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INTERACTIVE EFFECT OF POWERPOINT INSTRUCTIONAL PACKAGE AND ACADEMIC PERFORMANCE OF EDUCATIONAL TECHNOLOGY STUDENTS IN THE UNIVERSITY OF CALABAR

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ABSTRACT

The study examined the interactive effect of PowerPoint instructional package on academic performance of Educational Technology students in the University of Calabar. One null hypothesis was formulated to guide the study. The study employed the pre-test – post-test non-randomized control group design to select 180 Educational Technology students. Educational Technology Performance Test (ETPT) was the instrument used for data collection, with reliability co-efficient of 0.72. The data from the respondents were analysed using analysis of covariance (ANCOVA). The finding of the study revealed that there was a significant difference between the performance of students taught Educational Technology using PowerPoint instructional package and those taught using the conventional expository method, in favour of those taught using PowerPoint instructional package. Based on the finding, it was recommended that PowerPoint instructional package should be used as an instructional tool to enhance students' academic performance in Educational Technology in the University of Calabar.

Keywords: Power point, Instructional package, Academic performance, Interactive effect.

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1 Introduction

The relevance of Information and Communication Technology (ICT) for effective instructional delivery particularly in this era of technological breakthrough cannot be overstated. The need to provide effective instructional delivery in Nigerian tertiary institutions through utilization of ICT cannot be overemphasized. This is because the world has turned into a global village in the use of ICT devices, transforming the traditional method to the use of electronic and allied media devices with the view to enhance

quality instruction in tertiary institution. In traditional classrooms, a teacher's basic instructional tool for displaying information are chalkboards, multipurpose board, peg-broad, bulletin board and flip chart (Heinich, Mollenda, & Russel, 1999).

Pedras and Horton (1996) note that the tools of many professions are changing at an incredible rate and that education is no exception. The impact of technology has led to increased use of computers for presenting information in most of today's classrooms. Ljungdahi (2000) found PowerPoint technology to be one of the most widely used software application programmes in the area of education preparation programme and local public schools. PowerPoint, a standard part of the Microsoft Office software package, is used for preparing a sequence of slides that are displayed to the audience on a computer-guided monitor. Presentation development with this type of software can be saved digitally and easily modified, facilitating future use (Yao & Wang, 2000). Using computer presentation programms as Microsoft PowerPoint allows teachers to include chart clip, art photographs, sound or video segments to demonstrate concepts.

To come on board with our counterparts in the developed countries of the world, we need PowerPoint software facilities to use and teach in Nigerian tertiary institutions. The teaching of Educational Technology I topics using PowerPoint instructional package can enhance mastery learning. Akunyili (2009) maintains that mastery learning is an integrated instructional system, a logical step-by-step method for creating a learning process in which most students can achieve at a higher level. In many countries today the use of advanced technology like projectors, PowerPoint and slide has been found to be very effective in curriculum delivery and also useful to the learners (Wilson, 1995). Science teaching and learning place a lot of demands on the teachers especially with the revised curriculum and limited time. Effective teaching can be achieved through higher interactive technologies like Microsoft PowerPoint. Kwache (2007) supports this opinion by saying in concrete terms that using PowerPoint technology enhances teaching and learning through its dynamic interactive, flexible and engaging contents. PowerPoint technology helps in the development of student's intellectual and creative abilities which allows them to successfully apply the existing knowledge and produce new knowledge (Shavinia, 2001).

The abysmal performance of Educational Technology students has been linked to many variables such as teachers' teaching method, learning materials and learning styles. Gender, cognitive and reasoning, creative ability and sense organs also play their parts (Dikko, 2009; Etim, Upula and Ekpo, 2016; Udosen and Ekpo, 2016). Eze (2002) reported that student's performance in university has been dwindling over the years. The effect of the use of PowerPoint instructional package on academic performance of students as noted by Wealtherly (2003) is highly commended as an instructional delivery. PowerPoint presents information to students more effectively, more dynamically and more aesthetically. Furthermore, it makes the information readily available to students 24 hours per day. The reason for using PowerPoint could be in supporting the teacher during the

presentation of information, enhancing the success in the lesson, enhancing the performance of students, improving the interest and motivation of the students during the lesson (Sen, 2001). However, Bartsch and Corbern (2003), reported that the key to improved students' performance is the use of PowerPoint. They ascertained that PowerPoint material is indeed supplementary and pertinent as opposed to simply being extra or decorative.

