**THE EFFECTIVE USE OF MULTIMEDIA IN THE TEACHING AND LEARNING OF POLITICAL SCIENCE EDUCATION**

**ABSTRACT**

This study examines the use of multimedia in teaching and learning of political science in University of Calabar, Cross River State, Nigeria. A survey research was adopted and the tool employed for this research study was a questionnaire. The data from the study revealed Cds, projector, computer and sound system are available Instructional Multimedia in their respective faculties with 62(66.2%), 76(81.7%) and 69(74.2%) of the respondents affirming it respectively. The study further revealed that, the majority of the respondents do not know the exact number of computer sets available in the department. It was also revealed that between one to five sound systems were available in their department. And the use of computers for teaching in the department is “not very often”, same with projectors as indicated by the majority of the respondents. Also, it was revealed that computer sets, sound systems, and use of simulation and projectors were not adequate in the department. This implies that the small number of instructional multimedia in the department has little or no effect on students’ participation in class activities and their academic performances.

**CHAPTER ONE**

**INTRODUCTION**

**1.1 BACKGROUND OF THE STUDY**

"Multimedia" is currently the buzzword in educational technology. Multimedia here refers to combining different electronic media, commonly computers and videodiscs, in teaching materials. This new generation is using digital media for learning and communicating (Tapscott, 2008). Business, industry, the military and educational institutions have recognized this potential and used computers as instructional tools. However, in the context of education, technology also refers to the process of applying the tools for educational purposes. In other words, “educational technology is a combination of the processes and tools involved in addressing educational needs and problems, with an emphasis on applying the most current tools: computers and their related technologies” (Roblyer & Edwards, 2000). The advent of multimedia and multimedia technologies has changed the way educators teach and students learn. With multimedia, the communication of the information can be done in a more effective manner and it can be an effective instructional medium for delivering information. Multimedia application design offers new insights into the learning process of the designer and forces him or her to represent information and knowledge in a new and innovative way (Neo & Neo, 2000). The use of multimedia as a platform for teaching is made even more possible with the availability of the MPCs (Multimedia PCs) that are powerful, fast, and able to process all media elements effortlessly and quickly, and multimedia software packages that are user‐friendly yet power‐packed. Multimedia “provides a means to supplement a presenter’s efforts to garner attention, increase retention, improve comprehension, and to bring an audience into agreement”, which consequently results in people remembering 20% of what they see, 40% of what they see and hear, but about 75% of what they see and hear and do simultaneously (Lindstrom, 2004). The use of multimedia in teaching and learning enabled teachers to stimulate final outcomes and assist students in applying knowledge learned from textbooks, thereby compensating for the deficiency of traditional teaching methods. Multimedia is now permeating the educational system as a tool for effective teaching and learning. With multimedia, the communication of information can be done in a more effective manner and it can be an effective instructional medium for delivering information. Multimedia access to knowledge is one of the possibilities of information and communication technology that has tremendous impact on learning. The instructional media have emerged in a variety of resources, and equipment, which can be used to supplement or complement the teachers’ efforts in ensuring effective learning by students. It is recognized that conventional media technologies can no longer meet the needs of our teaching and learning processes; as a result they are being replaced by multimedia technology. This technology provides a learning environment that is self‐paced, learner‐ controlled and individualized. Multimedia in Education has been extremely effective in teaching individuals a wide range of subjects. Multimedia is changing the way we communicate with each other. The way we send and receive messages is more effectively done and better comprehended. While a lecture can be extremely informative, a lecture that integrates pictures or video images can help an individual learn and retain information much more effectively. Using interactive CD‐ROMs can be extremely effective in teaching students a wide variety of disciplines, most notably languages and music.

A multi‐sensory experience can be created for the audience, which in turn, elicits positive attitudes towards its application (Neo & Neo, 2001). Multimedia has also been shown to elicit the highest rate of information retention and result in shorter learning time (Ng & Komiya, 2000). On the part of the creator, designing a multimedia application that is interactive and multi‐ sensory can be both a challenge and thrill. Multimedia application design offers new insights into the learning process of the designer and forces him or her to represent information and knowledge in a new and innovative way.   However, information technology application serves different purposes, such as knowledge sharing‐portal, search engines, public administration, social service and business solution. Oshodi (2000) posits that awareness created towards the use of information and communication technology over the years is increasing in the classroom learning environment in the third world such that mere verbalization of words alone in the classroom to communicate ideas, skills and attitude to educate learner is futile. Omagbemi (2004) supporting this view expressed that access to multimedia information could stimulate changes and creates conductive learning environment and make learning more meaningful and responsive to the localized and specific needs of learners. The emphasis of multimedia design and development has been on the presentation of information in multiple formats (Hede & Hede, 2002). There are a number of overlapping definitions of multimedia. According to Doolittle (2001), “web‐based multimedia represents the presentation of instruction that involves more than one delivery media, presentation mode, and/or sensory modality. Multimedia has also been defined as “the use of multiple forms of media presentation” (Schwartz & Beichner, 2000) and “text with at least one of the following: audio or sophisticated sound, music, video, graphics” (Maddux, Johnson & Willis, 2001). Although numerous definitions exist to capture the essence and meaning of multimedia, “one commonality among all multimedia definitions involves the integration of more than one media” (Jonassen, 2000). Examples of multimedia includes but are not limited to text in combination with graphics, audio, music, video, and or animation. The teaching and learning of political science over the years has been delivered mechanically or by rote learning, which makes instruction teacher‐centered. Hardly can vital abstract contents in Political Science be effectively communicated to the learners theoretically. They need to be taught using relevant materials. The teacher in his/her method of teaching may have being a major source of students’ poor academic performance in Political Science. Most teachers still prefer using the ‘chalk and talk’ method in instructing learners. Although Multimedia could facilitate meaningful learning of Political Science, it is rarely used, whereas this method is considered as a good strategy for improving cognition. A good deal of expected learning outcomes is not realized in Political Science in our university as a result of non‐availability of instructional materials as well as lack of effective utilization of appropriate teaching materials (Nwagbo, 2008).

**1.2 STATEMENT OF THE PROBLEM**

There is a urgent need to upgrade educational standard to bridge the gap between developed and developing nations, and multimedia instruction is considered as a necessary tool for this purpose. However, the presence of multimedia alone will not stimulate significant changes in a school. Teachers are an important ingredient in the implementation of multimedia instruction in education. Without the involvement of teachers, most students may not take advantage of all the available potential benefits of multimedia on their own. Teachers need to actively participate in the use of multimedia facilities. They have to be trained in the use of multimedia and in its integration in the classroom activities to enhance thinking and creativity among students. They must also learn to facilitate and encourage students by making them responsible for their own learning. Many of the current graduates were found to be lacking in creativity, communications skills, analytical and critical thinking and problem – solving skills (Teo & Wong, 2000). In this study, attempts are therefore made at examining such issues as are pertinent to the use of multimedia in teaching and learning of Political Science in institution of higher learning, a case study of University of Calabar, Cross River State, Nigeria.

