

EFFECT OF VIDEO BASED INSTRUCTIONAL PACKAGE STUDENTS' ACADEMIC PERFORMANCE IN BASIC TECHNOLOGY IN NIGER STATE

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Abstract: *The study was carried out to determine the impact of video based instructional strategy on basic technology student's academic performance in Junior Secondary Schools in Niger State Nigeria. Pre-test post-test quasi-experimental design was adopted. The population for the study is 22,226 junior secondary school basic technology students. One hundred and ninety three students were purposively selected for the study an intact classes were used for the two schools. This was divided into two (2) groups (A and B). Data collection phase lasted for six weeks, pre-test was given before exposing the students to the treatment variable. Mean and standard deviation were used to answer all the research questions, while t-test statistics was use to test null hypotheses one and two. All hypotheses were tested at 0.05 ($P=0.05$). The analysis of the findings revealed among others that, instructional digital video disc has significant impact on the academic performance of basic technology students. It was also found that, there is no significant difference in the academic performance of male and female students taught basic technology with instructional digital video disc. The study revealed that, maintaining the use of instructional digital video disc in teaching by the teachers of basic technology enhanced teaching and learning thereby improving students academic performance. It was recommended among others that, there is need for curriculum planners to emphasize the importance of using video based instructional strategy when teaching basic technology by the teachers in secondary schools. Teachers in secondary schools should be encouraged by school administrators to use instructional digital video disc when teaching basic technology.*

Keywords: *Video based instructional strategy , Basic technology, students, Academic performance*

Introduction

Basic technology is an integrated subject offered at the junior secondary school level in Nigeria. According to Nneji *et al.* (2011), basic technology is an elective subject that comprises element of woodwork, metalwork, building technology, auto mechanic, electrical/electronics and technical drawing at their basic levels. Basic technology is taught in junior secondary schools as integrated aspect of introductory technology designed to expose the students to the appreciation and stimulation of their interest in various areas of industrial technology. The aim is that at the end of junior secondary school, students would have attained technological and solid foundation for their entrance into a vocation of their choice (Uwaifo & Edigin, 2011).

Basic Technology was introduced into the Nigerian education system, 6-3-3-4 in 1982 as a result of the newly defined National Policy on Education that came into being after the National curriculum conference of September, 1969. The techniques for transmitting technical skills has remained too theoretical and devoid of the use of technology to stimulate interest and sustain the necessary skills required after school that could lead to advancement in technology. Consequently, undermining the essence and the cardinal objectives of the subject matter of Basic Technology, this assertion is drawn from the perspectives of failures in school examination which may be ascribed to factors guiding teaching and learning which include archaic pedagogical approaches that are not in tune with global best practices (Uwaifo & Edigin, 2011).

Therefore, there is no doubt that students' performance should be improved so as to generate desirable changes in the performance of students of basic technology in junior secondary schools. To improve students performance of basic technology students, there is need to adopt video based instruction method of teaching.

Gambari (2010) stated that Video Based Instructional (VBI) package is that aspect of multimedia that the student will be solely participating in the learning. Video package can be defined as an instructional media which gives the learner the privilege to participate, control and, study at a close pace until the learning is achieved. It also makes the teaching of difficult part of most topics easier for the teacher. Video based instructional strategy based package, when used as a teaching material in the sciences makes the practical side to be easy since students are conversant with topic to be practicalized as they participate and control the videos they watch. It can also be used to bring home the practical topics of biological science on the close observational aspect, making the teaching and learning of Biology to be more of student-centered. The VBI based package can enhance effective teaching and learning process as it helps to improve the teacher (instructor) and the student (learner) in the area of visual and listening. Interactive instructional package is an electronic based technology generally used as teaching material and it comprises of video being manipulated or controlled by the learner at his/her pace for effective learning. Therefore, it is an instruction that includes drill and practice, tutorials, simulations, instructional management and exercises which leads the students to high level of performance.

The potential benefits of video based instructional strategy cannot be underestimated in the contemporary world. Adams (2009) is of the opinion that video instruction is one of the most influential of all the media for teaching, Agusibo (2007) reported that video based instructional strategy has a strong influence on learning but most teachers seldomly use them because they are not aware of their effectiveness. This has led to the use of conventional methods of teaching which has not helped in anyway to improve student's performance. For teachers to be able to pass knowledge to the students effectively and meet up with their counterpart in developed countries, he needs to integrate the use of video based instructional strategy in his teaching (Kochnar 2013).

