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EFFECTIVENESS OF POWERPOINT SLIDES AND CHALKBOARD INSTRUCTIONAL DELIVERY METHODS ON ACADEMIC PERFORMANCE OF JUNIOR SECONDARY SCHOOL BASIC TECHNOLOGIES STUDENTS IN ZARIA INSPECTORY DIVISION

DR. ISIYAKU ABDULRAHEEM
Department of Curriculum and Instruction, Kaduna State College of Education, Gidan Waya

ABSTRACT

The study experimented on the Effectiveness of PowerPoint Slides and Chalkboard instructional Delivery Methods on Academic Performance of Basic Technology Students in Zaria, Kaduna State. A quasi-experimental design was used in the study 15 schools, 645 males and 671 female, given a total of 1316 JSSII student of 2011/2012 academic session, were used for the study. The subject were randomly placed into two treatment groups. A computer randomizer program was used

Introduction

Secondary education is the education children receive after primary education and before tertiary stage (NPE, 2004). The objective of secondary education among others, shall be to prepare the individual for usual living within the society and higher education. It shall teach basic subjects which will enable pupils to acquire further knowledge and skills. Every student, according to the policy, shall offer a minimum of o and a maximum of subjects; representing all subjects in group A and at least one subject each from groups B and C. Basic Tech is among the elective courses in group B. Junior Secondary school stage shall be of the three years duration.

The examination syllabus is intended to provide candidates with opportunity to demonstrate the extent of their aesthetic awareness, emotional and visual development through perceptual and creative activities. To asses these, candidates should be able to respond to questions which seek to evaluate their development of perceptual analytical and expressive skill through a variety of activities relating to the environment, among others.

This subject consists of 3 papers: Paper 1(3 hours) is compulsory and consist of two sections. A (Objective) and B(Essay). The paper deal with theory, paper 2 (3 hours) involves Technical Drawing.

to select two classes of 40 students each from the five class streams of the JSSII Class. Group A was made Control group (JSS 2A), while JSS 2C was Experimental Group taught with PowerPoint slide presentation mode, while group B became the Conventional group, also taught with Conventional presentation mode. Three research questions and three hypotheses guided the study. A copy of a 50 item Researcher made Basic technology Achievement Test (REFAAT) and a copy of eight Affective Responses Questionnaire on Instructional Technology (ARQFA) for students exposed to PowerPoint slide lesson presentation. Two instruments were used for the study. A reliability index of 0.70 and 0.73 were calculated for the pilot study treatment, using Kuder (KR 21), and Pearson Products Moment Correlation Coefficient (PPMC) respectively, were used. The data were analyzed using mean, t-test and ANOVA. The study revealed that the students taught with PowerPoint presentation experimental (group) performed better than those taught without PowerPoint slides (conventional groups). This implies that utilization of PowerPoint in the classroom improves learning. Among the recommendations made were that PowerPoint slide presentation should be utilized as ICT instructional technology, for effective teaching and learning of Basic technology and that workshops and seminars should be regularly organized for Teachers and students, for effective instruction.

Some weakness observed were of poor composition of design and inability to use paper to advantage. Other observed weaknesses according to Exam Ethics (2001) includes:

- Poor grammatical construction
- Poor observational ability in drawing
- Ineffective use of technique and materials to achieve good drawing;
- Non-observation of drawing rules (use of space, proportion and perspective)
- Non-conformity with instruction on how objects should be arranged or model posed;
- Poor choice of type face and technical proficiency and
- Use of inferior quality materials.

Below is the May/June 2015-2017 SSCE statistics of Entries and Results in Basic Tech buttressing the claims of the researcher, thus;

Year	Total Entry	Total SAT (Percentage)	Number and Percentage Obtaining Grade			
			Total Credit 1-6	Pass 7 and 8	Fail 9	Number Absent as Percentage of Entry
2015	910	755 (82.9)	128 (17.07)	216 (28.7)	409 (54.2)	155 (17.0)

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2016	880	748 (85.0)	125 (16.80)	216 (28.85)	318 (42.5)	131 (14.9)
2017	825	642 (77.83)	108 (16.95)	195 (30)	326 (50.8)	182 (22.2)

Source: West African Examination Council

The incorporation of instructional materials into instruction started with teaching aids which involved the use of objects to provide what was called visual experience. Visual instruction as this was called was an attempt to make abstract ideas concrete and to promote intellectual cognitive learning (Nkom, Salawu and Inegbedion, 2006). However, According to Udo and Udosen (2010) most of our teachers are used to the chalk-talk method of teaching, rendering the student's passive learners. This affects their academic output against the students-centered learning approach. Gambari and Fagbemi (2008) also observed that the conventional method of teaching obviously does not prepare students for the information age and globalization, rather, modern development of innovative technology has provided new possibilities to instruction.