**1.3 OBJECTIVE OF THE STUDY**

The main aim of this study is to examine the effective use of multimedia in the teaching and learning of political science education. Specifically, the sub objectives of this study include:

1. To determine the availability of instructional multimedia in the department of Political Science for teaching and learning.
2. To determine the pattern and frequency of use of multimedia by in the department of Political Science for teaching and learning.
3. To investigate the adequacy of multimedia facilities for teaching and learning in the department of Political Science for teaching and learning.
4. To identify factors, if any, which limit the use of multimedia by the university lecturers in the department of Political Science.

**1.4 RESEARCH HYPOTHESES**

**H0:** There is no significant influence of limited simulation on the academic performance of students.

**H1:** There is a significant influence of limited simulation on the academic performance of students.

**H0:** There is no significant influence of availability of instructional multimedia on students’ academic performance.

**H2:** There is a significant influence of availability of instructional multimedia on students’ academic performance.

**H0:** There is no significant influence of the use of audio‐visual on students’ effective learning of Political Science.

**H3:** There is a significant influence of the use of audio‐visual on students’ effective learning of Political Science.

**1.5 SIGNIFICANCE OF THE STUDY**

The fact remains that the use of multimedia in teaching and learning enhance effectiveness and improves performance of students in the country today. Multimedia teaching has been believed to provide various techniques and method for lesson planning and to assist classroom instruction with improved visualization and representation. This study is therefore significant in that it will examine and hopefully reveal the effect of the use of multimedia in teaching and learning, and its implication on the academic performance of students and also make recommendation as to how best to use multimedia in teaching, so as to create a conductive atmosphere for teaching.

**1.6 SCOPE AND LIMITATION OF THE STUDY**

The scope of this research work is limited to the effective use of multi-media in the teaching and learning of political science education in Cross River State. It covers the problems encountered and the solutions to such problems in the case study. This study did not in any way investigate the problems that lead to student’s unrest in the primary and secondary schools in Calabar rather it is restricted to an institution of higher learning in Calabar. Therefore the University of Calabar is selected to be the case study by the researcher. However the research has some constraints which are;

**Time**: the time at the disposal of the researcher which is allocated for the study was a major limitation as the researcher has to combine other academic work with the study.

**Finance:** The finance at the disposal of the researcher in the course of the study does not allow for wider coverage as resources are very limited as the researcher has other academic bills to cover.

**1.7 DEFINITION OF TERMS**

**Effective:** adequate to accomplish a purpose; producing the intended or expected result.

**Multimedia:** Multimedia is content that uses a combination of different content forms such as text, audio, images, animations, video and interactive content.

**Teaching:** A teacher is a person who helps others to acquire knowledge, competences or values. Informally the role of teacher may be taken on by anyone.

**Learning:** Learning is the process of acquiring new or modifying existing knowledge, behaviors, skills, values, or preferences.

**ICT:** Information and Communication Technology.

**UNICAL:** University Of Calabar

**1.8 ORGANIZATION OF THE STUDY**

This research work is organized in five chapters, for easy understanding, as follows. Chapter one is concern with the introduction, which consist of the (background of the study), statement of the problem, objectives of the study, research questions, research hypotheses, significance of the study, scope of the study etc. Chapter two being the review of the related literature presents the theoretical framework, conceptual framework and other areas concerning the subject matter. Chapter three is a research methodology covers deals on the research design and methods adopted in the study. Chapter four concentrate on the data collection and analysis and presentation of finding. Chapter five gives summary, conclusion, and recommendations made of the study.

**CHAPTER TWO**

**REVIEW OF RELATED LITERATURE**

**2.1 INTRODUCTION**

The role of technology in teaching and learning is rapidly becoming one of the most important and widely discussed issues in contemporary education policy (Rosen and Well, 1995; and Thierer, 2000). Most experts in the field of education agreed that, when properly used, information and communication technology hold great promise to improve teaching and learning in addition to shaping workforce opportunities. Poole (1996) has indicated that computer illiteracy is now regarded as the new illiteracy. This has actually gingered a new and strong desire to equip schools with computer facilities and qualified personal necessary to produce technologically proficient and efficient students in developed countries of the world. There is no doubt that computer can aid the instructional process and facilitate students’ learning. Many studies have found positive effect associated with technology aided instruction (Burnett, 1994, and Fitzgerald and Warner, 1996).

The advent of multimedia and multimedia technologies has changed the way educators teach and students learn. With multimedia, the communication of the information can be done in a more effective manner and it can be an effective instructional medium for delivering information. Multimedia application design offers new insights into the learning process of the designer and forces him or her to represent information and knowledge in a new and innovative way (Neo & Neo, 2000). The use of multimedia as a platform for teaching is made even more possible with the availability of the MPCs (Multimedia PCs) that are powerful, fast, and able to process all media elements effortlessly and quickly, and multimedia software packages that are user‐friendly yet power‐packed. Multimedia “provides a means to supplement a presenter’s efforts to garner attention, increase retention, improve comprehension, and to bring an audience into agreement”, which consequently results in people remembering 20% of what they see, 40% of what they see and hear, but about 75% of what they see and hear and do simultaneously (Lindstrom, 2004). The use of multimedia in teaching and learning enabled teachers to stimulate final outcomes and assist students in applying knowledge learned from textbooks, thereby compensating for the deficiency of traditional teaching methods. Multimedia is now permeating the educational system as a tool for effective teaching and learning. With multimedia, the communication of information can be done in a more effective manner and it can be an effective instructional medium for delivering information. Multimedia access to knowledge is one of the possibilities of information and communication technology that has tremendous impact on learning. The instructional media have emerged in a variety of resources, and equipment, which can be used to supplement or complement the teachers’ efforts in ensuring effective learning by students. It is recognized that conventional media technologies can no longer meet the needs of our teaching and learning processes; as a result they are being replaced by multimedia technology. This technology provides a learning environment that is self‐paced, learner‐ controlled and individualized. Multimedia in Education has been extremely effective in teaching individuals a wide range of subjects. Multimedia is changing the way we communicate with each other. The way we send and receive messages is more effectively done and better comprehended. While a lecture can be extremely informative, a lecture that integrates pictures or video images can help an individual learn and retain information much more effectively. Using interactive CD‐ROMs can be extremely effective in teaching students a wide variety of disciplines, most notably languages and music A multi‐sensory experience can be created for the audience, which in turn, elicits positive attitudes towards its application (Neo & Neo, 2001). Multimedia has also been shown to elicit the highest rate of information retention and result in shorter learning time (Ng & Komiya, 2000). On the part of the creator, designing a multimedia application that is interactive and multi‐ sensory can be both a challenge and thrill. Multimedia application design offers new insights into the learning process of the designer and forces him or her to represent information and knowledge in a new and innovative way.   However, information technology application serves different purposes, such as knowledge sharing‐portal, search engines, public administration, social service and business solution. Oshodi (2000) posits that awareness created towards the use of information and communication technology over the years is increasing in the classroom learning environment in the third world such that mere verbalization of words alone in the classroom to communicate ideas, skills and attitude to educate learner is futile. Omagbemi (2004) supporting this view expressed that access to multimedia information could stimulate changes and creates conductive learning environment and make learning more meaningful and responsive to the localized and specific needs of learners. The emphasis of multimedia design and development has been on the presentation of information in multiple formats (Hede & Hede, 2002). There are a number of overlapping definitions of multimedia. According to Doolittle (2001), “web‐based multimedia represents the presentation of instruction that involves more than one delivery media, presentation mode, and/or sensory modality. Multimedia has also been defined as “the use of multiple forms of media presentation” (Schwartz & Beichner, 2000) and “text with at least one of the following: audio or sophisticated sound, music, video, graphics” (Maddux, Johnson & Willis, 2001). Although numerous definitions exist to capture the essence and meaning of multimedia, “one commonality among all multimedia definitions involves the integration of more than one media” (Jonassen, 2000). Examples of multimedia includes but are not limited to text in combination with graphics, audio, music, video, and or animation. The teaching and learning of political science over the years has been delivered mechanically or by rote learning, which makes instruction teacher‐centered. Hardly can vital abstract contents in Political Science be effectively communicated to the learners theoretically. They need to be taught using relevant materials. The teacher in his/her method of teaching may have being a major source of students’ poor academic performance in Political Science. Most teachers still prefer using the ‘chalk and talk’ method in instructing learners. Although Multimedia could facilitate meaningful learning of Political Science, it is rarely used, whereas this method is considered as a good strategy for improving cognition. A good deal of expected learning outcomes is not realized in Political Science in our university as a result of non‐availability of instructional materials as well as lack of effective utilization of appropriate teaching materials (Nwagbo, 2008).

