ISSN: 2664-3812 (ONLINE)
ISSN: 2664-3804 (PRINT)

Journal

JOURNAL OF EDUCATIONAL RESEARCH ON
CHILDREN, PARENTS & TEACHERS

African Educational Research &
Development Foundation

Message from the Editor-in-Chief

The journal publishes a broad range of papers from all branches of education relating to childhood, parents and teachers; including but not limited to curriculum, primary and secondary education, higher and adult education, and teacher education.

The Journal of Educational Research on Children, Parents and Teachers is an Interdisciplinary outlet for transformative engagement with research findings that implicate policy and practice within the domain of the educational development of children as well as the impacts of both the parents and teacher practices. For this reason, the journal publishes a broad range of papers from all branches of education relating to childhood to early teens, parents and teachers. Papers that feature curricula developments in the primary, secondary and teacher education are also published by this journal.

It will be pleasant to learn that from 1st January 2020, the Journal of Educational Research on Children, Parents and Teachers becomes a no fees journal outfit under the sponsorship of the African Educational Research and Development Foundation, which is based in South Africa.

EDITOR-IN-CHIEF
Prof. Chinedu I. Okeke
School of Education Studies
Faculty of Education
University of the Free State
Bloemfontein 9301, South Africa

Executive Editors
- Prof. J.W. Badenhorst (Educational Psychology), Department of Postgraduate Studies, Central University of Technology, Welkom Campus, South Africa.

ARTICLES

Comparative effects of digital instructional video and power point presentation on academic achievement and learning retention of basic technology students

Olabiyi, O.S.
University of Lagos, Faculty of Education,
Department of Science and Technology Education Akoka, Nigeria

Ojo, B.
 Federal University, Oye-Ekiti, Ekiti State, Nigeria

Keshinro, O.T., & Okeowo, S.O.
School of vocational and technical education
Adeniran Ogunsanya College of Education, Otto/Ijanikin, Lagos, Nigeria

Abstract

The study compared effects of digital instructional video (DIV) and Power point Presentations (PPP) on academic achievement and learning retention of Basic Technology students. Pre-test, post-test non-equivalent control group, a quasi-experimental research design was adopted. The population for the study comprises of 250 Basic Technology students in five public and private junior secondary schools in Lagos State. Purposive sampling technique was adopted to sample the schools that teach with the application of multimedia tools. Three research questions and three null hypotheses were tested at 0.05% level of significance. The instrument used for data collection was the Basic Technology Achievement Test (BTAT). The reliability coefficient of the instrument yielded 0.83 using Cronbach Alpha. Mean were used to answer research questions, while ANCOVA was used to test the null hypotheses. The study revealed that students taught Basic Technology with PPP had a higher mean score than students taught using the DIV technique in the achievement test. Furthermore, multimedia presentation increased students' academic achievement while PPP improved students' academic achievement in Basic Technology than digital instructional video presentations. Consequently, it was recommended that Basic Technology teachers should improve the academic achievement of their students by incorporating multimedia tools into teaching as a viable and effective strategy to enhance students learning.

Keywords: *Achievement Test. Basic Technology. Digital Instructional Video. Multimedia. PowerPoint.*

Introduction

Since independence, 1960, Nigeria has built many educational and training institutions and has also developed one form of education or the other to develop citizenry, whether indigenous or western education which specifies a range of curricular and educational systems. The range determines to a large extent the methods, techniques,

and materials used in curricular delivery. The body of knowledge in the school system is usually classified into small units called subjects. One of these subjects is Basic Technology. Basic Technology is one of the pre-vocational courses of study in Technical Vocational Education and Training (TVET). TVET promotes an understanding of various aspects of the industry, technology, and the broader environment while developing in students' specific manipulative and cognitive skills (Olabiyi, 2005). Basic Technology as enshrined in the National Policy on Education (Federal Republic of Nigeria, 2013) is a compulsory pre-vocational subject at the Junior Secondary School (JSS) in Nigeria which is aimed to prepare students for the future career. It includes counseling on career choices, skills gaining and professional ethics. Basic Technology as a subject is of great importance and relevance to Nigeria's economy because it is fundamental to the basic knowledge required in various fields of study (Aluwong, 2002).

The purpose of Basic Technology is to contribute to the achievement of the National Education Goals. Therefore, Basic Technology as a pre-vocational subject is designed among others to provide prevocational orientation in Technology, to provide basic technological literacy for everyday living and to stimulate creativity. Basic Technology is based on the understanding that the world is increasingly driven by technology. This is the major reason why the Basic Technology curriculum was revised to reflect the national policy orientation of teaching technology and the world globalization trends in education. The responsibility of every nation and school is to provide opportunities for all to acquire technological literacy and this is in line with the current goals of the National Economic Empowerment and Development Strategies –(NEEDS), (NERDC, 2007) (Federal Republic Nigeria, 2013).

