

### **Methodology**

Quasi-experimental design was used to determine the academic achievement of students taught Commerce with and without Multimedia technology.

### **Research design**

Quasi-experimental design was used to determine the academic achievement of commerce students taught with and without Multimedia technology.

### **Population of the Study**

All Senior Secondary School's Year three (SSIII) students totalling 187, in eleven (11) Public Secondary Schools offering Commerce in Bida Local Government metropolis constituted the population of the study.

### **Sample/ Sampling Technique**

The purposive sampling technique was adopted in selecting two Secondary schools offering commerce for the study. Government Model Secondary School, Bida which was used as experimental group was made up of 29 students and Day Secondary School, Eyagi which was used as the control group was made up of 20 students.

The population from both schools was small and hence the entire population of 49 students was used as the sample size.

### **Instruments**

#### **Commerce Achievement Test (CAT)**

The instrument used for this study titled Commerce Achievement Test (CAT) was the researcher's made instrument.

CAT consisted of 20 multiple choice items developed by the researcher to measure the four levels of cognitive domain (Revised Bloom's Taxonomy) of the students. They were remembering, understanding, applying and analyzing. The CAT consisted of items with four optional answers A – D. The students were required to indicate the correct answer by ticking the right answer corresponding to the questions.

Researcher's made Instructional packages. These were in two forms:

- (a) A lesson plan on Commerce: The teacher used it to teach topics in commerce to students (both experimental and control groups).
- (b) The teacher introduced the use of computers, projective and films screens. The experimental or treatment group was taught using Multimedia technology during their lesson class whereas the control group was taught with the traditional method approach, that is, without use of Multimedia technology.

### **Validity and Reliability**

The questionnaire items were face validated by three experts. A Lecturer for Industrial and Technical Education Department, Federal University of Technology, Minna and two lecturers' from School of Business and Management, The Federal Polytechnic, Bida. The Commerce Achievement Test (CAT) was validated by two experts from NECO, Test and Measurement Unit. The specialists critically examined the instruments specifically for content validity, clarity of statement, competence of direction and for suitability.

### **Administration of Instruments**

The researcher's made instruments was administered by the commerce teachers. A Pre-test was administered to the sampled subjects in their intact class for 20 minutes. To achieve the objective of the study, the subjects were subjected to formal instruction for a period of four (4) weeks. The teachers were given the lesson note to do the teaching using computer projector and film screen (Multimedia technology) to teach experimental or treatment group while the control group was taught with the traditional method approach. The questions that were administered as pre-test were also given as post-test after the 4 weeks formal instruction in the class.

### **Method of Data Analysis**

The Pre-test and post-test scores obtained from the administration of teachers made test (CAT) Instrument was analyzed using mean to answers the research question. T-test of independent was used to test and analyze the hypothesis. The Alpha level of 0.05 was used as the acceptable significant level for rejecting or uploading all the assumptions.

### **Presentation and Analysis of Data**

Research question: What is the mean achievement scores of commerce students when taught using Multimedia technology?

**Table 1: The pre-test and post-test mean scores of the experimental and control groups**

Types of Test	N	Experimental Group		N	Control Group	
		Mean	SD		Mean	SD
Pre-test	29	9.103	2.704	20	7.800	2.505
Post-test	29	26.1008	7.170	20	17.900	3.144
<b>Total</b>	<b>58</b>			<b>40</b>		

Source: Field Survey (2016)

Table 1 above showed that the experimental group taught Commerce using Multimedia technology had mean achievement score of 26.1008, while the control group taught without Multimedia had a lower mean score of 17.900. It can be observed that the experimental group performed better than the control group.

## Hypothesis

HO: There is no significant difference in the mean achievement scores of students taught Commerce using Multimedia technology and the mean scores of their counterparts taught without it.