**2.2 CONCEPT OF MULTIMEDIA**

The term multimedia by definition means “more than one media”. According to Hofstetter (2001), multimedia is the use of computer to present and combine text, graphics, audio and video with links and tools that let the user navigate, interact, create and communicate. In other words, multimedia is the combination of various digital media, into an integrated multi-sensory interactive application or presentation to convey information to an audience (Damodharan and Rengarajan, 2007; ButcherPowell, 2005). Other than that, interactivity is also part of the elements that are required in order to complete interactive communication process through the use of multimedia (Jamalludin and Zaidatun, 2005). Originally, a multimedia presentation did not have to be digital. For example, multimedia might have incorporated a slide show for visuals, a tape recorder for audio, and an overhead projector for text. But as software and hardware became capable of and adept at handling more than one media, the term multimedia was coined to define computer software applications and presentations that utilized more than one media (Shelly, Cashman, Gunter and Gunter, 2006).

**2.2.1 HISTORY OF MULTIMEDIA USE IN TEACHING AND LEARNING**

As classroom technology continued to improve, the 1980s saw the introduction of overhead transparencies and videotapes, while the 1990s gave us first videodiscs and then CD-ROMs, the World Wide Web, and eventually digital projectors with the mixed blessings (see Atkinson, 2004b) of Microsoft PowerPoint. Technological innovation has accelerated in the first decade of the new century, with digital projectors as standard features in most classrooms, and CD-ROMs or DVDs accompanying many textbooks. Most classrooms (and dorm rooms) have high-speed Internet connections that allow reasonable-quality video streaming, and many students now bring wireless laptops, tablet computers, or hand-held devices into the classroom setting.

In a sense, teaching has always been a “multimedia” enterprise; instructors have typically spoken aloud to, drawn pictures, and attempted demonstrations for the benefit of their students. What has changed has been the evolving technology available for combining and delivering that information. Instructors who began teaching in the 1960s or 1970s probably remember a time when the chalkboard was the main form of instructional media used in psychology classrooms, perhaps supplemented by mimeographed handouts and occasional glimpses of a sheep brain, an operant chamber, or a plastic model of an eyeball. These instructors may recall the enthusiasm with which students greeted the introduction of “new technologies” such as photocopied illustrations, slides depicting visual illusions, filmstrips with audio narration, and especially full motion 16-millimeter films with reenactments of classic experiments.

**2.3 IMPORTANCE OF MULTIMEDIA TO EDUCATION**

In the pre-technology education context, the teacher is the sender or the source, the educational material is the information or message, and the student is the receiver of the information. In terms of the delivery medium, the educator can deliver the message via the “chalk-and-talk” method and overhead projector (OHP) transparencies. This directed instruction model is a popular technique, which has been used for decades as an educational strategy in all institutions of learning (Damodharan and Rengarajan, 2007). Basically, the teacher controls the instructional process, the content is delivered to the entire class and the teacher tends to emphasize factual knowledge. In other words, the teacher delivers the lecture content and the students listen to the lecture. Thus, the learning mode tends to be passive and the learners play little part in their learning process. It has been found in most universities by many teachers and students that the conventional lecture approach in classroom is of limited effectiveness in both teaching and learning. In such a lecture, students assume a purely passive role and their concentration fades off after 15 - 20 min (Damodharan and Rengarajan, 2007). Some limitations which may prevail in traditional teaching method are:

1. Teaching in classroom using chalk and talk is “one way flow” of information.
2. Teachers often continuously talk for an hour without knowing students response and feedback.
3. The material presented is only based on lecturer notes and textbooks.
4. Teaching and learning are concentrated on “plug and play” method rather than practical aspects.
5. The handwriting of the lecturer decides the fate of the subject.
6. There is insufficient interaction with students in classroom.
7. More emphasis has been given on theory without any practical and real life time situations.
8. Learning from memorization but not understanding.
9. Marks rather than result oriented.

In order to solve the problem, multimedia can be effectively used for instructional purposes (Burden and Byrd, 1999). The use of multimedia in teaching and learning is not only able to maintain students’ interest but also able to make them enjoy learning. Furthermore, Cairncross and Mannion (2001) pointed out multimedia has the potential to create high quality learning environments. The key elements of multiple media, user control over the delivery of information, and interactivity can be used to enhance the learning process creating integrated learning environments.

