

INTEGRATING THE EFFECTIVENESS OF POWERPOINT PRESENTATION AND COOPERATIVE LEARNING IN THE ACHIEVEMENT OF NATIONAL DEVELOPMENT

Nnaji Adaeze Mukosoluchukwu

Faculty of Education Department of Educational Management Abia State University, Uturu

E-mail: princessadaezennaji@gmail.com Phone +2347032835551

Nnwachukwu Emilia Chinyere

Faculty of Education Department of Educational Management Abia State University, Uturu

E-mail: emilia.nwachukwu@yahoo.com Phone +2348037420237

Abstract

This study assessed the effectiveness of PowerPoint presentation and cooperative learning method for the purpose of effective implementation of Millennium Development Goals (MDGs). The design was pretest, treatment, post-test design. Purposive sampling technique was used in choosing one secondary school in Imo State from which two intact classes were chosen, Using simple random sampling, the researcher chose two groups (A&B) of the study made up of 15 students each. One research question and three hypotheses guided the study. Treatment on basic science was administered for four weeks, after which post-test (BSAT) was administered. Data collected were analysed using mean and t-test. Results show a significant difference in the mean scores of the learning groups when pre-test and post test are considered, but tilts in favour of co-operative learning methods when the two groups are compared at post-test. Based on this, it has been recommended, among 'others, that Curriculum experts and educational technologists should create awareness and sensitize teachers on the need and how to use the co-operative learning method and PowerPoint through conferences, seminars and workshops. This will help in the effective use of materials during instructions for the achievement of the needed goals.

Key Note: Achievement, Cooperative Learning, Development, Effectiveness, Integrating, National, PowerPoint Presentation.

Introduction

(National Development Goals are international development goals established in the year 2000 and 23 international organizations are committed to achieving them. These goals are; to eradicate extreme poverty and hunger, to achieve universal primary education, to promote gender equality and empower women, to reduce child mortality, to improve maternal health, to combat HIV/AIDS, malaria and other diseases, to ensure environmental sustainability and to develop a global partnership for development. The above goals have their specific targets to achieve as well as dates for achieving them. Achievement of all these requires enough funds which finance ministers agreed to provide for improving health, education

and poverty alleviation, Criticisms against these national development were lack of analysis, justification as well as lack of measurement for some goals.

In recent years, the visual audio multimedia technologies have been improved in line with the rapid development in the information technologies that are now used in education. Here, power point presentation is introduced to help facilitate teaching and learning, in order to achieve the National Development related to education. Power point is a presentation software program that is part of the Microsoft office package. It uses a graphic approach to presentations in the form of slides that accompany the oral delivery of the topic, (Wendy, 2013). This programme is widely used in business and classroom and is an effective tool when used for training purposes. "It can be made into photo albums, complete with music or narrations to distribute on CDs or DVDs", (Wendy, 2013: 1). "Power point offers Word processing, outlining, drawing, graphing and presentation management tools all designed to be easy to use and learn (Topeka and Shawnee, 2013:1). It is presentation software that allows the presenter to create slides, notes and show colored texts. The benefits derived from using power point presentation in the classroom situation are numerous but, many teachers are yet to harness this powerful technology that will buttress the student's academic work.

Another innovative method that has not been widely used in teaching and learning is cooperative learning, which is akin to one of the most important human activities. It is an instructional strategy which makes the learners work together for the accomplishment of a common goal shared among them. This goal is reached through dependence on all group members rather than working alone (Okoro, 2012). Each member is responsible for the outcome of the shared goal (Labidi and Ferreira, 2011).

Education as a process can be well achieved through cooperation. In cooperative learning, a student's success helps in ordinary classroom situation where interaction between students may be seen as learners relying on others to obtain better grades. Learners' performances are based on encouragement they give to one another. Johnson and Johnson (1999) observed that cooperative learning is instructional use of small groups in which learners work together to maximize and gain from each other, assess each other's current knowledge and fill any gap in each other's understanding, (Starvin, 1995). Furthermore, Johnson and Johnson in Okoro (2012:

133) identified the following characteristics of cooperative learning:

- I. Members perceive that they are part of a team and they have a common goal.
- II. Group members must realize that the problem they are to solve is a group problem and that the success or failure of the group will be shared by all members of the group.
- III. Learners must talk with one another to accomplish the group's goal. Each member's individual contribution has a direct effect on the group's success.

Team work is of utmost importance.