In this situation, there need to have a teaching-learning processes whose foundation is rooted in ICT, because of its ability to improve instruction and educate more people. In recognition of the role of ICT in advancing knowledge and skills in the modern world, the Government obliged to provide necessary infrastructure and training for the integration of ICT in the school system (NPE, 2004). This is the reason why both the National University Commission (NUC) and the National Commission for College of Education (NCCE) emphasized that any student-teacher in teacher education institution must offer Educational Technology as a core course (NPE, 2004). National policy on education attaches much importance to the development of the learner who is at the center of educational system, through Educational Technology. Educational Technology is a problem-solving methodology that uses its systems approach to simplify and solve any problem situation in the classroom. (Anulobi and Anulobi, 2012).

Iwu (2006) opine that ICT is an umbrella term that includes any communication device or application, encompassing radio, television, cellular phones, PowerPoint slide, computer network, hardware, software, electronic mail, facsimile, satellite systems as well as the various services and applications associated with them. It is also a way to describe exciting and innovative ways to provide lifelong learners with global access to information, learning and support.

Ike, Chimezie and Iwu (2002) observed the roles ICT plays in teaching-learning situations, thus:

1. ICT improves self-instruction
2. It provides concrete experience
3. ICT Sustains greater retention
4. It exposes students to more learning experience
5. It stimulates learning interest to learn and

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6. It reinforces vernal description

In this period of information and technology age, most of the developing countries including Nigeria have not yet exploit the potentials of ICT transforming the education sectors. ICT can change the way teachers teach, be useful in supporting more students-centered collaborative activities (Haddad, 2003). Avoseh and akintoye (2008) opine that different application software are produced for different tasks. e.g. PowerPoint slides for lesson presentation

Concept of PowerPoint Slide

Microsoft PowerPoint (MPP) according to Opara and Peters (2010) is a powerful tool to create a professional looking presentations and slide shows. It is accompanied with oral delivery of the topic. The program is used in business and classrooms as well as effective tool for training purposes. MPP is the leader of all software for presentations. It is one of the powerful tools in classroom teaching and learning. It is an invaluable classroom tool. The slides can store files such as pictures, diagrams, handouts texts etc. PowerPoint is a presentation software that allows the presenter or user to create slides, notes and show colored text and image with simple animation and sound. It is the software that is used to display information in the form of slide show. It is the product that can incorporate text, video, animation and uses graphical approach to presentations in the form of slide shows that accompany the oral delivery of the topic (Udo and Udosen, 2010). Asuquo (2008) supported that PowerPoint is one of the packages used in most cases to explain, illustrate and elucidate teaching points in the classroom.

It is also the presentation software that allows the presenter to crate slides, notes and show colored text and image with simple animation and sound. Other qualities of PowerPoint according to randanov (2008) include printing options that allows the presenter to provide handout and outlines for the audience, as well as note pages for the speaker to refer to during presentation. It is an effective technology when used for training purposes. PowerPoint makes presentations easy and saves time for teachers who otherwise would have used other types of visual such as hand-drawn pictures, charts graphs, chalk boards, white boards and overhead projectors. Apart from classroom instruction, Lowenthal (2009) opines that PowerPoint is widely used by business people, educators' students and trainers and is among the most prevalent forms of persuasion technology. The use of PowerPoint in classroom lectures has influenced students' performance in comparison to traditional based methods (Shkaminish, 2003).

Educational importance of PowerPoint Slide presentation

Other advantages outlined by Leen (2009) include the following:

1. PowerPoint helps Teachers to be more interesting than ordinary teaching method
2. Students are kept awake and the class become less boring and very interesting.

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3. It can be a tool for guiding students in note-taking, reforming points made in a teaching and to inject occasional humor or visual reinforcement.
4. PowerPoint invaluable to students in carrying out their own in-class presentations.
5. The use of PowerPoint in teaching and learning is very useful in some category of learners with learning disabilities
6. PowerPoint ensures that the information being orally transmitted is understood by every category of learners.
7. It engages students visually, as some learners learn better by seeing
8. PowerPoint presentation become more advantages than chalk/white board, flip charts, for the fact that the lectures can be prepared before time
9. MPP allows users to create their own multimedia presentations thereby giving the presenter complete control over their presentations. It serves as a tool for enhancement during presentations.
10. With color, movement and music PowerPoint project is a very beneficial tool in the classroom.
11. Finally, Microsoft PowerPoint makes presentations memorable.