**2.4. FACTORS INFLUENCING USE OF ICT TO MAKE TEACHING-LEARNING EFFECTIVE IN HIGHER INSTITUTIONS OF LEARNING**

The fundamental factors influencing the use of ICT in teaching-learning have been identified by researchers. Rogers, E.M. identified five technological characteristics or attributes that influence the decision to adopt an innovation. Stockdill, S.H., &Morehouse, D. L. also identified user characteristics, content characteristics, technological considerations, and organizational capacity as factors influencing ICT adoption and integration into teaching. Balanskat, A., Blamire, R., &Kafal, S. (2007) identified the factors as teacher-level, school-level and system-level. Teachers‟ integration of ICT into teaching is also influenced by organizational factors, attitudes towards technology and other factors. Sherry, L., & Gibson, D. claims that technological, individual, organizational, and institutional factors should be considered when examining ICT adoption and integration. Charles, B. identified several factors influencing use of ICT to make teaching-learning effective which include: self-efficacy, computer motivation, computer attitudes, the attitude-behaviour relation, technology integration, constructivist beliefs, ICT motivation, attitudes towards ICT in education, organization of learning, organizational climate, infrastructure and resources, teachers‟ educational beliefs, perceptions on ICT-related school policies, teachers' individual background, gender, teaching experience, professional development, teachers' attitudinal factors, innovativeness, technology self-efficacy (technology competence), attitude toward computers in education, socio-organizational factor, school culture, administrative support, school support, pressure to use technology, age, education level, level of ICT training, proximity from a town centre, government policy on ICT literacy, period of experience with ICT. Therefore, these factors may assist teachers and educators to use ICT in teaching-learning process and become successful technology adopters. There are many factors influencing the use of ICT to make teaching-learning effective in higher institutions of learning in Uganda which include the following:

**2.4.1 Teachers’ attitudes**

Attitude is a predisposition to respond favorably or unfavorably to an object, person, or event according to Ajzen, I. To successfully initiate and implement educational technology in school’s program depends strongly on teachers‟ support and attitudes. Among the factors that influence successful integration of ICT into teaching are teachers‟ attitudes and beliefs towards technology by Hew, K. F., & Brush, T and Keengwe, J., & Onchwari, G. If teachers‟ attitudes are positive toward the use of educational technology then they can easily provide useful insight about the adoption and integration of ICT into teaching and learning processes. The strong relationship between computer related attitudes and computer use in education has been emphasized in many studies like that of Sang, G., Valcke, M., van Braak, J., &Tondeur, J and Tondeur, J., Valcke, M., & van Braak, J. Attitudes toward computers influence teachers‟ acceptance of the usefulness of technology, and also influence whether teachers integrate ICT into their classroom (Akbaba, S., &Kurubacak, G) (Huang, H. M., &Liaw, S. S). Many theorists (e.g., van Braak, 2001b; Vannata & Fordham, 2004) have maintained that teachers' attitudinal factors have a strong impact on technology integration in schools. For example, (Paraskeva, F., Bouta, H., &Papagianna, A) reported that factors related to the nature of the teacher's personality are considered crucial to the integration and development of technology in education. Attitudes toward technology are expected to predict one's uses of technology (Bai, H., &Ertmer, P.A). Thus, attitude toward the computer or technology is also one of the most researched factors. It has been found to be a major predictor of teachers' technology use in instructional settings. Studies have clearly shown that the likeliness of teachers integrating technology, and its effective use and implementation, was very much related to the users' attitudes toward the computer or technology (Knezek, G. & Christensen, R). Some researchers (Becker, H.) ( Paraskeva, F., Bouta, H., &Papagianna, A) (Zhao , Y., & Frank , K. A) find that teachers who placed a more positive value on computers tend to use computers more frequently in their instruction. That is, beliefs about the value of technology greatly enhanced teachers' perceptions about the effectiveness of technology for teaching and learning. Research has shown that teachers‟ attitudes towards technology influence their acceptance of the usefulness of technology and its integration into teaching, (Huang, H. M., &Liaw, S. S). Teachers‟ computer experience relates positively to their computer attitudes. The more experience teachers have with computers, the more likely that they will show positive attitudes towards computers (Rozell, E.J., & Gardner, W.L). Positive computer attitudes are expected to foster computer integration in the classroom (Tondeur, J., Valcke, M., & van Braak, J). According to (Woodrow, J. E), for successful transformation in educational practice, user need to develop positive attitudes toward the innovation.

**2.4.2 ICT Competence**

Computer competence is defined as being able to handle a wide range of varying computer applications for various purposes (Tondeur, J., Valcke, M., & van Braak, J). According to (Bordbar, F.), teachers‟ computer competence is a major predictor of integrating ICT in teaching. Evidence suggests that majority of teachers who reported negative or neutral attitude towards the integration of ICT into teaching and learning processes lacked knowledge and skills that would allow them to make “informed decision” (Al-Oteawi, S. M. (2002)). According to (Peralta, H., Costa, F.A), teachers with more experience with computers have greater confidence in their ability to use them effectively. To conclude, (Jones, A) reported that teachers competence relate directly to confidence. Teachers‟ confidence also relate to their perceptions of their ability to use computers in the classroom, particularly in relation to their children’s perceived competence.

**2.4.3 Computer Self-Efficacy**

Research has been conducted on teacher’s self-efficacy and reported to have greater effect on their use of ICT. Self-efficacy is defined as a belief in one’s own abilities to perform an action or activity necessary to achieve a goal or task (Bandura, A). In real meaning, self-efficacy is the confidence that individual has in his/her ability to do the things that he/she strives to do. Thus teachers‟ confidence refers both to the teachers‟ perceived likelihood of success on using ICT for educational purposes and on how far the teacher perceives success as being under his or her control (Peralta, H., Costa, F.A). According to (Liaw, S., Huang, H., & Chen, G), teachers‟ computer self-efficacy influences their use of ICT in teaching and learning. Similarly, (Yuen, A. H. K., & Ma, W. W. K) revealed that the Hong Kong teachers‟ implementation of ICT was depended on simplicity of computer use and perceived teacher self-efficacy. (Knezek, G. & Christensen, R) revealed that teachers‟ competence with computer technology is a key factor of effective use of ICT in teaching. According to (Jones, A.), teachers feel reluctant to use computer if they lack confidence. “Fear of failure” and “lack of ICT knowledge” (Balanskat, A., Blamire, R., &Kafal, S. (2007)) have been cited as some of the reasons for teachers‟ lack of confidence for adopting and integrating ICT into their teaching.

**2.5 EMPIRICAL REVIEW**

Several dozen studies indicate that computer-based multimedia can improve learning and retention of material presented during a class session or individual study period, as compared to “traditional” lectures or study materials that do not use multimedia (see Bagui, 1998; Fletcher, 2003; Kozma, 2001; Mayer, 2001). According to Najjar (1996), this improvement can be attributed mainly to dual coding of the information presented in two different modalities visual plus auditory, for example (Clark & Paivio, 1991; Paivio, 1986) leading to increased comprehension of the material during the class session, and improved retention of the material at later testing times (Mayer & Moreno, 1998). There is general agreement that multimedia presentations are most effective when the different types of media support one another rather than when superfluous sounds or images are presented for entertainment value which may induce disorientation and cognitive overload that could interfere with learning rather than enhance learning (Mayer, Heiser, & Lonn, 2001). Finally, a number of studies have suggested that student satisfaction and motivation is higher in courses that use multimedia materials (Astleitner & Wiesner, 2004; Yarbrough, 2001). In one particularly large study, Shuell and Farber (2001) examined the attitudes of over 700 college students toward the use of computer technology in twenty courses representing a wide range of academic disciplines. Students were generally very positive about the use of technology, although females rated the use of technology for learning and classroom instruction somewhat lower than did their male peers.