Basic Technology is a foundation subject at the Junior Secondary School (JSS) level meant to provide the basic knowledge and skills in technology. Basic Technology as one of the pre-vocational subjects is a unique and multi-disciplinary subject that covers a very large area and draws from many other disciplines in TVET. The revised Basic Technology Curriculum covers the following nine themes: You and technology (ICT inclusive), safety, materials, and processing, drawing practice, tools and machines, applied electricity and electronics, Energy and power, maintenance and building. The major difference in the curriculum content of the Introductory Technology and that of Basic Technology is the Information and Communication Technology (ICT) that was introduced as a topic under "You and Technology" and also the conceptualization of the themes as well as the change in the name from Introductory Technology to Basic Technology (NERDC, 2007).

The contents under each theme are made to reflect the basic nature of technology; where the knowledge, skills, creativity, and attitude needed by the students are explained in detail. Whereas the objectives and the contents of the curriculum of Basic Technology are laudable, numerous impediments are affecting the teaching and learning of the subject in Nigerian schools which are likely to obviate the realization of the objectives. Some studies have tried to identify the problems affecting the teaching and learning of Basic Technology, while others have attempted to proffer solutions. Looking at the Nigerian schools and how far the objectives have been realized, one must be concerned with how best to attain the objectives of Basic Technology. Over the years, academic achievement in Basic Technology has been lower than in other

subjects. One may want to find out the reasons why the achievement of students in Basic Technology that is a core subject, has been so low over the years at the Junior Secondary School Certificate Examination (JSSCE) in Lagos State.

The academic achievement in Basic Technology has consistently been lower than other core and other selected elective subjects. According to Ogbeide (2010), the low academic achievement in Basic Technology needs to be investigated by educators if the nation must advance technologically. Stressing the low educational achievement of students in Basic Technology, Akinyede and Uwameiye (2010) stated that: the very low achievement in Basic Technology by Junior Secondary School leavers should worry everyone concerned with Science and Technology Education in Nigeria. Akinyede and Uwameiye (2010) further pointed out that the JSSIII results in Basic Technology in recent years is 30 percent failure or above on the average.

Achievement is an accomplishment, attainment, completion, fulfillment, performance or realization. Academic achievement or performance is the outcome of education, that is, the extent to which a student, teacher or institution has achieved their educational goals (Wikipedia, 2019). Academic achievement according to Wikipedia (2019) is commonly measured by examination or by continuous assessment but there is no general agreement on how it is best tested or which aspects are most important, the procedural knowledge such as skills or the declarative knowledge such as facts. Whichever knowledge and whatever aspect that is being tested, academic achievement is the level of the individual attainment on learning task which may be high or low. The high and low attainment is due to individual differences and the individual differences influence academic achievement (Stumm, Sophie, Hell & Thomas, 2011). Academic achievement can also be referred to as a measure of how much an individual has accomplished after a course of instruction or training. In the school setting, it may be measured by the score of the student with others in the class test or examination.

The academic achievement of a school child in any school subject can be attributed to many factors. Uwameiye, Guobadia, Olaitan and Obiaha's studies as cited in Nwachukwu, (2004) stressed that the factors responsible for this low achievement could be associated with poor teaching methods, socio-economic, gender, and minimum equipment as well as fund. These factors as expressed by these researchers could contribute positively or negatively to the academic attainment of a school child. One of these factors that are of interest to this study is the teaching method. Research evidence showed that the major problem students are facing in passing Basic Technology at JSS examination is traced to the teaching method employed by the teacher to impart the knowledge. Adepoju (2006) points out that students encountered difficulties in learning when they are instructed using the verbal approach.

Achieving the objectives of teaching Basic Technology requires effective teaching methods. The teaching method can be explained as the method a teacher employs to deliver his/her subject matters to students, based on pre-determined instructional objectives, to promote learning in students and to facilitate the accomplishment of the set objectives. What a teacher does in the classroom depends to some degree upon his approach to learning situations. Correct use of an appropriate teaching method is critical to successful teaching and learning. Ndagana and Onofade (2000) observed

that no method has been the best for every situation. However, a carefully designed teaching method can make making learning more effective, Ndagana and Onofade (2000) further explained that the success in the use of the method depends on an intelligent analysis of the educational objectives, a student in the class, the curriculum content or type of subject matter being taught.

Armstrong (2000) posited that teachers must diversify their instructional techniques if they are to successfully reach students of different abilities and learning preferences. Technology tools have been introduced for teaching. Technology tools are electronic devices used for accessing, processing, gathering, manipulating, presenting and communicating information. The application of technology tools in teaching and learning refers to the use of tools to make learning more interesting, motivating, stimulating and meaningful to the students. The teaching and learning materials using technology tools are designed to accommodate differing needs and abilities which may result in the fuller realization of students' capabilities and potentials and allowing students to take greater responsibilities for managing their learning (Levin, 2002). Technology tools facilitate the implementation of Basic Technology, the provision of learning content, and communication between teachers and learners. To enhance students' academic achievement, interactive methods of teaching are selected. The interactive method of teaching is the use of interactive media in the classroom setting.