PowerPoint is a Microsoft – designed application for creating presentation, speeches and slides in classrooms or public lectures. Meghan (2004) opines that PowerPoint has become the dominant presentation tool in our professional and educational world. Microsoft (MS) PowerPoint is a software package created for composing and displaying presentations, which can be displayed to a large audience by connecting a digital projector with robust audio and visual support.

PowerPoint presentation package is an innovative teaching strategy. Through PowerPoint, large number of students can be reached. Asan (2003) opined that utilization of PowerPoint presentation helps to transmit information to a large class. He also observes that PowerPoint presents educational tools which potentially change some traditional and non-effective educational methods. Acikalin and Duru (2005) maintained that utilizing PowerPoint instructional package in a class is an important supportive element in the development of the teaching-learning process.

PowerPoint helps to transmit both verbal and visual information to the learners (Aldag and Sezgin, 2003). According to Akkoyulu and Yilmaz (2005) the information found on the projector screen during PowerPoint presentation is always attractive to the learners. During the lessons the words or the concepts that should be emphasized could be presented visually to facilitate the increase in the attractiveness of the information. However, one of the most powerful features of PowerPoint is the ability to easily add interactivity without complicated programming. Moreover to create a simple PowerPoint mock-up, each slide depicting a separate screen in the application, use shape, text, and clipart to populate the screen, space the margins for note and half-baked ideas and finally view the document in slide show mode to see the interactivity. Although rapid growth in technology has already positively influenced the academic field, there is a lack of conformity on how technology should be integrated into the school curriculum and what students should be taught using technological advancement. It is against this background that this research work identified interactive effect of PowerPoint instructional package and students' academic performance as an area of concern for investigation.

1.2 Statement of Problem

Over the years, Educational Technology students have been taught using the "traditional" approach. Thus, teachers rarely expose the students to technological devices, either because of non-availability of these technological tools in schools or due to inadequate exposure of the teachers to handle this new equipment. This for most times may

result in poor learning of concepts and poor performance in examinations.

Students at this level are prone to distractions and so the most important challenge facing teachers is to capture their attention and interest which will facilitate interactive class instruction. Probably, if PowerPoint instructional packages are properly integrated into the teaching of Educational Technology topics, students will perform maximally in class or examinations. This study is therefore aimed at finding out if PowerPoint instructional package could enhance effective teaching and learning of Educational Technology topics to improve students' academic performance.

1.3 Literature Review

Interactive effect of PowerPoint Instructional Package and Students' Performance in Educational Technology

Wealtherly (2003) notes that instructional delivery through PowerPoint presents the information to students more effectively, more dynamically and more aesthetically. Furthermore, it makes the information readily available to students 24 hours per day. Thus, these Power Point technology increases the students' exposure to information. The reason for using PowerPoint could be supporting the teacher during the presentation of information, enhancing the success in the lesson, enhancing the performance of students, improving the interest and motivation of the students for the lesson (Sen, 2001).

In the traditional education environment, the duty of the students is to adhere to the education activities as a passive receiver and memorize the content of the lesson (Surmeli, 2007). PowerPoint presentation creates more powerful sensory alerts when compared with traditional education materials (blackboard, overhead projection, etc). While delivering the lesson through PowerPoint presentation, the content of the lesson stays the same, but the form of transmitting the lesson to the students' changes. The PowerPoint presentation therefore has the advantage of having strong colour, gradual building of text, simple animation of diagrams, facilities for simple editing and updating (Lowry, 1999). Thus it can be mentioned that PowerPoint presentation provide significant time and force savings and simplifies taking notes during the lesson.