**2.6 RESOURCES IN TEACHING/LEARNING PROCESS**

It is a truism that learning is essentially a social process and teaching is only an instrument of learning. It therefore becomes necessary that a teacher should use all types of machinery in guiding students’ learning and these machineries that can be used in guiding learning are called instructional or teaching materials/aids NERDC (2009). Teaching/ instructional materials/ aids come under resources for teaching and learning. Teaching/ learning resources are many and varied covering a range of objects, facilities, processes, locations, and human, from which teachers/ learners can obtain information to meet their teaching/ learning needs. For a mathematics teacher, these resources are indispensable tools in his/her hands for the achievement of the objectives of teaching. For Nzewi and Nwosu (2009), resources in teaching process include anything or anybody to which or whom a teacher or a learner can turn for information or help. Thus, you have teaching and teaching resources .e.g. teachers, doctors, nurses, material resources .e.g. chalkboard/whiteboard, textbooks, magazines, books .e.g. reference materials, textbooks, magazines, non- printed materials .e.g. Pictures, drawings, community resources .e.g. farms, hospitals. These resources are indispensable to good science (mathematics), teaching and learning (NERDC, 2009). Teaching materials or aids are those equipment and materials that a teacher uses to illustrate, emphasize, and explain a lesson in order to make it clearer to the students. These materials and equipment include simple familiar objects that can be locally obtained (Nzewi and Nwosu, 2009). Ahmed (2007) opined that teaching materials are also referred to as instructional materials or teaching aids. It should be noted that instructional materials or teaching aids are not and cannot be supplanted for the teaching process itself. However, the value or importance of teaching materials/ resources cannot be over emphasized. For Nzewi and Nwosu (2009) the importance of resources for teaching and learning processes is to provide the teacher with the means of expanding the horizon of experience of students, thereby seeking to have a counterpart of firsthand experience. Teaching resources help to provide materials and opportunity for experiment. This ensures students participation in the lesson, which promotes effective learning (Nzewi and Nwosu, 2009). The new science curriculum used in Nigerian schools is activity- based and emphasizes the acquisition of productive skills for life- long learning. These require creativity on the part of the teacher in sourcing for and using appropriate instructional resources for teaching and learning (NPE, 2004). There are factors or challenges militating against the process of sourcing for and using appropriate instructional resources for teaching and learning (NERDC, 2009).

**2.7 THEORETICAL FRAMEWORK**

The researcher adopted Jerome Bruner’s Learning Theory for this study:Bruner introduced the concept of learning by discovery. Bruner is of the view that learning is effectively engaged in if the learner is giving the opportunity to discover facts by him/herself. Bruner argues that mere presentation of information will not enhance effective solution of a problem. The theory stresses cognitive effectiveness. Because of this, some referred to Bruner’s theory of learning as Bruner’s theory of cognitive development. Bruner believed that learning by discovery begins when science teacher purposefully (i.e. intentionally) create (present) a problem and present it to the students by introducing some inconsistencies (i.e. contradictions) among source of information which are giving in the process of instruction. According to Bruner such inconsistencies lead to intellectual discomfort that will stimulate (i.e. motivate) the students to initiate individual discoveries through cognitive restructuring (i.e. internal reorganization). The intellectual discomfort created by the inconsistencies makes the learner to attempt to bring order out of this confusion by engaging in mental processes i.e. discovery activities which involve observation, hypothesizing, measuring, stating problem, data collection, classifying, inferring, etc. Through mental processes, the student can generate facts from his/her desperate experiences. Experiences gained during the mental processes enable the students to sense the disparity. According to Bruner there are two forms of discovery processes which are: Assimilation: This occurs when a student recognizes a new situation that is familiar to one of the elements in the existing structure of knowledge (i.e. cognitive structure) and he/she easily assimilates it. Accommodation: This occurs when a new situation (i.e. a new knowledge) is incompatible to the existing structure of knowledge (i.e. cognitive structure) the learner first restructures (i.e. reorganizes) his/her cognitive framework (i.e. cognitive structure) in order to be able to accommodate the new knowledge. Bruner believes that the students should find out information on their own using mental processes. The theory places great emphasis on the three types of human activity for learning i.e. the three information processing systems which are:

1. Physical activity (motor activities) called Enactive representation.
2. Imagery called Ionic representation
3. Symbolic activities

The three activities coexist with each other and for this reason; the attainment of one does not mean the total abandonment of the others. At enactive stage, the child manipulates the learning materials directly by neuro muscular activities. At ionic stage, the child deals with mental images of objects, but does not manipulate them directly. At symbolic stage the child uses language. The interpretation of the above is that when a child, say at secondary school level shows deficiencies in his/her learning capacity especially in symbolic representation, it could be that he/she was deficient in early stages (i.e. enactive and ionic stages) which he/she skipped. It is therefore necessary to fill in the missing gap by providing concrete support that will make up for the deficiency. Discovery learning, when encouraged in science instruction also aids problem solving because learning by discovery starts with problem solving (Aknmoyewa, 1992). Discovery learning also stimulates creativity in the student, which is one of the major objectives of science teaching/learning. Application of Jerome Bruner’s Theory of Learning to Science Teaching/Learning: The science teacher should intentionally create or present problems to students either in form of apparent contradiction or inconsistency among sources of information which are giving in the process of instruction. Encouraging discovery learning in science class by science teachers will result into aiding problem solving. One of the major objectives of science teaching is creativity. Therefore, discovery learning encourages creativity. Students should be taught concepts in such a way that they have applicability beyond the situation in which they were learned. Retention of science concepts are aided by knowledge acquired through discovery learning. Teachers must encourage students to make intuitive guess more systematically. Bruner supported a radical reorganization of the curriculum across all levels of education. Bruner advocated the fundamental structure of curriculum to begin with simple contents and later graduated to complex contents. That means that learning should proceed from simple to complex, from concrete to abstract, and from specific to general. Teaching should be inductive. Bruner supported the spiral nature of curriculum as we have in our present science curriculum at all levels of education. Bruner’s Constructivist Theory asserts that learning is an active process in which learners construct new ideas based upon their current knowledge. Instruction can be made more efficient by providing a careful sequencing of materials to allow learners to build upon what they already know and go beyond the information they have been given to discover the key principles by themselves.

