

EFFECTS OF GENDER AND ACHIEVEMENT LEVELS ON STUDENTS' PERFORMANCE IN EDUCATIONAL TECHNOLOGY INSTRUCTION IN FEDERAL COLLEGE OF EDUCATION (FCE) KONTAGORA, NIGER STATE

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Abstract

The study investigated the effects of gender and achievement levels on the students' performance in Educational Technology instruction in Federal College of Education, Kontagora, Niger State. It was an experimental study, post-test and retention test were employed. The experimental group was taught using videotape in two hundred level (200) Educational Technology student instruction. 60 students drawn from 200 level Educational Technology department. Federal College of Education, Kontagora were used. Instrument used for data collection is Educational Technology Achievement Test (ETAT). The students were stratified into male and female, and three achievement levels (high, medium and low). Data collected from the post-test and retention test scores were analyzed using Analysis of Covariance (ANCOVA). Result revealed no significant difference between male and female students. Post hoc was further used to establish where significant difference lies. There is significant difference in the post-test and retention test scores of students at different achievement levels.

Introduction

The use of video-player has become an indispensable tool in every aspect of education. Learners' cognitive, affective and psychomotor skills acquisitions have been explored by the use of technological devices (Mark, 2010). It is recognized that the three domains (cognitive, affective and psychomotor) affect every student's learning and understanding in certain unique ways pictures as one of learning materials had been in use for several years, but with the introduction of video-tape instruction into the educational system, teaching and learning has witness a great change. The National Commission for Colleges of Education (NCCE) is of the opinion that there is the need to produce seasoned professional teachers who would be able to handle video-tape instruction in the teaching and learning process.

With the introduction of video-tape instructional technology into the educational system, it has been discovered that teaching could be developed in a more flexible way through video-tape assisted instruction in order to make it more responsive to student's learning (Mavis, 2011). According to Ruben (2011), video-tape instruction has its feature that permits a high degree of individualization. Video-

tape involves the use of magnetic that can perform all educational functions such as broadcast television and can achieve some of them more effectively due to the additional control, the learner can exert by stopping, repeating and replaying the material. Video-tape instruction can be used to distribute television material and thus remove some of the constraints of broadcast programme, such as inconvenient transmission times. It can be as well used to provide vicarious experience which may be difficult to view in real life (Dave, 2010). Several studies have suggested that video-tape ensures pleasant and rewarding learning experiences for students (Mark 2010, Jaff 2010, Ruge 2011). According to Cegg 2010, video-tape instruction had more positive effects on students learning and transfers of knowledge than the conventional classroom instruction.

It has been observed that the relationship between the variables of gender and achievement levels vis-a-vis the use of video-tape player has been only superficially examined in Nigeria. Thus, the influence which these variables have on students' achievement in educational technology instruction provides unique problems for media technology researchers and educational technologist in Nigerian (Umeh, 2012). This study, effects of gender and achievement level specifically examined by same researcher due to some insatiable (Vikars, 2011). Wittich (2011) identified some justifiable reasons of low gender performance and achievement levels which include; the preponderance of male students admitted into higher institutions and higher illiteracy among female students, despite the fact that there is no statistically significant difference in the study, the researchers concluded that the reasons for observed educational differences between male and female students in the Nigerian schools is inadequate instructional technology in the teaching and learning process in the Nigerian schools.

Research Questions

Two research questions guided this study and they are:

1. Does the use of video-tape player affects gender achievement levels on students' performance in the post-test mean scores of high, medium and low levels students who are taught using video-tape player in education technology instruction.
2. Does the use of video-tape player affect the retention test mean scores of male and female students who are taught using video-tape player in education technology instruction?

Hypotheses

Two null hypotheses were formulated to answer the research questions.

H₀₁: There is no significant difference in the post-test mean scores of high, medium and low achievement level of students taught using video-tape player in education technology instruction.

HO2: There is no significant difference in the retention test mean scores of male and female students taught using video-tape player in education technology instruction.