Statement of the Problem

Over the years, the performance of students has been very poor. For instance, in the year 2019 only 42% passed the prescribed examination i.e. education resolve centre at credit level while 58% failed, in the year 2020 only 39% passed at credit level while 61% failed (Niger State Ministry of Education). This poor performance has been linked to many factors such as inappropriate admission policy into junior secondary schools, negative attitude of students to the subject, inadequate coverage of syllabus on the part of the teachers, lack of adequate tools and equipment to teach basic technology in junior secondary schools. Most people are very conversant with the traditional method of impacting knowledge to the students in the classroom. This practice could be boring to the students after a while and some of the topics taught to the students may look abstract to the students even when they are well taught by the teacher. Cardenas (2008) states that every students cannot understand everything that is verbally taught to them, so the use of media in teaching proves to be more interesting, creative and attractive.

Purpose of the Study

1. The impact of video based instructional package on academic performance of basic technology students;
2. The impact of video based instructional package on the academic performance of male and female students in junior secondary schools in Niger State.

Research Questions

This research provided answers to the following research questions:

1. What is the impact of video based instructional package on the academic performance of students taught basic technology in junior secondary schools in Niger State?
2. What is the impact of video based instructional package on the academic performance of male and female students taught basic technology in junior secondary schools in Niger State?

Hypotheses

The following hypotheses were formulated for this research work:

- i. There is no significant difference in the academic performance of students taught basic technology using video based instructional strategy and those taught using conventional method of teaching.
- ii. There is no significant difference in the academic performance of male and female students exposed to video based instructional strategy.

Methodology

Quasi-experimental design was used for the study. The study was carried out in junior secondary schools in Minna, Niger State. The population of this study consists of the junior secondary school students in Minna. The major characteristics of the population comprises of male and female students in Minna, Niger State secondary school. It comprises of a total of 1,681 male students and a total of 1,245 female students which sums up to 2,926 Junior secondary schools students. In the selection of the schools for sampling, purposive sampling was employed. The schools were selected on their population, availability of basic technology teachers and whether the subject (basic technology) is offered in the schools. The total number of students used for sampling is 193 students. The instrument as formulated by the researcher were validated by experts in the in the area of audio visuals, also ascertain its appropriateness. A pilot testing was conducted in Government Junior secondary school Paiko. The main aim was to determine the reliability coefficient of the items in the instrument (test items). A total of 30 copies of the test items were administered, answered and returned. The pilot study was conducted once in the school. The reliability of the instrument was determined by the statistical analysis of the data collected from the pilot study. The reliability of the whole instrument was determined using Pearson reliability. Reliability coefficient of 0.99 was obtained. A pre-test was administered to the students in each group thereby selected those that perform well to form the group. After which the experimented group were taught with video based instructional strategy package. The duration for the researcher period was six weeks, this is done with lesson plan, video based instructional strategy package. Demonstration method was used to teach the students, there after a post-test was administered to compare the Performance of the two Groups. The mean and standard deviation of the performance of students for pre-test and posttest for experimental group were computed to answer the research questions. Independent t-test statistics was used to test null hypotheses at 0.05 level of significance.

Results

Table 1: Means and standard deviation of post-test scores of students taught Basic Technology using video-based instructional package and those taught without.

Group	N	Mean	DF	Standard Dev.
Expt. Post-test	50	49.960	49	8.350
Control post-test	50	24.020	49	6.600

The result in Table 1 indicates that, post-test performance of students taught using video based instructional strategy is better than that of students taught without it. This therefore, showed that video based instructional strategy significantly improve students' academic performance.

Table 2: Mean and standard deviation of posttest scores of male and female students under experimental group

Group	N	Mean	DF	Standard Dev.
Expt. Post-test males	25	49.680	24	8.854
Expt. Post-test Females	25	49.840	24	7.998

Table 2 presents the means and standard deviations of the post test scores of male and female students taught basic technology using video based instructional strategy. The mean and standard deviation for male students were 49.6801 and 8.854 and that of the female students were 49.840 and 7.998. The result therefore, indicated that no significant difference exist on the performance of male and female students taught using video based instructional strategy. It means that video based instructional strategy has impact on the performance of male and female students in junior secondary schools in Niger State.