**2.8 STUDIES ON THE USE OF VIDEO TAPED INSTRUCTION**

According to a study conducted by Osokoya (2007) on the effects of VTI on secondary school students’ achievement in History. In his study, he adopted the quasi-experimental research design using a videotaped instruction and conventional strategies. A multi-stage sampling technique was employed to select 92 history students made up of 40 males and 52 females. A validated history achievement test instrument with reliability co-efficient of 0.75 was administered. The result showed that students taught with VTI performed better (X=25.30) than those taught with the conventional method(X=20.12). The result of the ANCOVA statistical analysis revealed that gender F(2,91): p>0.05) was not a significant factor on students’ achievement in history when VTI are used. Chinna and Dada (2013) investigated the effects of developed Electronic Instructional Medium (video-instructional package) on students’ achievements in biology. The quasi experimental, pre-test – post-test control group design was used for the study. The sample comprised of 180 senior secondary year two students from six (6) schools located in the 3 educational zones of Niger State. The students were divided into an experimental group (electronic instructional medium) and a control group (traditional lecture instruction). Structured Biology Achievement Test (SBAT) with internal consistency reliability co-efficient of 0.83 was used to measure the students’ achievement before and after the treatment. The data obtained from the study were analysed using the Analysis of Covariance (ANCOVA) and Scheffe test indicated that the achievement of students’ in biology greatly improved with the use of electronic instructional medium. The result have implications for innovative use of instructional media and creating sound strategies for disseminating science in the classroom. Mudasiru (2005) in his study of the effects of videotape and slide tape instructions on students’ performance in Junior Secondary School Social Studies, examined the significant difference in the post test and retention test achievement scores of students taught using VT, slide tape and the normal classroom instruction. The sample consisted of 191 Junior Secondary School students drawn from three equivalent secondary schools within Ilorin metropolis. The social studies achievement test (SSAT) was administered to students as pre-test, post-test and retention test. The results of students were analysed using analysis of covariance (ANCOVA). Turkey’s test was used for post-hoc confirmation of significant deference. The results indicated that the students using VT and those taught using slide-tape performed significantly better than their counterparts taught using the normal classroom instruction. However, there was no significant difference reported in the posttest and retention test scores of students taught using VT and those exposed to slide-tape instructions. These findings indicated that social studies content could be taught and learnt better through the resourceful integration of VT and slide-tape into social studies instruction. Agommuoh and Nzewi (2003) in their study of effects of VTI on secondary school student’s achievement in physics made use of a sample of 398 SSI students selected from 2 co-educational schools. Three research questions and three hypotheses guided the study. Data generated were analysed using analysis of covariance (ANCOVA) at 0.05 level of significance. The results indicated that the achievement of students in physics greatly improved with the use of VTI. Adedapo, Salawu and Afolabi (2001) assessed the effects of VT and audio-taped instructions on cognitive outcomes in mathematics. The sample used for this quasi-experiment study consisted of 364 senior secondary Two (SSII) students drawn from secondary schools in Oyo metropolis. Two hypotheses were postulated and tested using analysis of covariance (ANCOVA), Turkey/Kramer post hoc test and mean. The results of the study showed that there was significant difference in the students’ cognitive achievement and interest in mathematics which were mostly enhanced by the VT strategy, followed by audio taped strategy and minimally by the conventional strategy.

**CHAPTER THREE**

**RESEARCH METHODOLOGY**

**3.1 RESEARCH DESIGN**

The researcher used descriptive research survey design in building up this project work the choice of this research design was considered appropriate because of its advantages of identifying attributes of a large population from a group of individuals. The design was suitable for the study as the study sought to examine the effective use of multimedia in the teaching and learning of political science education.

* 1. **SOURCES OF DATA COLLECTION**

Data were collected from two main sources namely:

1. Primary source and
2. Secondary source

**Primary source:** Personal interview was conducted with selected staffs and students of the institution in Cross Rivers State metropolis.

**Secondary source:** The secondary formed the major theoretical part that was derived through critical review of library and also other related literature (material written by others researchers).

* 1. **POPULATION OF THE STUDY**

Population of a study is a group of persons or aggregate items, things the researcher is interested in getting information on the study the effective use of multimedia in the teaching and learning of political science education. 200 staffs and students of University Of Calabar, In Cross River State was selected randomly by the researcher as the population of the study.

* 1. **SAMPLE AND SAMPLING PROCEDURE**

Sample is the set people or items which constitute part of a given population sampling. Due to large size of the target population, the researcher used the Taro Yamani formula to arrive at the sample population of the study.

n= N

1+N(e)2

n= 200

1+200(0.05)2

= 200

1+200(0.0025)

= 200 200

1+0.5 = 1.5 = 133.

**3.5 INSTRUMENT FOR DATA COLLECTION**

The major research instrument used is the questionnaires. This was appropriately moderated. The head of department was administered with the questionnaires to complete, with or without disclosing their identities. The questionnaire was designed to obtain sufficient and relevant information from the respondents. The primary data contained information extracted from the questionnaires in which the respondents were required to give specific answer to a question by ticking in front of an appropriate answer and administered the same on staffs of the institution: The questionnaires contained about 16 structured questions which was divided into sections A and B.

* 1. **VALIDATION OF THE RESEARCH INSTRUMENT**

The questionnaire used as the research instrument was subjected to face its validation. This research instrument (questionnaire) adopted was adequately checked and validated by the supervisor his contributions and corrections were included into the final draft of the research instrument used.

**3.6** **METHOD OF DATA ANALYSIS**

The data collected was not an end in itself but it served as a means to an end. The end being the use of the required data to understand the various situations, it is with a view to making valuable recommendations and contributions. To this end, the data collected has to be analysis for any meaningful interpretation to come out with some results. It is for this reason that the following methods were adopted in the research project for the analysis of the data collected. For a comprehensive analysis of data collected, emphasis were laid on the use of absolute numbers frequencies of responses and percentages. Answers to the research questions were provided through the comparison of the percentage of workers response to each statement in the questionnaire related to any specified question being considered.

Frequency in this study refers to the arrangement of responses in order of magnitude or occurrence while percentage refers to the arrangements of the responses in order of their proportion.

The simple percentage method is believed to be straight forward easy to interpret and understand method.

The researcher therefore choose the simple percentage as the method to use.

The formula for percentage is shown as.

% = f/N x 100/1

where f = frequency of respondents response

N = Total Number of response of the sample

100 = Consistency in the percentage of respondents for each item contained in questions.

**CHAPTER FOUR**

**PRESENTATION ANALYSIS INTERPRETATION OF DATA**

**4.1 INTRODUCTION**

Efforts will be made at this stage to present, analyze and interpret the data collected during the field survey. This presentation will be based on the responses from the completed questionnaires. The result of this exercise will be summarized in tabular forms for easy references and analysis. It will also show answers to questions relating to the research questions for this research study. The researcher employed simple percentage in the analysis.

**DATA ANALYSIS**

The data collected from the respondents were analyzed in tabular form with simple percentage for easy understanding.

A total of 133 (one hundred and thirty three) questionnaires were distributed and 133 questionnaires were returned.

Question 1

Gender distribution of the respondents.