Interactive media is explained as the integration of digital media including combinations of electronic text, graphics, moving images, and sound into a structured digital computerized environment that allows individuals to interact with the data for appropriate purposes. The digital environment includes the Internet, telecoms, interactive video, power point and interactive digital television (Andy Finney, 2002). One method through which students' academic achievement and retention in learning can be improved is the use of the multimedia method. Multimedia technique, according to Onwuka (1981), makes schoolwork real, uses students' experiences, motivates natural interest, promotes retention of learned materials, and carries students forward in clearly defined terms. It also minimizes waste of time, eliminates irrelevant materials from the curriculum and emphasizes creativity. According to Onwuka, this method is an excellent means of fostering cooperation amongst learners. Considering the advantages of power point and digital video method of teaching, this study is undertaken to compare the effects of both methods of teaching in improving the academic achievement of Basic Technology, since learning style preference varies between students, the most effective mode of instruction will also vary. This research work aims at comparing the effects of digital educational video and power point presentation on academic achievement and learning retention of Basic Technology students.

PowerPoint Presentation (PPP) is one of the interactive methods of teaching. It is more structured and interesting to students/audiences than other methods (Amare, 2006). It is a computer-based training tool that provides stable presentations in lecture halls and conference rooms. It is used in over 30million presentations a day and its software is on 250million computers world-wide (Alley & Neeley, 2005). Several studies have suggested that graphics improve students' memory ability (ChanLIn, 2000). Other researchers also reported a corresponding increase in students' performance in courses where it was adopted (Stolo, 1995; Susskind,

2005; Szaba & Hastings, 2000). PPP can be as simple as a few texts on a color screen or as complex where tables, pictures, graph, sound effects, visual effects are inclusive. The effectiveness of PPP and other multimedia like Instructional Video presentations may, however, depend on the complexity of the topic that is being presented. Several researchers have demonstrated that materials, such as graph aided charts are interesting but extraneous texts (Schraw, 1998). However, the Power point used in this study does not involve audio.

Digital instructional video is another multimedia that combines motion, color and sound for a better understanding of ideas. Instructional Video, otherwise called Digital Educational Video (DEV) is one of the Interactive media that shows/projects motion pictures, when the picture is a significant factor of a subject. Educational films are always in black and white, but sometimes in color. Video embedded in PPP files or shown separately on television shows historical footage or re-created events, it can also demonstrate processes or events that cannot easily be replicated in a laboratory or slow down and analyze motion (Farrant, 1981, Kemp & Smellie, 1989; Wittich & Schuller, 1973). Interactive learning occurs when a student pulls together the knowledge and skills acquired from information and experiences provided by the teacher. The student is engaged both intellectually and emotionally thus feedback, reflection and dialogue are integral components of interactive learning (Blythe-Lord, 1991).

Besides technology tools, gender is another factor that influences the achievement of students, Okeke (2008) gave a broad analytical concept which draws out women's roles and responsibilities with those of men. According to Okeke, gender refers to the socially culturally constructed characteristics and roles that are ascribed to males and females in any society. Gender is a major factor that influences career choice and the subject interest of students. Okeke (2008) described the males' attributes like bold, aggressive, tactful, economical use of words while the females are fearful, timid, gentle, dull, submissive and talkative. It may be the reason Umoh (2003) stated that more difficult works are usually reserved for males while the females are considered feminine in a natural setting. Thus, in schools, males are more likely to take too difficult subject areas like technical while the females take to the career that will not conflict with marriage chances, marriage responsibilities and motherhood (Okeke 2008). This created fewer job areas available for women, which might be of low status and low income.

Gender issues are currently the focus of discussion and research all over the world, Nigeria inclusive. The question of gender is a matter of vital concern, especially among academics and policy formulators. Intellectuals are worried about the role of male and female in the psychological, political, social, economic, religious, scientific and technological development of nations. Meanwhile, concerns about academic achievement concerning males and females have generated considerable interest in the field of TVET over the years. Differences in the academic achievement of the two genders are likely to contribute disparities in the allocation of cognitive roles in the world of work.

Also, because today's children have grown up with a different digital landscape than their teachers (Jukes, 2008), they, most likely, are inspired and motivated by different

technology. Today's digital natives speak a different language than their teachers do (Prensky, 2001). For these reasons, students of the 21st century may retain more information if it comes to them through a digital medium. In a more digital world, multimedia tools are better for a student's memory (Miller, 2009). SMART boards, digital "clickers," and computers all spur interest in a child and are more likely to motivate a student to perform at his or her highest level, multimedia tools that promote content creation among students, such as videos, audio podcasts, and web pages, are more effective strategies than traditional methods Miller added. Instead of memorizing facts for a test, teachers want their students to retain the information longer than a week. Because of the pressures of standardized tests, teachers must find different ways to teach the required curriculum and help students retain the necessary information.