Having seen the advantages of power point utilization in the classroom situation, many teachers are yet to harness this powerful technology that will buttress the students' academic work today (Shkaminish, 2003). Concluded. Therefore, it is the wish of the researcher to find out if PowerPoint lesson presentation could contribute positively to the academic performance of Basic Technology Students in Zaria, Kaduna State.

Statement of Problem

Most of our Nigerian teachers are used to the talk-chalk method of teaching, rendering the students passive and ineffective learners, thereby, affecting their academic output (Udo and Udosen 2010). This traditional method keeps the students passive in class against the student7-centered learning approach recommended by the National policy on Education, 2004. Unfortunately, in Nigerian classrooms, the typical pedagogical pattern reflecting authoritarian and didactic approaches to instruction still prevail (Gambari and Fagbemi (2008).

An investigation into the average performance of the students that offered Basic Technology in JSS Class in WAEC from 2015 to 017 academic sessions indicated a very poor performance, respectively (see table 1.1 above). The implication of the above scores shows that the student performed very bad indeed. This poor performance rate is of great concern and has agitated this study. The question is what alternative teaching strategy can the education system adopt? Can the PowerPoint instructional package lesson presentation get more student's interest in educational technology? Can the utilization of PowerPoint in the teaching learning of Basic Technology improves the academic

performance of the JSS students in Zaria? Hence the study is designed to answer these questions.

Purpose of the Study

1. To find out if PowerPoint instructional slides can promote learning in the students offering Basic Technology. Specifically, the study intends to find out if students taught with PowerPoint slides will perform better than those taught with conventional teaching approach.
2. To ascertain the students' affective response to the PowerPoint and Conventional modes of lesson delivery on the Basic Technology Subject
3. To determine if gender influence the academic performance of students exposed to the treatment.

Research Questions

1. To what extend do students respond to the use of PowerPoint instructional mode of teaching and learning of Basic Technology?
2. What is the level of difference between the mean score of students taught Basic Technology with PowerPoint slides and those taught with conventional approach in a researcher-made Basic Technology achievement test?
3. What is the level of difference between the mean scores of male and female student taught Basic Technology with PowerPoint slides and conventional mode?

Hypotheses

HO_1 The mean scores of students taught Basic Technology using PowerPoint slides and Conventional modes do not differ significantly ($p<0.05$).
HO_2 There is no significant difference between the mean scores of male and female students taught Basic Technology using PowerPoint slides and conventional modes ($p<0.05$).
HO_3 There is significant interaction effect of treatment and gender among student performance in Basic Technology ($P<0.05$).

Methodology

Research Design

Quasi-experimental research design was used in this study. Intact groups pretest treatment-control-post-test was adopted with analysis of variance (ANOVA) as a post-hoc control, thus;
Int. g.p O1x1O2
Int. g.p O1X2O2
Where X1 indicate PowerPoint treatment group
X2 indicate conventional treatment group
O1 indicates pretest with researcher-made-test
O2 indicate post-test with researcher made test.
The choice for the quasi experiment on the premise that the researchers could only exert practical control over the subjects owing to administrative policies.

Area of Study
The study was carried out in the Government Secondary School, Kofar Jatau in Zaria local Government Area of Kaduna State. Kaduna state is one of the states in the North-West Geopolitical Zones of Nigeria. They are mainly civil servants and traders.

Population of the Study
The population of the study consisted of 1316 JSS II Basic Technology Students of 2011/2012 sessions.

Samples and Sampling Techniques
In this quasi-experimental study, the researcher purposively selected the 2011/2012 JSS II students from G.S.S. Kofar Jatau Zaria because they offer Basic Technology and also, they are co-educational school. The two intact classes (JSS 2A and JSS 2C) were selected because the researcher had not the opportunity to divide and use any of the intact class streams, due to the administrative policies. The researcher randomly selected 40 students each, given a total of 80 students from the two intact classes selected. JSS 2A became the conventional group A, was made up o 14 males and 26 females. While JSS 2C became the experimental group B, made up of 13 males and 37 females. Toss of the coin random sampling techniques was carried out to place the two treatment groups, A and B, respectively. This took place during the second term of 2011/2012 session.

Instrument for Data Collection
Two instruments were used for data collection. One was a structured type questionnaire with 8 items on the "Affective Response Questionnaire on Fine Arts (ARQFA), for the students exposed to PowerPoint slide lesson presentation. The second was a 50 itemed Researchers made Basic Tech. Achievement Test (RBAAT), drawn from the second term unit topic (Seasoning of Timber). The Conventional group A was taught with PowerPoint slide presentation. While, the experimental group B was taught without the PowerPoint slide presentation, rather, with chalkboard. RBAAT was administered on the two treatment groups to determine the student's performance.