TABLE I

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Gender distribution of the respondents** | | | | | |
|  | | | | | |
| Response | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Male | 77 | 57.9 | 57.9 | 57.9 |
| Female | 56 | 42.1 | 42.1 | 100.0 |
| Total | 133 | 100.0 | 100.0 |  |

From the above table it shows that 57.9% of the respondents were male while 42.1% of the respondents were female.

Question 2

The positions held by respondents

TABLE II

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **The positions held by respondents** | | | | | |
| Response | | Frequency | Percent | Valid Percent | Cumulative Percent |
| **Valid** | Lecturers | 37 | 27.8 | 27.8 | 27.8 |
| Students | 50 | 37.6 | 37.6 | 65.4 |
| Non-lecturing staffs | 23 | 17.3 | 17.3 | 82.7 |
| ICT personnel | 23 | 17.3 | 17.3 | 100.0 |
| Total | 133 | 100.0 | 100.0 |  |

The above tables shown that 37 respondents which represents 27.8% of the respondents are Lecturers, 50 respondents which represents 37.6 % are Students, 23 respondents which represents 17. 3% of the respondents are Non-lecturing staffs, while 23 respondents which represents 17.3% of the respondents are ICT personnel.

**TEST OF HYPOTHESES ONE**

There is no significant influence of limited simulation on the academic performance of students

**Table III**

|  |  |  |  |
| --- | --- | --- | --- |
| There is no significant influence of limited simulation on the academic performance of students. | | | |
|  | | | |
| Response | Observed N | Expected N | Residual |
| Agreed | 40 | 33.3 | 6.8 |
| strongly agreed | 50 | 33.3 | 16.8 |
| Disagreed | 26 | 33.3 | -7.3 |
| strongly disagreed | 17 | 33.3 | -16.3 |
| Total | 133 |  |  |

|  |  |
| --- | --- |
| **Test Statistics** | |
|  | There is no significant influence of limited simulation on the academic performance of students |
| Chi-Square | 19.331a |
| Df | 3 |
| Asymp. Sig. | .000 |
| a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 33.3. | |

Decision rule:

There researcher therefore reject the null hypothesis which states that there is no significant influence of limited simulation on the academic performance of students.

Therefore the researcher accepted the alternate hypothesis which states that there is a significant influence of limited simulation on the academic performance of students.

**TEST OF HYPOTHESIS TWO**

There is no significant difference in achievement of mathematics students taught with mathematics laboratory and those taught with lecture method **Table IV**

|  |  |  |  |
| --- | --- | --- | --- |
| **There is no significant difference in achievement of mathematics students taught with mathematics laboratory and those taught with lecture method** | | | |
| Response | Observed N | Expected N | Residual |
| Agreed | 40 | 33.3 | 6.8 |
| strongly agreed | 50 | 33.3 | 16.8 |
| Disagreed | 26 | 33.3 | -7.3 |
| strongly disagreed | 17 | 33.3 | -16.3 |
| Total | 133 |  |  |

|  |  |
| --- | --- |
| **Test Statistics** | |
|  | There is no significant difference in achievement of mathematics students taught with mathematics laboratory and those taught with lecture method |
| Chi-Square | 19.331a |
| Df | 3 |
| Asymp. Sig. | .000 |
| a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 33.3. | |

Decision rule:

There researcher therefore reject the null hypothesis which states that there is no significant difference in achievement of mathematics students taught with mathematics laboratory and those taught with lecture method as the calculated value of 28.211 is greater than the critical value of 5.99

Therefore the alternate hypothesis is accepted which states that there is a significant difference in achievement of mathematics students taught with mathematics laboratory and those taught with lecture method.

**CHAPTER FIVE**

**SUMMARY CONCLUSION AND RECOMMENDATION**

**5.1 INTRODUCTION**

It is pertinent to note that this research was aimed at examining the contribution of instructional materials to teaching and learning of political science in tertiary institutions, thus the topic “the effective use of multimedia in the teaching and learning of political science education”.

In the preceding chapter, the relevant data collected for this study were presented, critically analyzed and appropriate interpretation given. In this chapter, certain recommendations made which in the opinion of the researcher will be of benefits in addressing the challenges associated with teaching and learning of political science education in Nigeria.

**5.2 SUMMARY**

The study tends to determine the adequacy of Instructional Multimedia facilities for teaching and learning of Political Science, the study revealed that computer sets, sound systems, and use of simulation and projectors are not adequate in the department. This implies that small number of instructional multimedia facilities in the department has little or no effect on students’ participation in class activities and their academic performances as indicated by the majority of the respondents in the study area.

The findings of the study revealed that Cds, projector, computer and sound system are available Instructional Multimedia in their respective faculties. This implies that the majority of the students indicated that there are Cds, projectors, computer and sound system in their department for use by the lecturers for teaching.

The study also revealed that the majority of the students do not know the exact number of computer sets available in the department. It was also revealed that between one to five sound systems are available in their department.  And the use of computer for teaching in the department is “not very often”, same with projector as indicated by the majority of the respondents. The researcher discovered that the factors that limit the use of multimedia by lecturers in political science include none supportive, inadequate knowledge on the use of multimedia in teaching and learning of political science and lack of understanding on the benefits of multimedia facilities limit the use of multimedia in teaching and learning of political science.

**5.3 CONCLUSION**

There is little doubt that the changing role of education is currently being reinforced with the integration of multimedia technologies. This has led to a new paradigm in education and the evolution of new concepts in content development and a number of innovative methods in which information can be communicated to the learners. This new learning environment will undoubtedly influence the way teachers teach and students learn. This research has presented and discussed the use of multimedia in a learning environment to equip students with high‐order thinking and problem‐solving skills and to enable them to experience an ICT‐oriented learning situation. From the results, we are able to conclude that by integrating multimedia into the teaching and learning process, the conventional traditional method is reinforced and strengthened and a multimedia‐oriented method can be instituted. The multimedia project in this course enabled the students to exercise their creative and critical thinking skills in solving their design and development problems, work collaboratively to gain team‐based experience, and to face the real‐life situation of problem‐solving. This is a student‐centered learning approach which allows them to construct their own knowledge and understanding, and determine their own learning goals. The role of the teacher, on the other hand, changes from the “sage on the stage” to a “guide on the side,” assisting the students in the construction of their knowledge. As such, the use of multimedia technology and project are an innovative and effective teaching and learning strategy because they motivate the students in their learning process and help them to acquire good problem‐solving skills. As evidenced by this project, students became very active participants in their learning process instead being passive learners, and were able to use various digital media elements to accomplish their project.