Statement of the problem

The understanding of the Federal Government of Nigeria is that Basic Technology would contribute to the national goal of education since the world was increasingly driven by technology. The teaching of the subject has been faced with numerous problems that can impede the realization of the objectives. One of such problems is the low academic achievement in the subject. Over the years, student achievement in Basic Technology has been so low that Basic Technology has the highest percentage failure and the lowest percentage pass at the JSSCE for the past 10years (2005-2015) compared to the other core subjects at the junior secondary school level. How to achieve the objectives of Basic Technology has been a major concern to educators. Some researchers have tried to identify some of the problems affecting the teaching and learning of basic technology but it seems the problem of low academic achievement is a persistent one and has reached a level that should worry everyone concerned with the technological development of the nation. It is, therefore, imperative that the state of academic achievement in Basic Technology should be re-appraised so that possible solutions could be offered to remedy the present situation in the teaching and learning of the subject. There are always differences in the academic achievement of students in the same class even when taught by the same teacher. This means that the rate of achievement varies may be as a result of certain factors such as teaching methods, gender, and students' attitude. Thus, there may exist gaps or disparities in the academic achievement of students based on the influences of these variables. Influences resulting in low academic achievement do not favor national development, and therefore, ought to be minimized. Therefore, the study was designed to compare the effects of digital video and power point presentations on academic achievement in Basic Technology to improve on the academic achievement in the subject in Lagos State.

Purpose of the Study

The study was guided by the following purposes:
1. Compare mean academic achievement of Basic Technology students taught using Power point Presentation (PPP) and digital Instructional video (DIV).
2. Compare the mean performance learning retention of Basic Technology students taught with digital Instructional video (DIV) and PowerPoint Presentation (PPP).
3. Influence of gender on students' academic achievement in Basic Technology

Research Questions
The following research questions were raised to guide the study.
1. What are the mean academic achievement scores of Basic Technology students taught with digital educational video and PowerPoint Presentation?
2. What are the mean performance retention scores of learning of Basic Technology students taught with digital Instructional video and Power point Presentation?
3. What is the influence of gender on the academic achievement of students in Basic Technology?

Hypotheses
The following null hypotheses tested at 0.05% level of significance guided the study.
1. There is no significant difference in the mean academic achievement score of Basic Technology students taught with a digital instructional video and Power point Presentation as measured by the Basic Technology Achievement Test (BTAT).
2. There is no significant difference in the mean performance retention score of Basic Technology students taught with a digital instructional video and Power point Presentation as measured by the Basic Technology Achievement Test (BTAT).
3. There is no significant influence of gender (male and female) on the academic achievement of students in Basic Technology as measured by the Basic Technology Achievement Test (BTAT).

Methodology
Research Design
The research design employed was the quasi-experimental design and non-randomized, pre-test/post-test. The subjects were not randomly assigned to groups rather intact classes were randomly assigned to experimental and control groups. The design is symbolically represented as follows:

Treatment Group I $O_1 X_1 O_2$
Treatment Group II $O_3 X_2 O_4$

Key: X_1 = treatment with Power point Presentation
     X_2 = treatment with Instructional Video
     O_1 = pre-test scores of the group treated with Power point Presentation
     O_2 = post-test scores of the group treated with Power point Presentation
     O_3 = pre-test scores of the group treated with Instructional Video
     O_4 = post-test scores of the group treated with Instructional Video

Area of the study
The study was carried out in five public and private junior secondary schools where teachers employ the use of multimedia (power point and instructional video) in teaching basic technology in Education District four of Lagos State, in the South-west of Nigeria.

Population of the study

The population sample for the study consisted of 250 students of Basic Technology in five public and private junior secondary schools in Lagos. Purposive sampling technique was adopted and used to sample the schools that teach Basic Technology with the application of technology tools for lesson delivery.

Instrument for data collection

The instrument used for data collection was the Basic Technology Achievement Test (BTAT). BTAT was based on standardized test items from the National Examination Council Junior Secondary Certificate Examination (NECO JSCE). The BTAT contained 80 multiple choices of items, 40 for the pre-test and 40 for the post-test of four options. The topics covered the entire Junior Secondary Schools year I and year II curriculum for Basic Technology. The topics were taught with the application of digital educational video and power point presentations.

Lesson plan

A set of the lesson plan was written based on power point presentation, which was used to teach the experimental group, while the control group was taught using a digital instructional video set of lesson plans.