To analyze, the above hypothesis, two sets of scores obtained from the CAT administered on the experimental and control groups were used. The result of the test of significant difference in commerce achievement is shown in table 2 below:

### T-test analysis showing the post-test mean scores of the effects of Multimedia technology on the academic performance of the experimental and control groups

Variable	N	Df	Mean	SD	t-values	c-critical	Pv	Remarks
Experimental group	29	47	26.1008	7.170	5.250	2.135	0.0000	Significant
Control group	20		17.900	3.144				

The result of the analysis shown in table 2 above revealed that the calculated t-value of 5.250 is greater than t-table value of 2.315. This means that there is a significant difference between students taught commerce with Multimedia technology and those taught without it. This fact is further supported by the p-value which returned a value of .0000 which shows highly significance between the two variables measured. The null hypothesis of no significant difference is rejected.

## Discussion of Findings

The result of the only research question on the comparison of students' achievements showed that the treatment group had a higher achievement score than the control groups. It was therefore concluded that there was a significant difference in the achievement of students taught using Multimedia technology and those taught without it. This indicated that the achievement of students increased when teachers used Multimedia technology in teaching and learning Commerce. These findings supported the views of Norzita (2004); ISTE (2008) Al-mmmary(2013) and Zidden et al (2013) who in their separate studies, found that results have revealed statistically significant differences in the performance of students taught using Multimedia technology and those taught with the traditional method.

## Conclusion and Recommendations

In view of the findings, it was concluded that Multimedia instructional technology has significant and positive effects on teaching and learning commerce.

## Recommendations

Based on the findings and the conclusion drawn, the following recommendations were made:

- (1) Governments and commerce teachers should as a matter of policy de-emphasize the use of traditional method for Instructional delivery. Rather, they should emphasize and regularly use Instructional Multimedia for Instructional delivery in Commerce because it is capable of increasing students' academic performance in the subject.

- (2) Government should empower students to acquire personal computers at subsidized rate to support the educational use of computers out of class because use of computers during school lessons alone cannot make any significant impact on learning.
- (3) Teacher who are the implementers of technology need adequate and relevant skills to be able to transfer knowledge to students. They need to be regularly trained on the skills and utilization of software packages for teaching and learning Commerce.

## References

- Al-Ammary, J. (2003). Educational technology: A way to enhance students' achievement at the University of Balirain. The online of news Horizons in Education 3(3). 54-65. <http://www.tojned.net>.
- Anyaele, J.U. (2003); Comprehensive Commerce for Senior Secondary Schools 1, 2 and 3, Lagos: A Johnson Publishers.
- Azuka, E.B. (2005); Opportunity of Information and Communication Technology in Business Education in Secondary Schools; Business Education Journal, Vol.1, No. 1.
- Bartsch, G.U. (2009); Multimedia and Synchronization in Higher Education, N.Y. McGrand-Hill Book Company.
- International Society for Technology in Education (2008); Technology and Student Achievement the Indelible link. <http://www.iste.org/standard>
- Mayer, R.E (2001); Multimedia Learning, N.Y. Cambridge University Press.
- Odundo, P.A & Gunga, S.O. (2013); Effect of Application of Instructional Methods on Learner's Achievement in Business Studies in Secondary Schools in Kenya, International Journal of Education Research 1(15).
- Oghomwen, J.N.S. (2016). Effect of Multimedia Technology on Instructional Delivery in Business Studies in Secondary Schools in Niger State. Unpublished Thesis in Masters Educational Technology of the National Open University of Nigeria.
- Olise, J.N (2009); Principles of Business Education, Ughilli: Eregah Nig, Company.
- Okoli, C.I. (2012); Assessment of ICT Challenges and Success of E-learning Adoption among Business Teachers in South East Universities of Nigeria; L.E (Ed), ABSEN Book of Readings, Benin.
- Roblyer, M.D. & Edward, J. (2000); Integrating Educational Technology into Teaching (2<sup>nd</sup> Ed), NJ. McGrill /Prentice Hill.
- Schroeder, C.M., Scott, T.P., Tolson, H., Haung, T. & Lee, Y.A (2007); A Meta-analysis of International Research, Effects of Teaching Strategies on Students' Achievement in Science in the United States, Journal of Research in Science Teaching, 44, 1436-60.
- Ziden, A.A., Issham, I., Spain, R.S. and Kumutha, K. (2011); Effects of Information and Communication Technology (ICT) use in Teaching and Learning in Students' Achievement in Science Subject in a Primary School in Malaysia, Malaysia Journal of Distance Education, 13(2).