According to Craig and Amernic (2006), PowerPoint should be recognized as a communication medium that is fundamentally changing the nature and dynamics of how teaching is carried out. Pedras and Horton (1996) assert that PowerPoint presentation could enhance the teaching process by increasing students' interest and improving retention of material alternatively. In a study conducted among 143 pre-service teachers, Ahmed (1998) found difference in test scores when comparing using traditional overhead projection and PowerPoint presentation.

In a research by Szabo and Hastings (2000) on the use of Educational Technology in Accounting, it was observed that PowerPoint instructional package had more entertainment than instructional value. Maxwell (2007) concluded that

PowerPoint is more effective when used to provide distinctive contents that compliment oral teaching rather than as a bullet-point summary of a lecture, and advocates over stimulation as preferable to boring repetition. Bartsch and Corbern (2003) opined that the key to improved students' performance many lay in ascertaining that PowerPoint material is indeed supplementary and pertinent as opposed to simply being extra or decorative.

Szabo and Hastings (2000) conducted a research using IT in the undergraduate classroom. The students were divided into two groups; the lesson was given through blackboard to the first group, and through PowerPoint presentation for the second group. The average final score of the groups were 48 and 78 respectively. Butler and Mautz (1996) and Nouri and Shadid (2005) asserted that PowerPoint presentation has a lasting impact on the short term memory. Hence, the utilization of PowerPoint technology in teaching results in higher performance of students in schools. Moreso, Boyce (1999) asserted that the utilization of educational technology in modern classroom (PowerPoint) positively contributes to the learning motivation and academic performance of the students.

Sugahara and Boland (2006) carried out a research on the effectiveness of power point presentation in accounting in Hiroshirra University covering 132 students taking accounting subjects. The study focused on the relation between the use of PowerPoint presentation and students' performance. They concluded that the PowerPoint presentation has a positive influence on student performance in Accounting. Nowaczyk (1998) stated that the degree of improved learning is a function of a complex set of interaction among learners and medium attributes, Mason and Hlyrika (1998) stated that PowerPoint helps structure the content and processing of a lesson, aiding note-taking and thus facilitating learning (Cook, 1998).

Parks (1999) in his research reported that student were interested in the lecture outline and graphs on the screen, and that the PowerPoint presentation has positive influence on students' academic performance. Moreover, Harrison (1999) found out that students tend to like the lecture outline and graphs on screen, and that the PowerPoint presentation has positive influence on students. Harrison (1999) argues that PowerPoint enhances instruction and motivates students to learn. More so, PowerPoint presentation incorporates graphics, animation, and colour (imagery). A human information processing theory focuses on how the human memory system gathers, transform, compacts, elaborates, encodes, retrieves and uses information. Sensory registers, short term memory and long term memory are the three major storage structure of the human brain. The sensory system registers stimuli and holds them for a brief period until they are organized or lost. Short-term memory, with its limited capacity, received information from sensory registers. It holds information longer than the sensory registers through rehearsal process, recycling the information again and again, and long term memory is a permanent store of human knowledge, and receives information from both sensory

registers and the short-term memory system.

Moore (1996) opined that attention plays an important role in determining when and how information is further processed from sensory registers to short and long term memory. Therefore, if information is not attended to, it quickly lost the sensory stimulus stage of processing. Reynolds and Baker (1997) found out that presenting instruction on PowerPoint increased attention and learning increased as attention increased. The use of PowerPoint presentation in the classrooms has attracted many researches from different scientific area and from several countries. Some of these studies try to measure the effect on the use of PowerPoint presentations on the attitude and behaviour of the students, while some of them focused on the success differentials between the lesson given through PowerPoint presentation and through black board.

1.4 Purpose of the Study

The purpose of this study was to investigate the interactive effects of the use of PowerPoint instructional package on the academic performance of Educational Technology students in the University of Calabar. Specifically, the research sought to:

1. Examine how the use of PowerPoint instructional package affect students' academic performance in Educational Technology.

1.5 Research Question

One research question was developed to guide the study;

1. How does the use of PowerPoint instructional package affect students' performance in Educational Technology?

1.6 Research Hypothesis

1. There is no significant difference in academic performance of Educational Technology students taught with and without the use of PowerPoint instructional package.

2 Research design

This study used a quasi-experimental research involving a pretest-posttest non randomized control group design.