Validation of instrument

Face and content validity of the study instrument and the lesson plan were ascertained by three lecturers in the Department of Science and Technology Education and two experts from the Technical Department of Education District V, Agboju, Lagos. The recommendations and suggestions given by these experts were used to modify and improve the test instrument and lesson plan

Reliability of the Instrument

The reliability coefficient of the Basic Technology Achievement Test (BTAT) was established using Cronbach Alpha reliability. The reliability coefficient of BTAT was 0.86.

Training of the basic technology teachers as research assistants for the study

A week induction training program was organized for the teachers that used a power point presentation lesson plans. The teachers were given a detail explanation on the use of power point and digital educational video and other research expectations. The training exercise was based on the aim and objectives of the research, the topic to be tutored, the use of lesson plans, and the use of the Basic Technology instrument and general conduct of the study.

Experimental procedure: The conduct of the study took place during the normal school lesson periods. The normal timetable of the schools used for the study was followed. The regular school Basic Technology teachers were used. On the first day, before the lesson commences, the instruments BTAT was administered as a pre-test to the two groups after which proper teaching commenced by using the prepared lesson plans. The experimental group was taught using power point presentation while the control group was taught using digital instructional video the

selected topics by the research assistants. The two groups were taught using researcher-designed lesson plans respectively. The treatment lasted for six weeks. After teaching for six weeks, the two groups were post-tested. The scores obtained from both groups were compared to determine if there was any significant difference in the performance of the two groups. The data collected was used for further analysis. Therefore, they were collected and kept under the custody of the researcher.

Method of data collection
Each student was given a pre-test of the Basic Technology Achievement Test (BTAT). Lesson delivery styles were Power point presentations and digital instructional videos (i.e., lesson with slides) in the Basic Technology subject. In Power point presentations involved both instructor and graphics presentations, the presentations were made to reflect on the screen from a laptop using Power point software, basic text, tables, and diagrams relating to topics were presented On the other hand, digital instructional video, presentation involved instructor and the corresponding graphics presentations, the presentations on the Television screen from the recorded Video cassette played on the Video player connected to Television. Only basic text, tables, and diagrams relating to the topic were presented and the presentations were supported by verbal illustrations for student's easy understanding. Both groups were taught the same topics by the same regular Basic Technology teachers and at the scheduled time.

Method of data analysis
The research questions were answered using the mean of the pre-test and post-test scores. The Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05% level of significance

Results

Table 2: Mean of Pre-test and Post-test Scores of Learning Retention in Basic Technology Achievement Test (BTAT)

Group	N	Pre-test	Post-test	Retention Test
Power point Presentation	135	19.47	27.47	29.18
Digital Instructional Video	115	18.77	27.67	29.02

The mean score for the retention test for power point presentation (experiment group) was 29.18 when compared with digital instructional video (control group) with the mean score on the retention test 29.02, the difference is 0.16 points. To see whether there was a significant difference between the groups, the ANOVA analyses were carried out.

The ANOVA shows a significant difference between the groups at the retention test $F_{(2, 99)} = 3.316$, $p < 0.040$. Post hoc comparisons indicated that the difference is between experiment group A and experiment group B, Dunnett t= -2.543, p <.051.

Table 3: Mean of Pre-test and Post-test Scores of Male and Female in Basic Technology Achievement Test (BTAT)

Power point Presentation	Digital Instructional Video

Gender	N	Pre-test	Post-test	Mean diff. $\overline{X}$	N	Pre-test	Post-test	Mean diff. $\overline{X}$
Male	74	7.28	13.08	5.80	68	7.02	12.26	5.24
Female	63	5.82	7.94	2.12	45	6.52	6.88	0.36

The data presented in Table 3 showed that male students taught with power point presentation had a mean achievement score of 7.28 in a pre-test, and a mean score of 13.08 in post-test, making a pre-test, post-test mean a difference in a power point presentation in the BTAT for the male to be 5.80. Meanwhile, the female students taught with power point presentations had a mean score of 5.82 in the pre-test and a post-test mean of 7.94 with a pre-test, post-test mean difference of 2.12. Also, male students taught with digital instructional videos had a mean score of 7.02 pre-test and a mean score of 12.26 in the post-test making a pre-test, post-test mean a difference in the male students taught with a digital instructional video to be of 5.24. Meanwhile, female students taught BTAT with digital instructional videos had a mean score of 6.52 in the pre-test and a post-test mean of 6.88 with a pre-test, post-test mean difference of 0.36. With these results, the male students taught BTAT had a higher mean score than the female students. This means that gender influences the academic achievement of male and female students measured by the BTAT.