Methodology

The method adopted for this research was post-test and retention test control. The research sample was drawn from an intact class of 200 level education technology students in Federal College of Education, Kontagora. Students were stratified along sex and academic achievement levels (high, medium and low) based on their performance in the previous school examination in education technology instruction. According to the study, a high achievement level student was one whose average score in the previous school examination falls within the upper 50%, the medium achievement level students' scores fell within the middle 50%, while the lower fell within 25% lower. Total population of students used for the study consists of sixty students, 21 male and 39 female. The instrument used for the study consisted of video-tape instructional package. The video-tape instructional package lesson contained visual and audio lesson on motion pictures and visual components were prepared from video-tape instructional prepared by the researcher.

Research Instrument

The instrument used for the study is the educational technology achievement test. It was designed by the researcher to measure students' cognitive learning achievement. It contained a fifty multiple choice questions while section A and B, four answer choices A - D section A contained forty questions while section B contained ten true/false question choices. This test was constructed and pilot tested on a sample of fifty students selected from the same population as the primary sample. It was validated by two educational technology experts from Federal University of Technology, Minna. They ensured that all question items were derived from the content that was presented to the group. To test for the reliability, the test (ETAT) was pilot tested on fifty students randomly selected from 100 level educational technology students not from the research population, thus they were not selected for the final study. The test was administered once on the pilot sample. A reliability test using the Kuder Richardson formular revealed a reliability of 0.86% which was considered good enough for the research study.

Result

The results from the findings were presented as follows:

Research Question 1: Does the use of video-tape player affects gender achievement levels on students' performance in the post-test mean scores of high, medium and low levels students who are taught using video-tape instructional package in education technology instruction.

Table 1: Analysis of Covariance post-test scores based on gender achievement level of students using the pre-test covariate

Source of Variation	Sum of Squares	Df	Mean Square	F	Significance Difference
Covariate	116.430	1	116.430	13.387	0.001
Effect Achievement level	76.876	2	38.438	4.090	0.022
Explained	193.308	3	64.438	6.85	0.001
Residual	535.743	57	9.399		
Total	729.049	60	12.151		

0.05 significant level

From the table above, the result revealed that there is a significant difference in the post-test mean scores of high, medium and low achievement levels of students $F(3, 57) = 6.85, P = .001$.

Research Question 2

Does the use of video-tape player affect the retention test mean scores of male and female students who are taught using video-tape instructional package.

Source of Variation	Sum of Squares	Df	Mean Square	F	Significance Difference
Covariate	50.462	1	50.462	3.504	0.066
Effect Retention level	45.228	1	45.228	3.140	0.82
Explained	95.690	2	47.845	3.32	0.04
Residual	835.359	58	14.403		
Total	931.049	60	15.517		

The table above revealed that male students retention test scores were not significantly different from the scores of their female counterparts when they were taught using video-tape instructional package $F(2, 58) = 3.32, P = .04$.

Discussion

The result of hypotheses indicated significant difference at 0.05 alpha level. Post-hoc ANCOVA analysis revealed that there was significant difference in the post-test mean scores of high achievement and low achievement levels of students. Thus, there was high and medium achievement levels and between students of medium and low. The result of hypothesis two examined the effect of video-tape and observed that there was no significant difference in post-test mean scores of male and female students. The result also show that there was no significant difference between

retention test mean scores of male and female students. The post-test mean scores and the retention test were not significantly different from those of the female students at the 0.05 alpha level. It can be deduced from the results obtained from hypothesis two that the use of video-tape in teaching education technology did not produce a significant difference in the analysed post-test and retention test mean scores of the male and female students. Therefore, the null hypothesis was accepted.

Conclusion and Recommendation

The findings of this research showed that education technology instruction on gender variable has major implications for education practice and instruction in general. The study revealed that the use of education technology instruction (video-tape) did not produce any significant difference on either the male or female students at both post-test achievement and retention test. It therefore shows that the medium is not gender biased. The study further revealed the facilitative effect of video-tape in enhancing better teaching and learning process, for male and female students and for learners at different achievement level.

Based on the result above, it is recommended that Colleges of Education at all levels should exploit the potentials of the video-tape in their classroom instruction. Federal government should encourage lecturers in both colleges of education and universities to the use of such technologies by making them available in schools. Also the software materials needed should be provided along with the hardware.

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