The population of the study included all the Educational Technology students for the 2011/2012 academic session in the department of Curriculum and Teaching, University of Calabar (Source 2011/12 Departmental Results).

2.2 Sample

The sample for the study comprised of all 180 Educational Technology students of the 2011/2012 academic session selected using Purposive sampling technique. This sampling technique was used because all the students were used since they are not marry.

2.3 Instrument for data collection

The instrument used for data collection was an Educational Technology Performance Test. The ETPT was used to determine the pretest and post-test performance of students in Educational Technology as treatment. The Educational Technology Performance Test was used to measure the students' pretest and posttest performance. It had 40

multiple choice items with each item having four options lettered A-D. Each correct answer was scored 2.5marks and incorrect answer zero (0), giving a maximum score of 100 marks and a minimum score of zero (0). In addition to the instruments for data collection, PowerPoint instructional package was prepared by the researchers for classroom instruction on the topic: Instructional Material Design, Development and Utilization. The package was developed using the ASSURE model (Hienich, Mollenda and Russell, 1982). The model enabled the researchers to introduce systems principles in which all aspects of instruction and the design principles were determined. Design elements of colour, light, animation and manipulation were introduced to influence learners' attention, interest, motivation and aspiration.

Reliability coefficients of the Educational Technology Performance Test (ETPT) was determined using test- retest method. The second test was administered one week after the first test to a group of 20 students who were not part of the main study but equivalent in all respects. The data obtained were analysed using Pearson Product Moment Correlation Coefficient (PPMCC). The results indicated that Educational Technology Performance Test (ETPT) had a reliability coefficient of .72. The instruments was therefore regarded as being reliable for the study and capable of measuring the intended issues with consistency.

Descriptive statistics of mean and standard deviation were used to analyse data generated to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypothesis.

3 Results

3.1 Research Question

How does the use of PowerPoint instructional package affect students' performance in Educational Technology?

Table 1 Presents the mean and standard deviation of pretest, post-test scores of Educational Technology Performance Test (ETPT) taught with and without the use of power point instructional package.

The results in Table 1 show that the means of pretest and post-test scores of the experimental group (use of PowerPoint instructional package) were greater than those of control group (expository) [$\bar{X}$= 29.96,72.27;$\bar{X}$ = 25.90,46.57]. The standard deviation scores revealed variability in performance. Therefore, Educational Technology students taught with the use of PowerPoint instructional package performed better than those taught without the instructional package.

3.2 Hypothesis

There is no significant difference in students' academic performance in Educational Technology when taught with and without use of PowerPoint instructional package.

Table 2 presents a summary of ANCOVA of students' post-test performance by instructional strategy with pre-test as covariates.

Table 1: Mean and Standard Deviation of Pretest – Post-test Scores of Students Performance in Educational Technology Test by treatment Groups.

Treatment group	n	Pretest		Post-Test		Mean Difference (Posttest – Pretest)
		$\bar{X}$	Sd	$\bar{X}$	Sd	
Power Point	89	29.96	14.06	72.27	13.36	42.31
Expository	91	25.90	9.05	46.57	10.39	20.67

Table 2: Summary of Analysis of Covariance (ANCOVA) of Student's Post-Test Performance by Treatment Groups With Pre-Test as Covariate

Source of variation	Sum of squares	Df	Mean Square	F-cal	Sig.	Decision at p<.05 level
Covariate: Pre-test	.199	1	.199	.001	.970	Not Significant
Main Effects:	28827.35	1	28827.35	200.63*	.000	
Instructional	25431.62	177	143.68	-	-	Significant
Strategy	55146.11	179	-	-	-	-
Residual						-
Total						

*p<.05

The result in Table 2 reveals that there is a significant effect of instructional strategy (use of Power Point instructional package) on students' performance in Educational Technology [F=200.63,df (1,177),P<0.05]. Therefore, the null hypothesis that there is no significant difference in students' academic performance in Educational Technology taught with and without Power point Instructional Package is rejected. There is a significant difference between the performance of students taught Educational Technology using Power Point Instructional package and those taught without, in favour of those taught with package.