Discussion

The analysis of data presented in Table 1 indicates that students in the power point presentation group had better mean scores compared with their counterparts in a digital instructional video in both pre-test and post-test. The differences in the mean scores in the pre-test may, however, be attributed to the initial difference in the knowledge and skills possessed by the students in both groups before the treatment. The post-test result implies that students taught with power point presentation perform better than those taught with digital instructional video group. This result stands as evidence that Power point Presentation method has positively affected student achievement test in Basic Technology. This agrees with Bartsch and Cobern (2003), and Gonen and Basaran (2008) who revealed that Power point-aided education facilitated learning, attracted students' attention and enhanced their motivation. Also, the teaching method that incorporates Power point Presentation positively affected student academic achievement and retention. Additional studies support this view (Bartsch & Cobern, 2003; Gok & Sılay, 2008). The work is also in agreement with Szabo and Hastings (2000) who emphasized that power point presentation helps to keep students' interest and attention on the lecture (, improves student learning (Lowry, 1999), and aids explanations of complex illustrations (Apperson, Laws, & Scepansky, 2006). Gambari and Olumorin, (2013) also stressed that power point presentation made students work better, allow students to do more work in a short time. Thus, give room to greater productivity.

Furthermore, the study is in support of the view of Bartsch and Cobern, (2003) and Gok and Sılay, (2008) who stressed that complex shapes that provided a suitable enough rendition of the original image cannot easily be achieved in the instruction video presentation. However, texts and complex figures in a PPP can be easily achieved from the computer/laptop onto a screen. In this way, color and concrete presentation of graphics helps students to understand better and remember

knowledge during examinations because such graphics are identical to the original image. Therefore, the rationale behind the success of the students in the power point presentation group stems from the alleged views. According to the present research results, a teaching method that incorporates Power point Presentation positively affected the student academic achievement and learning retention.

When learning occurs, students will place relevant words into their auditory working memories and relevant images into their visual working memories. They then organize the information separately in their auditory and visual memory and, finally, integrate these representations with prior knowledge. This idea has been supported by Mayer's cognitive theory of multimedia learning (2001). Similar discussions had been put forward by El-Ikhan (2010) and Moore (1993), who highlighted that Power point-aided education, enhanced an adult student's success, attention, and motivation. It was argued that Power point increases visual quality in the learning process. They also contend that it takes less time to present a subject matter; therefore, more materials can be covered in the classroom. Opponents of Power point, however, believe that it diminishes creativity and innovation besides elevating format over content, betraying an attitude of commercialism that turns everything into a sales pitch (Tufte, 2003). On the other hand, Creed (1997) describes Power point as a teacher-centered instructional tool that nourishes teacher-controlled lectures. Similarly, Tufte (2006) points out that Power point reduces the analytical quality of a presentation, limits the amount of detail that can be presented, and often weakens verbal and spatial thinking.

Conclusion

The choice of instructional method is a factor in the delivery of a curriculum and consequently impacts on the quality of performance of the recipients. The use of power point presentation as a teaching aid and an instructional technique would generally aid students' motivation, skill development, and subject matter assimilation. Students learn better when they are allowed to participate actively in the class by interacting freely with the teacher and their peers, working in groups and using interactive computer software to perform tasks. Furthermore, the findings are supported by other studies conducted by El-Ikhan (2010) and Tao (2001). They stated that the teaching method that includes the presentation of graphics (slides) had a positive effect on student achievement at every teaching level.

The concept of a student-centered approach to teaching and learning would be better articulated using powerpoint presentations since the application of multimedia can positively, if developed appropriately, complement the teachers' pedagogy. The present study provides information on the contributions of intelligent use of Power point Presentations to the academic community. The findings also shed light on students' understanding of the scientific concepts and how best they (students) can apply the principles in real-life situations. Additionally, the results give insights into how classroom teachers can improve student performance in the classroom setting.

Recommendations

Based on the findings of the study, the following recommendations are made: Basic Technology teachers should improve the academic achievement of their students by incorporating multimedia into the teaching and learning process as a viable and

effective strategy created to enhance students learning. Also, ministry of education through science and technology education should organize seminars, conferences and workshops to sensitize Basic Technology teachers on the use of multimedia tools and to ensure availability of the facilities for teacher and students use.

References

Akinyede, B. O. & Uwameiye, R. (2010). Effective teaching and learning of Basic Technology in Nigerian Schools: *Ekiadolor Journal of Education*. 17(1), 17 -23

Alley, M., & Neeley, K. (2005). Discovering the power of power point: Rethinking the design of presentation slides from a skillful user's perspective. In Proceedings of the 2005 American society of engineering education annual conference and exposition, Portland, Oregon, June 12 –15.

Aluwong, S.W. (2002). The Impact of goal structures on students' performance in Accounting.

Annie Ward, H.W. & Stoker, M.M. (1996). Achievement and ability tests-definition of the domain, educational measurement 2, University Press of America.

Apperson, J. M; Laws, E. L. & Scepansky, J. A. (2006). The impact of presentation graphics on students' experience in the classroom. Computers & Education, 47, 116–126.