Validation of Instrument
Three experts (Senior Lecturers) validated the instruments. The first expert came from Centre for Educational Technology and the second expert was from the Computer Department all from ABU Zaria. The third expert was from the measurement and evaluation unit from the Faculty of Education, ABU Zaria. The three experts posses Ph.D degrees in their respective disciplines. Finally, the researcher did the final corrections, given the two instruments face and content validity.

Reliability of the Instruments
A pilot study was carried out on students a very few students outside the local government of study, using the two validated instruments on the pilot treatment groups who were not part of the study groups. Kuder Richardson's formula (KR 21) was used to

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calculate the reliability coefficient index of 0.70, (ARQFA) and 0.73 (RBAAT) was determined after being subjected to test-retest on the two validated instruments.

Treatment

Ten weeks were used for the study. The first week was used for collection of the student's data, randomization and administration of 50 items (RFAAT) as the pre-test to the two treatment groups. Eight weeks was used for instruction, after which, 50 item RFAAT was reorganized and also re-administered as post-test at the tenth week. Eight ARQFA was administered to the experimental group also, at the tenth week. This was done in order to find out how the group felt on the innovative ICT (PowerPoint) lesson presentation technology administered on them.

Data Analysis

The data analysis was done using the research questions and hypotheses. Pre-treatment test (pre-test) and post-treatment test (post-test) scores of the students were tabulated and their means calculated, t-test was used to calculate the hypotheses, ANOVA was used to calculate hypothesis three, at an alpha level of 0.05.

Data Analysis and Results

Results obtained from the data were presented in the tables below based on the research questions and hypotheses

Research Question One

To what extent do student respond positively to the use of PowerPoint instructional package for the teaching of Basic Technology.

Table 4.1: The mean affective response scores of the students taught with the use of PowerPoint instructional package

Items	SA	A	D	SD	X Mean
1	45	57			3.9
2	42	8			3.84
3	39	9	2		3.74
4	43	7			3.84
5	40	8	2		3.74
6	46	4			3.92
7	44	5	1		3.86
8	42	8			3.84
Total					3.84

The affective responses of the student on how they feel about the use of PowerPoint slides presentation in teaching Basic Tech. contained 8 items. The sum of the man responses scores of 8 items is 30.72. While the mean responses score per item is 3.84, the 4 point modified Likert scale has the following class intervals for decision making below:

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Table 4.2:4 Point Modified Likert scale class internal for decision making

1.00 – 5.00	1.51 – 2.50	2.51 – 3.50	3.51 – 4.00
Highly Negative	Negative	Positive	Highly Positive

Therefore, judging from the scale in the tab le above, it is concluded that the student's response of 3.84 to the use of PowerPoint instructional package in learning Basic Tech. highly positive.

Research Question Two

What is the level of difference in the mean scores of achievements in Basic Tech. students taught with PowerPoint slides and those taught with Conventional approach on a posttest?

Table 4.3: Results of the mean scores of achievements in Basic Tech. of the students taught with PowerPoint instructional slide and Conventional mode

Group	N	_X	Average
PowerPoint	50	39.28	33.15
Conventional	50	27.04	
Male power point	8	40.72	39.28
Female Power point	42	37.84	
Male Conventional	13	28.44	27.05
Female Conventional	37	25.64	

Table 4.3 shows that the mean scores of the PowerPoint group (39.28) is greater than the average (33.1) while the mean score of the conventional group (27.04) is less than average (33.15). it can therefore be concluded that the PowerPoint group perform better than the mean score Conventional group at posttest.

Research Question Three 3a

What is the level of difference in the mean scores of achievement in Basic Tech. Male and Female students taught with power point slides method at post – test.

Table 4.3 above shows that of the students taught Basic Tech with PowerPoint slides. The mean scores of the males (40.72) is greater than the average (39.28) while the mean scores of the female (27.87) is less than the average (39.28). it can therefore be concluded that the male student taught Basic Tech in the PowerPoint Slide perform better than the females at post-test.

Research Question Three 3b

What is the level of difference in the mean score of achievement in Basic Tech of female student taught with conventional approach at post – test.

Table 4.3 above also showed that the of the student taught Basic Tech with conventional approach.

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Mean score of the male (28.44) is greater than the average (27.05), while the mean score of the females (25.64) is less than the average (27.05). it can be therefore be concluded that of the male students taught Basic Tech with Conventional approach, perform better than the female students at posttest.