4 Discussion of Findings

The findings from the results in Tables 1 and 2 showed that there was a significant difference between the performances of students taught the Educational Technology using PowerPoint instructional package and those taught using the traditional expository method. The students in the experimental group (taught with

PowerPoint instructional package) performed significantly better than their counterparts in the control group (who were taught with the traditional expository method). This was as a result of the use of design elements such as Colour (gray), Animation (Wedge), and sound (Drum roll). All these were incorporated in the instructional package using PowerPoint which enhanced students' interaction as well as sustained their interest. This result underscores the effectiveness of PowerPoint instructional package in arousing and sustaining the interest of the learners during the teaching - leaning session, and in effect their performances in most subjects. This finding is supported by earlier studies of Sen (2001), and Surmeli (2007), who reported that the use of PowerPoint instructional package can create powerful sensory alert; interest and motivation as well as increase the academic performance of students. Bartsch and Corbern (2003) maintain that the key to improved students' performance may revolve around the use of PowerPoint as an instructional delivery tool.

5 Conclusion

Admittedly, PowerPoint stands out as an innovative instructional delivery package with a rich reach. It is a dominant presentation tool for undergraduate students, most of whom can be aptly described as "digital natives" (those born in the computer age). And because it helps in composing and displaying presentations to large scattered heterogeneous learners by connecting a digital projector with robust audio and visual support, PowerPoint instructional delivery has the potentials of enhancing and enriching the teaching-learning process by increasing student's interest and improving the retention of concepts taught Educational Technology and most other courses in universities.

Recommendations

Based on the findings, the following recommendations are advanced to support the potency of PowerPoint as an in instructional delivery tool.

1. Since PowerPoint is a computer-tool, students should be computer literate as well as use it flexibly to harness the learning opportunities that go with PowerPoint.
2. Teachers should be encouraged to use the PowerPoint (the technology of the day) to access and display technological education to its clients. This can be use of PowerPoint achieved through the training of teachers on a consistent basis and making the facilities available and affordable.

REFERENCES

Ahmed, C. (1998). PowerPoint versus traditional overheads: which is more effective for learning. Paper presented at the conference of the South Dakota Association for Health, Physical Education and Recreation. Sioux falls, SD ERIC Document Reproduction Service No. (ED429037).

Akkuyunlu, B. and Yilmaz, M. (2005). Theory of multimedia learning. *Journal of Education Technology*. 28, 9-18.

Akunyili, D. (2009). Cited in Onoja, A. I. Nzewuibic, G. U. and Egeruoh, A. S. (2010). Nigerian ICT Sector: Growth gains and challenges. *The Punch Newspaper,* April 25th pg. 4.

Aldag, H. and Sezgin, (2003). The cognitive theory and the dual theory of multimedia learning, *Journal of Educational Technology*, 11(11), 121-135.

Alikalin, M. and Duru, E. (2005). The use of computer technology in the social studies classroom the Turkish. *Journal of Educational Technology (JOJET)*, 4(2).

Asan, A. (2003). Construction technology awareness by elementary school teachers: A case study from Turkey. *Journal of Information Technology Education*, 2, 153-162.

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

Boyce, G. (1999). "Computer-assisted teaching and learning in accounting: Pedagogy or product? *Journal of Accounting Education*, 17(2/3), 191-220.

Butler, J. B. and Mautz, R. D. (1996). Multimedia presentations and learning: A laboratory experiment. *Issues in Accounting Education* 11(2): 259-280.

Cook, D. M. (1998). The power of PowerPoint. *Nurse Educator*. 23(4), 5-9.

Craig, R. J. and Amernic, J. H. (2006).PowerPoint presentation technology and the dynamics of teaching. *Innovations in Higher Education*, (31), 147-160.

Etim, P. J., Upula, B. E., and Ekpo, U. S. (2016). The use of Cloud Computing Tools and Teachers Effectiveness in the Teaching of English Language in Cross River Tertiary Institutions. *Equatorial Journal of Education and Curriculum Studies:* 1(2): 30-40

Eze, C. U. (2002). Effect of target task approach on Chemistry. In: M. A. G. Akale (ed.) *41st Annual Conference Proceedings of STAN*, 256-262. Ibadan: Heinmann.