**5.4 RECOMMENDATIONS**

The following recommendations were suggested by the researcher from the findings of the study:

1. The Nigerian (Federal) government should see Information and Communication Technology (ICT) integration effort at the university as an embracing project to development in education and should support by allocating and releasing adequate funds to invest in massive Internet connectivity, as well as purchase and installation of ICT infrastructures. Also, the university must aim to ensure accessibility, availability and reliability of ICT facilities such that every lecture room and staff offices have computers linked to Internet and have equipment appropriate for accessing a range of electronic resources.
2. If the Federal Government is not forthcoming, the university management can solicit for both internal and external funds and support from willing individuals, philanthropists and international organizations. They can also embark on networking and partnership programs for funds, technical support etc but should ensure that funds or support realized are geared toward sustainability of ICT integration and application efforts.
3. The Federal Government can also help by subsiding or reducing the tariffs on importation of ICT facilities so that lecturers and others can afford the purchase of these ICT facilities and accessories since the price will be lower.
4. It is also recommended that the University lecturers be exposed to a series of training and development skills in the use of these high technology facilities. Integrating the use of technology into curriculum in a purposeful and meaningful way is one of the many problems facing lecturers today. ICT training should be given to lecturers and other members of staff in the university on integration of technology in instruction.
5. Adequate, competent and experienced ICT technical staff must be made available should problems arise.

**REFERENCES**

Al-Oteawi, S. M. (2002). The perceptions of Administrators and teachers in utilizing information technology in instruction, administrative work, technology planning and staff development in Saudi Arabia. (Doctoral dissertation, Ohio University, 2002).

Anao, A. R. (2003). Society, knowledge incubation and management - Lagos. The Guardian Newspapers, November 11, 75.

Ambron, S., & Hooper, K (Eds.). (1990). Learning with interactive multimedia. Redman, WA: Microsoft Press.

Bourner, T. & Flowers, S. (1997). Teaching and learning methods in higher education: A glimpse of the future. Reflections on Higher Education, 9, 77-102.

Breuleux, A., Laferrière, T., &Bracewell, R.J. “Networked learning communities in teacher education”. In S. McNeil, J. D. Price, S. Boger., Mehall, B. Robin, & J. Willis (Eds.), Proceedings of SITE „98, the 9thInternational conference of the Society for information technology and teacher education (pp. 1170‐1175). Charlottesville, VA: ACCE, 1998.

Borghans, L., &ter Weel, Bas,. "Are computer skills the new basic skills? The returns to computer, writing and math skills in Britain," Labour Economics, Elsevier, vol. 11(1), pages 85-98, 2004.

Becker, H. (1986). Computers in the schools. A Recent update. Classroom Computer Learning, January, 96-102. Bergheim, K., & Chin, K. (1984). Computers in the classroom. InfoWorld, September 10, 28-37.

Burnett, G. (1994). Technology as a tool for urban classrooms. ERIC/CUE Digest, 95, New York: Eric Clearing house on Urban Education, retrieved December 21, 2004, from <http://www.ericdigests.org/1994/tool.htm>.

Carlson, S., & Firpo, J. (2001). Integrating computers into teaching: Findings from a 3-year program in 20 developing countries. In L. R Vandervert, L. V. Shavinina & R. A. Cornell (Eds.), Cyber education: The future of Distance Learning. Larchmont, NY: Mary Ann Liebert, Inc, 85-114.

Casanova, J., & Casanova, S.L. (1991). The computer as electronic blackboard: Remodeling the organic chemistry lecture. EDCOM Review, 26.31-33,36-39.

Chira, S. (1990, September 5). Do computers make better teachers? New York Times, p.B6.

Dabalen, A., & Oni, N. (2000). Labour market prospects for university graduates in Nigeria. World Bank Report on Nigeria University system innovation project.

Danebeth, T.G (2013). The effect of multi‐media instruction on student learning. Journal of Education and Practice, Vol.4, No.5. Doolittle (2001). What drives successful technology planning? Journal of Information Technology for Instructor Education, 5(1/2), 46.

Hede & Hede. (2002). Media, communication and national development. Uppsala: Scandinavian Institute of African Studies. pp. 218 – 223.

Jonassen, (2000). Academic library as a learning environment: how do students perceive it? A paper presented at the European Conference on Educational Research. University of Hamburg pp. 17 – 20.

Lindstrom, R. (2004). The Business Week Guide to Multimedia Presentations: Create Dynamic Presentations That Inspire. New York: McGraw‐Hill. Maddux,

Johnson & Wills (2005). Towards developing a profile of ICT use among IPBA lecturers. Jurnal IPBA, Jilid3: Bil 3. Available online at http://apps.emoe.gov.my/ipba/rdipba/cd1/article92.pdf. Accessed on 7th March, 2009.

Nasaruddin F.H , & Ismayatim W.F (2013). Factors Affecting the usage of Multimedia Teaching Tools by University Lecturers. 4th International Conference on Computer Science and Information Technology (ICCSIT'2013) Oct. 6‐7, 2013 Dubai (UAE).

Neo, M & Neo, T. K. (2000). Multimedia Learning: Using multimedia as a platform for instruction and learning in higher education. Proceedings of the Multimedia University International Symposium on Information and Communication Technologies 2000 (M2USIC’2000), PJ Hilton, October 5‐6, 2000, pp S3‐1.1 ‐ 1.4.

Ng, K. H. & Komiya, R. (2000). Introduction of Intelligent Interface to Virtual Learning Environment. Paper presented at the Multimedia University International Symposium on Information and Communication Technologies 2000 (M2USIC’2000), October 5‐6, Petaling Jaya, Malaysia.

Nwagbo, C. (2008). Science, Technology and mathematics curriculum development: Focus on problems and prospects of political science curriculum delivery; 49th Annual conference of science teachers’ association of Nigeria (STAN) pp. 77‐81.

Omagbemi, C.O., Akinola, B.A. & Olayiwola I.B. (2004). Academic libraries, the Internet and it’s potential impact on teaching and learning in Nigerian tertiary institutions. Journal of Library and Information Science, Vol. 1 (1 & 2), pp. 34‐46.

Onotai L. O., Tabansi, P. N. & Asuquo, E. O. (2012), Medical student’s perception of traditional method and multimedia use for lecture delivery at the University of Port Harcourt, Nigeria. International Educational Research journal, Vol. 3(7) pp. 576‐582.

Oshodi, O. (2000). Introduction to instructional media. Lagos: Amazing Grace Press.

Roblyer, M.D. & Edwards, J. (2008). Integrating Educational Technology into Teaching (second edition). New Jersey: Merrill/Prentice‐Hall.

Schwartz, J. & Beichner, R. (2000). The use of ICTs for teaching and learning in Law Education: some innovators’ perspectives. Web Journal of Current Legal Issues, (Web JCLI), Issue 3. Available online at http://webjcli.ncl.ac.uk/2006/issue3/enyon3.html. Accessed on 22nd January, 2009.

Teo, R. & Wong, A. (2000). Does Problem Based Learning Create A Better Student: A Refelection? Paper presented at the 2nd Asia Pacific Conference on Problem –Based Learning: Education Across Disciplines, December 4‐7, 2000, Singapore.

Tapscott, D. (2008). Growing Up Digital: The Rise of the Net Generation. New York: McGraw‐ Hill.