Many studies have been carried out on effects of power point presentation as well as cooperative learning strategies, in teaching and learning of different subjects. Their results show variations throughout with differences in design, sample size, instrumentation, variables and environmental factors. Thus the need for this Investigation.

Anulobi and Uzoma (2012) carried out a study on power point utilization and its effects on students' performance. The study revealed that students taught with power point presentation performed better than those taught without power point slides. Again Rim and Dorine (2012) carried out a study on power point in accounting classroom. Result showed that power point negatively affects students performance. Again, Okoro and Urenyere (2013) carried out a study on effects of power point presentation and Lecture method. Students taught, with power point presentation performed better than those taught with traditional Lecture method. In addition to this, researches have been carried out on the efficacy of cooperative learning in Nigeria. Such studies among others are those conducted by Essan (1999), Adeyemi (2001) and Ibebuike (2014) which showed that cooperative learning strategy is more useful than some other learning strategies. Again, Adeyemi (2008) investigated the effects of cooperative learning and other strategies on social studies students' performance. Results revealed that cooperative learning strategy was the best, followed by problem solving and conventional strategy in that order. This study therefore sought to ascertain the quality of instruction using power point presentation and cooperative learning strategies using basic science in relation to Home Economics.

Statement of the Problem

Federal Republic of Nigeria advocates developing proper values for the survival of the individual and the society. The question that arises from this is how can instructional delivery in our schools be done so as to enhance students' academic performances and develop proper values? It is generally observed that the mode of curriculum delivery in our schools mostly recognizes traditional method of lesson presentation that makes students inactive, ineffective, passive and these affect their academic performances (Udo and Udosen, 2010), which may not make for the achievement of the National Development.

Modernization gives room for innovation to many spheres of life, which include power point presentation and cooperative learning strategies. To what extent can they effect positive change on the learner's achievement? This is the concern of this paper because this year's West African Examination Council (WAEC) revealed mass failure of students in English Language and Mathematics. Seventy percent (70%) of the students failed, as was announced over the air, and carried by National Dailies. This failure can be caused by many factors including mode of lesson presentation. Can these two methods, power point presentation and cooperative learning have positive impact on students' academic achievements so as to achieve the National Development?

Research Questions:

1. What are the differences in the pre-test and post-test mean scores of students taught Basic sciences in group A using PowerPoint presentation?



2. What are the differences in the pre-test and post-test mean scores of students taught Basic sciences in group B using cooperative learning method?
3. What are the differences in the post-test mean scores of students taught Basic sciences in the two groups?

Research Hypotheses

HO: The post-test mean scores of students taught Basic science using power point presentation do not differ significantly from the pre-test.

HO₂: The post-test mean scores of students taught Basic science using cooperative learning method do not differ significantly from the pre-test.

HO₃: The post-test mean scores of the two treatment groups do not differ significantly.

Methodology

The design is quasi-experimental research of pre-test, treatment and post test

| Group | Pre-test | Treatment | BST | Post test |
|-------|----------|-----------|---|-----------|
| A | BSAT 1 | BS + | Personal Hygiene, Heat, simple machine and matter | BSAT 2 |
| B | BSAT 1 | BS + | Personal Hygiene, Heat Simple machine and matter. | BSAT 2 |

AB experimental groups and Control group

BSAT 1 Basic Science Achievement Test (Pretest)

BSAT 2 Basic Science Achievement Test (Post test)

BST Basic Science Topics

Imo state is the area of this study. The population comprised the state's public Junior secondary school students numbering six thousand, three hundred and twenty three (6,323) of which purposive sampling technique was used in choosing Alvana Model Secondary School, Owerri; With JSSII as the experimental class.

Instrument for data collection was Basic Science Achievement Test (BSAT) comprising Basic science Achievement Test questions (BSAT) in the teacher made test. They are 25-item completion questions in which the students are required to provide their answers. The instrument was constructed





using the term's scheme of work of JSSII students in Basic science. This is from the topics selected for teaching the JSSII students. Any correctly answered question attracted a score of 4marks, giving a maximum score of 100marks.

The instrument was validated by a Basic science teacher. The reliability was determined using test re-test method in which the instrument was administered twice to the same number of sample outside the study sample, giving a reliability coefficient of 0.75. Pearson product-Moment Correlation Analysis was employed to arrive at the reliability coefficient.

Experimental procedure started with data collection after the administration of INSAT in the first session that helped in grouping the students into two homogeneous groups as well as getting the base line of the study established. Out of 72 students of two intact chosen classes, 36 were randomly selected. The researchers classified them into two groups using cluster random sampling technique, making sure that each group had equal number of 'above average', 'average and 'below average students. This gives room for consistency and homogeneity.