Table 3: Impact of instructional digital video on Students' 'academic performance

Group	N	Mean	Std Dev.	DF	t-cal.	Sig.
Expt.	50	24.0200	6.60083			
Control	50	49.7600	8.35088	98	18.099	.000

P = 0.05

$$t = (98) = 18.099 \quad P = .001 < .05$$

From Table 3 the t-calculated was 18.099 which is greater than the t-critical (1.99) at 5% level of significance ($p=0.05$). The analysis therefore showed that, video based instructional package has significant impact on the academic performance of basic technology students. Therefore, the null hypothesis which states that, there is no significant difference in the academic performance of students who were taught Basic Technology with video based instructional package and those taught using conventional method was rejected.

Table 4: Impact of video based instructional package on male and female Students' academic performance

Group	N	Mean	Std Dev.	df	t-cal	Sig.
Male	25	49.6800	8.85400			
Female	25	49.8400	7.99833	24	0.60	.952

P = 0.05

$$t (24) = .60, P = .952 > .05$$

Table 4 present t-test analysis of the difference between the academic performance of male and female basic technology students taught using video based instructional package. The analysis indicated that t-calculated value of 0.60 was less than the t-critical value of 1.99 even at 0.05 levels of significance. This means that, there is no significant difference between the academic performance of male and female students. The null hypothesis which states that, there is no significant difference on the academic performance of male and female students taught using video based instructional package was not retained.

Discussion

The study revealed that, video based instructional package has significant impact on academic performance of basic technology students. This was revealed by the findings table 1 in which the mean score for students exposed to experimented was greater than the mean score for students exposed to the conventional method. The result of hypothesis one revealed that there is no significant difference in the academic performance of male and female students taught basic technology with instructional digital video disc. This is in line with the findings of Anulobi (2009) who discovered that the use of video compact disc in teaching enhance academic achievement.

This also agreed with the findings of Ogunleye (2008) who noted that video based instructional strategy is used for enrichment, that is an added resources, similar to a film recording that is supposed to add value to a subject of study, he pressed further to say that it is also used for team teaching in the classroom and provide opportunities for all (male and female) students to learn. Also in support of this findings Oshokoya (2011) conducted a research on the effect of video-taped instruction on secondary school students Achievement in history, it has a mixed population of male and female. The result confirmed that students taught with video-taped instruction perform better than those taught with the conventional method, it also revealed that gender was not a significant factor on student's achievement in history. It also revealed that the mean achievement scores of male and female students were greatly improved when video instruction is used in teaching them. This is in line with Agommuoh and Nwewi (2013) who opined that students taught using video instruction performed significantly well than those taught using conventional/traditional method. Owusu (2013) conducted a research on impact of the use of audio-visual aids to complements the traditional or conventional lecture method on the performance of Ghanaian senior high school physics students. The findings in this research study revealed that the senior high school students exhibited higher achievement than those in the control group. This finding is in line with Fillmore (2008) which opined that students learn better than audio-visual aids are used to teach them.

Oguz (2014) also conducted a research on effect of the computer Based instruction on the achievement and problem solving skills of the science and technology students and finds out that there is a statistically significant increase in the achievements and problem solving skills of the students in the experimental group that received treatment. This also agreed with Chukwu (2010) who observed that instructional digital video disc can be considered as learning resource in that it can provide learners with access to knowledge and information in a more direct and concrete forms and provide physical models and improve academic performance.

Conclusion

From the result this study revealed that video based instructional package has significant impact on the academic performance of basic technology students. The study also revealed that there is no significant difference in the academic performance of male and female students taught basic technology with video based instructional package. Result from the study made this conclusion to be drawn that maintaining the use of video based instructional package in teaching by the basic technology teachers will enhance teaching and learning thereby improving students academic performance.

Recommendations

Based on the findings and conclusion of the study, the following recommendations were made:

1. The findings of this study revealed that video based instructional package has significant impact on the academic performance of basic technology students, it is therefore recommended that the curriculum planners should emphasize the importance of using video based instructional package to teach basic technology by the teachers of junior secondary school.

2. Teachers in junior secondary schools should be encouraged by the school administrators to use video based instructional package when teaching basic technology as it was found to be more effective than lecture method.

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