Bartsch, R. A. & Cobern, K. M. (2003). Effectiveness of power point presentations in lectures. Computers and Education, 41(1), 77-86.

Blythe-Lord, R. (1991). The educational media design handbook. London Macmillan

Chan Lin, L. J. (2000). Attributes of animation for learning scientific knowledge. *Journal of Instructional Psychology,* 27, 228 –238.

Creed, T. (1997). Power point, no! Cyberspace, yes! The National Teaching and Learning Forum, 6. Retrieved from http://www.ntlf.com/temp/backup/power point.htm Doi:10.5901/jesr.2015.v5n2p101 Educational Psychology, 90, 3-12.

El-Ikhan, K. K. (2010). The advantages and disadvantages of teaching with Power point. Retrieved from http://www.penalido.wordpress.com/theadvantages.

Farrant, J. S (1981). *Principle and practices of education*: London; Longman

Federal Republic of Nigeria (2013) *National Policy on Education.* Lagos: NERDC. Press.

Gambari, A. I., & Olumorin, C. O. (2013). Effectiveness of video-based cooperative learning strategy on high, medium and low academic achievers. The African Symposium: An Online *Journal of the African Educational Research Network,* 13(2), 77-85.
http://www.hfmboces.org/HFMDistrictServices/TechYES/PrenskyDigitalNatives.p df

Jukes, I. (2008). Understanding digital kids (Dks.): Teaching and learning in the new digital landscape. Retrieved November 19, 2009. From: http://www.hmleague.org/Digital%20Kids.pdf

Kemp, J. E. & Smellie, D. C. (1989). Planning, Producing and Using Instructional Media (Sixth Ed.). New York: Harper & Row publisher.

Miller, M. (2009). What the Science of Cognition Tells Us About Instructional Technology. Change, 41(2), 16-17. Retrieved November 28, 2009, from Research Library. DOI: 1667020291

Moore, D. M., Burton, J. K. &. Myers, R. J (1996). Multiple-channel communication: the theoretical and research foundations of multimedia.   Semantic scholar 997-109

Nigerian Educational Research and Development Council (2007). 9-Year Basic Education Curriculum, Basic Technology for JSS 1 – 3, Abuja, Nigeria.   NERDC Press.

Ogbeide, J. O. (2010). Some Correlates of Enrolment in Introductory Technology in the Western part of Nigeria. (Unpublished M.Ed. Project). University of Ibadan, Ibadan.

Okeke, E.A.C. (2008). Clarification and Analysis of gender concepts. Focus on Research, Reproductive Health Education, and Gender-sensitive classrooms. *Science Teachers Association of Nigeria-Gender and STM Education*, 2: 5-8.

Oriakhi, U. & Ujiro, I. (2015) Influence of Gender on Students' Academic Achievement in Government Subject in Public Secondary Schools in Oredo Local Government Area of Edo State, Nigeria. *Journal of Educational and Social Research.*5 (2), 101-106

Prensky, M. (2001, October). Digital natives, digital immigrants. On the Horizon, 9(5), Retrieved   November 19, 2009, from Psychology, 22, 138-141.

Schraw, G. (1998). Processing and recall differences among seductive details. *Journal of Educational Psychology*, 90, 3-12.

Stolo, M. (1995). Teaching physiological psychology in a multimedia classroom. Teaching of Psychology, 22, 138-141.

Stumm, V., Sophie, D., Hell, M. & Tomas (2011). The Hungry mind: Intellectual curiosity is the Third pillar of academic performance. Perspective on psychological science 6(6), 574 – 588S

Sungur, S., & Tekkaya, C. (2003). Students' achievement in human circulatory system unit: The effect of reasoning ability and gender. *Journal of Science Education and Teaching,* 12(1), 59-64.

Susskind, J. (2005). Power point's power in the classroom: Enhancing students' self-efficacy and attitudes. Computers & Education, 45, 203 - 215.

Susskind, J. E. (2005). Power point's power in the classroom: Enhancing students' self-efficacy and attitudes. Computers and Education, 45(2), 203-215.

Szaba, A. & Hastings, N. (2000). Using IT in the undergraduate classroom: should we replace the blackboard with Power point? Computers & Education, 35, 175-187.

Szabo, A., & Hastings, N. (2000). Using IT in the undergraduate classroom: Should we replace the blackboard with Power point? Computers & Education, 35, 175–187.
Theoretical and Research Foundations of Multimedia. In Handbook of Research for Educational Communications and Technology, Edited by D. Jonassen. (New York: Simon & Schuster Macmillan).

Tufte, E. R. (2003). Power point is evil
http://www.wired.com/wired/archive/11.09/ppt2.html

Tufte, E. R. (2006). The cognitive style of Power point: Pitching out corrupts within (2nd Ed.). Cheshire, CT: Graphics.