In the second session, the actual experiment was carried out on the two groups (A and B). Group A served as experimental group while group B served as control group. These groups were taught the following topics of Basic science for four (4) weeks: Personal hygiene, Heat, Simple Machine and matter.

The work was typed in the system using PowerPoint cable to connect it to the system and starts showing on the projector. From there, it entered the PowerPoint screen. Students' interests were glued on the screen as the teacher explained the important points. Interactions such as questions and answers were allowed between the teacher and the learners and between the learners and the learners themselves. For cooperative learning strategy, the students were grouped into three groups of five students each. The teacher introduced and explained the concepts, and then provided the learners with the necessary materials for interactions. They interacted in groups towards the achievement of the needed experiences. They were evaluated individually in the groups. One of the researchers administered the treatment using equal length of time, making sure that extraneous variables were controlled through some other measures.

- Group A was taught using power point presentation.
- Group B was taught using cooperative learning strategies. Basic Science Achievement Test (BSAT) was the Post test.

Post test was administered in the third session. The scripts were collected and marked using marking scheme to ensure uniformity of evaluation and elimination of bias. The data collected were analyzed using mean and t-test at 0.05 significant levels. Pretest ensures for the group equivalent, before the experiment.

Results

Results are presented in the table below;

Research Question 1: What are the differences in the pre-test and post-test mean scores of students taught Basic Sciences in group A using PowerPoint presentation?





Table 1: Differences in the mean scores when taught using PowerPoint presentation

| TETS | n | x | SD | Difference of mean |
|-----------|----|-------|-----|--------------------|
| Pre-test | 15 | 15.47 | 4 | 86.39 |
| Post-test | 15 | 71.86 | 7.8 | |

Table 1 above shows the pre-test and post-test mean scores of students in group A as 15.47 and 71.86 with SD of 4 and 4.8. respectively. This shows a significant difference in the performance of the students. Here \bar{x} and SD mean the average (mean) scores and standard deviation respectively; n= sample size.
Research Question 2: What are the differences in the pre-test and post-test mean scores of students taught Basic Sciences in group B using cooperative learning method?

Table 2: Differences in the students performances when taught using cooperative learning method.

| TETS | n | x | SD | Difference of mean |
|-----------|----|-------|------|--------------------|
| Pre-test | 15 | 16.67 | 11.6 | 62.26 |
| Post-test | 15 | 78.93 | 8.4 | |

The table two above shows the pre-test and post-test mean scores of the students when taught using cooperative method as 16.67 and 78.93 respectively, while their standard deviation are 11.6 and 8.4 respectively for pre-test and post-test. The difference in the mean scores is highly significant.

Research Question 3: What are the differences in the post-test scores of students taught Basic Sciences using PowerPoint and cooperative learning?

Table 3: Differences in the mean scores of the students in the two groups at post-test.

| Groups | n | x | SD | Difference of mean |
|-----------------------------|----|-------|-----|--------------------|
| Powerpoint | 15 | 71.86 | 7.8 | 7.07 |
| Cooperative learning method | 15 | 78.93 | 8.4 | |





Table 3 above shows the differences in the performances of the students in the two groups (A&B) at post test as 71.86 and 78.93 respectively with SD as 7.8 and 8.4 respectively for PowerPoint and cooperative learning and 7.07 as mean difference. The difference tilts in favour of cooperative learning though not significant.

HO₁: The post-test mean scores of students taught Basic science using PowerPoint presentation do not differ significantly from the pre- test at p (0.05).

Table 4: T-test analysis of Group A; L.S=Level of Significance

| Test | n | x | SD | t-cal | L.S | df | t-tab | Result |
|-----------|----|-------|-----|-------|------|----|-------|---------------|
| Pre-test | 15 | 15.47 | 4 | 24.83 | 0.05 | 28 | 1.7 | S. difference |
| Post-test | 15 | 71.86 | 7.8 | | | | | |

Table 4 above shows that t-cal, 24.83, is higher than t-tab, 1.7. This hypothesis is therefore rejected showing that there is a significant difference in the performance of the students taught using PowerPoint presentation at pre-test and post-test.

HO₂: The post-test mean scores of students taught Basic Science using cooperative learning method do not differ significantly from the pre-test at P (0.05).