Table 4.4: Results of ANOVA on Conventional versus PowerPoint slides, and interaction of sex and treatment

Source	Sum of Square	Df	Mean square	Ls	Prob	f-computed	f-critical	Decision
Model	1144	8	1431		0.00	595.25		
Group	5099	3	1699		0.00	706.97		Reject
Sex	103.68	1	103.68	0.5	0.089	2.31		Accept
Treatment X sex	4616.24	3	32.80		1.36	1.36	2.65	Reject
Error	1191.00	24.04						
Total		200						

Table 4.4 above shows that of the groups, the F-computer (706) is greater than the F-critical (2.65) and the level of signifies (0.5) is greater than the prob (0.00). This result rejects the null hypothesis and accepts the alternate that there is significant in the groups. Based on the man of scores presented in table 4.4, the power pint group mean score (39.28) is greater than the convention group mean score (27.04) one can therefore conclude that the mean score of achievement in Basic Tech of student taught with PowerPoint is significantly greater than the mean score of achievements in Basic tech. of student with Conventional approach. Here, the students taught with Power Point slides performed better than students taught with Conventional approach.

HO2 There is no significant difference in the mean score of achievement in Basic Tech of male and female students taught with Conventional approach at post test

Table 4.5: Result of t-test analyze testing the null hypotheses that there is no significant difference in the mean scores of male and female students taught with conventional approach.

Power Point	N	X	SD	DF	T-comp	T-critical	Prob.	Decision
Con male	13	28.44	7.54	48	1.29	2.02	0.21	Accept
Con female	37	25.64	7.85					

Table 4.5 shows that of t-computed (1.29) is less than the t-critical (2.02), and prob. (0.09) is greater than the level of significance (0.05).

This result accepts the null hypothesis that there is no significant difference.

HO3; There is no significant sex difference in the mean scores of achievements in Basic tech students taught with power point slide method at post test

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Table 4.6: Result of t-test analyzes testing the null hypotheses that there is no significant sex difference in the mean scores of achievements in Basic Tech of male and female students

Group	N	X	SD	Df	LS	T-Comp	T-Critical	Prob.	Decision
Power Male	8	40.72	4.43	48	0.05	1.76	2.02	0.09	Accept
Power Female	42	37.84	6.89						

Table 4.6 above shows that t-computed (1.76) is less than t-critical (2.02) and prob. (0.09) is greater than the level of signifies (0.05). This result accepts the null hypotheses that there is no significant sex difference.

HO4: There is no significant interaction effect of treatment and gender in student's performance in Basic Technology

Table 4.4 above shows that F-computed (1.36) is less than the F-critical (2.65) and prob. (0.26) is greater than the level of significance (0.05). this result accept the null hypothesis that there is no significance interaction effect on gender treatments.

Summary of Findings

1. The students responded highly positively to the use of PowerPoint instructional package in Teaching Basic Technology Junior Secondary school in Zaria
2. There is a significant different between the mean scores of students exposed to PowerPoint instructional package and those taught with Conventional mode. This has shown that power Point instructional package will serve as both supplementary and as alternative mode of teaching to Basic Technology in the classroom
3. There is slight significant difference in the researcher-made-achievement test scores of male and female students taught with the two modes. The power Point group and the conventional group. This has shown that sex has no boundary in learning with PowerPoint slides presentation (ICT).
4. However, both male and female students will equally study with PowerPoint instructional package and pass their examinations in Basic Technology. This mean that ICT technologies (PowerPoint) is very reliable mode of lesson presentation in the classroom teaching and learning situations.

Recommendations

Based on the findings of this study the following recommends were made:

1. PowerPoint instructional slide presentation should be used as supplement or as alternative to the conventional lesson presentation in the classroom.
2. Use of PowerPoint slide presentation by teachers should be intensified by individual lecturers as mode of lesson presentation

3. AIFCE management should as a matter of need and urgency encourage Teachers acquire these ICT technologies in order to boost effective teaching and learning.
4. Intensive workshops and seminars should occasionally be organized for Teachers
5. The school authority should set up a committee to supervise and to ensure regular college electric power supply whenever there is main (NEPA) power outage
6. ICT technologies like microcomputers, multimedia projectors and screens, interactive whiteboards, public address systems and microphones should be made available and accessible to lecturers.
7. PowerPoint slide presentation should be used as an alternative to lecture presentations, especially when the teacher is unavoidably absent from the class. This will help the learners not to access lectures, retain longer and prepare for the examination, even without the presence of their teachers therein.

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