Udry, J.R. (1994). The nature of gender, Demography, 31(4); 561-573

Umoh, C.G. (2003). A theoretical analysis of the effects of gender and family education on human resources development. Journal of curriculum organization of Nigeria. 10 (1) 1-4. Unpublished Ph.D. Thesis, Ahmadu Bello University, Zaria, Nigeria.

Wikipedia (2019). Academic achievement. *Definitions.net.* STANDS4 LLC, <https://www.definitions.net/definition/academic+achievement>

Wittich, A. W. & Schuller, F. C. (1973)**.** *Instructional technology; its nature and use.* New York: Harper & Row publishers

Acknowledgements

Call for manuscripts

Researchers, scholars, teachers, administrators, specialists, and advanced graduate students are invited to submit manuscripts. Journal of Educational Research on Children, Parents and Teachers, is seeking theoretical and empirical articles that seek to advance knowledge and theory of the education on the welfare of children, teachers and parents in education. Papers that derive data from quantitative, qualitative and mixed-methods approaches will be given consideration. Papers may be submitted by prospective authors at any time of the year for consideration. This journal is published quarterly in both online and print versions.

Aims and objectives

The Journal of Educational Research on Children, Parents and Teachers, is a publication of the African Educational Research and Development Foundation (AERDF). The journal publishes theoretical and empirical articles that seek to advance knowledge and theory of the education on the welfare of children, teachers and parents in education. Papers that derive data from quantitative, qualitative and mixed-methods approaches will be given consideration. It is equally important to note that views expressed in articles published by the Journal of Educational Research on Children, Parents and Teachers do not necessarily reflect the positions of the African Educational Research and Development Foundation.

Submission requirements

Welcome to the Journal of Educational Research on Children, Parents and Teachers (ERCPT Journal) – bringing you high a quality journal and articles by Professionals. The Journal of Educational Research on Children, Parents and Teachers is a high-quality research journal that is published by the African Educational Research and Development Foundation (AERDF). It provides a platform for researchers, academicians, professional, practitioners and students to impart and share knowledge in the form of high quality empirical and theoretical research papers, case studies, literature reviews and book reviews. Manuscripts can be emailed to: ercptaerdf@gmail.com and okekeco@ufs.ac.za

Author details
These must include full names, institutional affiliation and physical address, and email addresses of all participating authors. In the case of multiple authors, the corresponding author should be stated.

Publication language
English language (USA or UK English but not both in same manuscript)
Manuscript types
Original articles, position or theoretical papers, book reviews

Manuscript preparation
Manuscripts must follow the most conventional approach including title, abstract (maximum of 200 words), keywords (between 5 and 7), introduction, literature review, methodology, findings, discussions and references. Note that tables, figures and appendices (if any) must be part of the main manuscript.

Ethics and conflict of interest
All forms of contributions and sponsorships must be acknowledged, and declarations must be duly reported in the manuscript.

Word limit
Minimum: 5000; maximum: 8000 including references, tables, figures and appendices.

Submission format
MS Word, Font size is 12, and Font style is Ariel

Referencing style
Journal of Educational Research on Children, Parents and Teachers follows the citations and referencing style consistent with the American Psychological Association (APA) and the Harvard Manuscript preparation styles.

Publication charges: No charges
Manuscripts' submission and publication in this journal is from henceforth free. The Journal of Educational Research on Children, Parents and Teachers is the official journal of the African Educational Research and Development Foundation. From 1st January 2020, accepted papers are published at no author or page fees. This journal charges no fees for the publishing of accepted papers.

ABOUT THE AFRICAN EDUCATIONAL RESEARCH & DEVELOPMENT FOUNDATION

Welcome to the AFRICAN EDUCATIONAL RESEARCH & DEVELOPMENT FOUNDATION (AERDF) - providing a platform for academics from Africa and beyond. The central aim of the African Educational Research & Development Foundation (AERDF) is to provide the formal platform for academics across the Continent of Africa and beyond to engage with academic research and the dissemination of the product of such research endeavour in a more professional and coherent manner.

ABOUT US

The establishment of the African Educational Research & Development Foundation (AERDF) represents a major step at providing the much-needed professionally coherent Continental platform for academics within the Continent of Africa. This is because it provides the opportunity for researchers and academics from different research tradition to work together for a common good-engaging in research as well as disseminating the outcomes of such research with a clear mandate aimed to impact the provision of educational services within the Continent. Africans in postgraduate studies, academics and researchers are encouraged to be a part of this initiative. The Journal of Educational Research on Children, Parents and Teachers, is a publication of the African Educational Research and Development Foundation (AERDF). The journal publishes theoretical and empirical articles that seek to advance knowledge and theory of the education on the welfare of children, teachers and parents in education.

Joining the Association

If you would like to join the African Educational Research and Development Foundation (AERDF), you can download an application form from: https://ercptjournal.org/ and email it to: ercptaerdf@gmail.com. Membership is free.

ARTICLES