Table 5: T-test analysis of Group B performance

| Test | n | x | SD | t-cal | L.S | df | t-tab | Result |
|-----------|----|-------|------|-------|------|----|-------|---------------|
| Pre-test | 15 | 16.67 | 11.6 | 18.83 | 0.05 | 28 | 1.7 | S. difference |
| Post-test | 15 | 78.93 | 8.4 | | | | | |

Table 5 above shows the t-cal is 18.83 and the t-tab is 1.7. Since t-cal is greater than t-tab, the hypothesis is rejected showing that there is a significant difference in the performances of the students taught with cooperative learning method in the pre-test and post-test performances.

HO₃: The post-test mean scores of the students taught using PowerPoint and cooperative learning do not differ significantly at p (0.05)





Table 6: T-test analysis of the two groups (A & B).

| Test | n | x | SD | t-cal | L.S | df | t-tab | Result |
|----------------------|----|-------|-----|-------|------|----|-------|-------------------|
| Power point | 15 | 71.86 | 7.8 | 0.81 | 0.05 | 28 | 1.7 | Not Difference |
| Cooperative learning | 15 | 78.93 | 8.4 | | | | | |

Table 6 above shows that t-cal is 0.81 and t-tab is 1.7. Since t-cal is less than t-tab, we accept the hypothesis that the post-test mean scores of the students taught using PowerPoint and cooperative learning do not differ significantly.

Discussion

The first research question sought to find out the difference in the pre-test and post-test mean scores of students taught Basic Sciences in group A using PowerPoint presentation. Table 1 shows the mean scores of the students in group A as 15.47 and 71.86 with SD of 4 and 7.8 respectively, and mean difference of 56.39 thus showing a significance difference in the performances of the students respectively for pre-test and post-test. Furthermore, on testing hypothesis one, it was found out that there was significant difference between pre-test and post-test mean scores of students taught using the PowerPoint presentation, with the post-test scores being significantly higher and mean difference of 56.39. This finding attests to the potency of PowerPoint presentation in fostering better learning and performance among students.

This finding corroborates the findings of Okoro and Urenyere (2013) where it was shown that there was a significant difference in the performances of students when taught using PowerPoint presentation.

Research question two determined the difference in the pre-test and post-test mean scores of students in group B when taught using cooperative learning method. Table two shows pre-test and post-test mean scores of the students as 16.67 and 78.93 with SD as 11.6 and 8.4 respectively for pre-test and post-test and difference in mean as 62.26, showing a significant difference.

On testing hypothesis two, it was found out that there was a significant difference between the pre-test and post-test mean scores of the students taught using cooperative learning method. This tilts in favour of the post-test mean score, with mean difference of 62.26.

This was further subjected to the test of hypothesis which highlights the effectiveness of cooperative learning in fostering better learning and performance among students. This agrees with the findings of Ibebuike (2014) that cooperative learning strategy enhances students' performance. The third research question investigates the differences in the post-test mean scores of students taught Basic science in the two groups (A and B) using PowerPoint presentation and cooperative learning method. Table 3 shows



the post-test mean scores of the two groups as 71.86 and 78.93 with SD as 7.8 and 8.4 respectively for groups A and B with difference in mean as 7.07 tilting in favour of cooperative learning strategy. This finding was subjected to test of hypothesis which revealed that t-cal is 0.81 and t-tab is 1.7. Since t-cal is less than t-tab, the hypothesis is therefore accepted that there is no significant difference in the post test mean scores of the students in the two groups (A and B). Furthermore this shows that these two teaching methods are effective for meaningful teaching and learning, almost at the same level in improving the performances of the students. This result agrees with the findings of Anulobi and Uzoma (2012) that PowerPoint presentation and cooperative learning method improve students' performance. The study concludes that PowerPoint presentation stimulates learning as learners' eyes and interest will be glued on the screen thereby creating room for meaningful teaching and learning as encouraged in MDGS Cooperative learning method also enhances learning as learners are encouraged to work cooperatively with others in the learning environment.

Recommendations

Based on the findings of the study, the researchers made these recommendations;

1. Teachers should endeavour to utilize the two methods of teaching but more of cooperative learning method in teaching learning situation. This will make for meaningful teaching and learning thereby achieving to effective implementation of (MDGs objectives).
2. Curriculum experts and Educational Technologists have to create awareness and sensitize teachers on the need and how to use cooperative learning method and PowerPoint presentation through conferences, seminars and workshops. This helps for the effective use of the materials during instructions as well as lessens the criticisms on lack of analysis, justification and measurement for some of the goals.
3. The Government should provide sufficient and quality of materials to schools for power point lesson presentation. The availability of the materials is crucial to adequate utilization during instruction for the attainment of desired objectives.

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