Harrison, A. (1999). Power up! Stimulating your students with PowerPoint. *Learning and Leading with Technology* 26 (4): 6-9.

Heinich, R., Molenda, M., Russell, J. D., and Smaldino, S. E. (1999). *Instructional media and technologies for learning* (6thed.). New Jersey: Prentice-Hall.

Kwacha, P. Z. (2007).The Imperatives of information and communication technology for teachers in Nigeria. *Journal of Science Teachers Association of Nigeria*, 43: 203.

Ljungdahl, R. T. (2000). Technology integration in the teacher preparation program and public schools in Sam Houston center for professional development and educational partnerships at Sam Houston State University. A

Doctoral Dissertation, Sam Houston State University.

Lowry, R. B. (1999). Electronic presentation of lectures: Effect upon student performance. *University Chemistry Education*, 3: 18-21.

Mason, R., and Hlynka (1998). *The Power of human intuition and expertise in the era of the computer*. Free Press Publishers.

Maxwell, A. (2007). Ban the bullet-point! Content-based PowerPoint for historian. *The History Teacher*. 41(1), 39-54.

Meghan, L. (2004). *Use of PowerPoint in 314L classroom: Computer writing and research laboratory department or rhetoric and writing*. Texas: The University of Texas.

Nouri, H. and S. A. (2005). "The effect of PowerPoint presentations on student learning and attitudes", *Global Perspectives on Accounting Education*, 2: 53-73.

Parks, R. P. (1999). "Macro principles, PowerPoint, and the internet: For years of the good, the bad and the ugly". *Journal of Economic Education*, 30: 200-209.

Pedras, M. J., and Horton, J. (1996).Using technology to enhance teacher preparation. Paper presented at the annual meeting of the Northwest Association of Teacher Educators. Coerd' Arlene, ID. (ERIC Document Reproduction/Service No. ED 395929).

Reynolds, R. E. and D. R. Baker (1997). The utility of graphical representations in text: Some theoretical and empirical issues. *Journal of Research in Science Teaching,* 24(2): 161-73.

Sen, A. I. (2001). Fizik Ogretiminde Bilgisayar Destekli Yeni Yaklasimlar, [New Computer Aided Approaches on Physical Education. *Gazi Universites Egitim Fakultesi Dergisi, 21(3), 61-71.*

Shavinia, L. V. (2001). A new generation of educational multimedia: High intellectual and creative educational multimedia technologies. Larchmount, N. V.: Mary Ann Liebert, Inc.

Sugahara, S. and Boland, G. (2006). The effectiveness of PowerPoint presentations in the accounting classroom, *Accounting Education*, 15(4): 391-403.

Surmeli, F. (2007). Muhasebe Egitiminde e-Degisimi Yakalamak [Clutching E-Change in Accounting Education], *Muhasebeve Finansman Dergisi,* 33: 29-30.

Szabo, A. & Hastings, M. (2000). Using IT in the undergraduate classroom should we replace the blackboard with PowerPoint? *Computers & Education* 35: 175-187.

Etim,P. J., Upula, B. E., and Ekpo, U. S. (2016). The use of Cloud Computing Tools and Teachers

Effectiveness in the Teaching of English Language in Cross River Tertiary Institutions. *Equatorial Journal of Education and Curriculum Studies:* 1(2): 30-40

Weatherly, J. N. (2003). Providing introductory psychology student's access to lecture slides via blackboard 5: A negative impact on performance. *Journal of Educational Technology Systems*, 1(4): 463-474.

Wilson, C. (1995). Issues in instructional design related to computer technology implementation in the classroom. *Delta Kappa Gamma Bull*, 61: 5-9.

Yoa, J. E., Ouyang, J. R., and Wang, H. (2000). A farewell to the traditional instructional media and technologies in the new millennium. Paper presented at the Eleventh Annual Conference of the Society for Information Technology and Teacher Education. San Diego, CA. (ERIC Document Reproduction Service No. ED 444466).