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Impact of Video Advance Organizer on NCE Students' Interest and Performance in Geomorphology Concepts

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Abstract:

This study employed quasi-experimental research design with pre-test and post-test. The study involved the use of experimental and control groups of NCE II Geography students, and digit of randomization were used to select the two groups. The population of this study was 234 which consist of all NCE II (2013/2014) students' intake of Umar Suleiman College of Education Gashu'a (USCOEGA), Department of Geography. From the NCE II class of 234 male and female students, 60 were randomly selected for experimental and control groups. The instruments used for data collection are Geomorphology Performance Test and (GPT), Geomorphology Interest Test (GIT). Mean Scores of students' performance was used to answer research questions. Hypothesis 1 was tested by Wilcoxon Signed Rank Test, hypothesis 2 was computed by t-test tested by Independent t-test at a significant level $p \leq 0.05$. The findings revealed that the students' interest before and after the treatment in the experimental and control groups is almost the same which indicates insignificant difference. Experimental group exposed to video advance organizer strategy performed significantly higher. It is therefore recommended that; teachers should use video advance organizer strategy in teaching earth science courses for its adequacies to improve the cognitive ability of the students.

Keywords: Video advance organizer, interest, performance, geomorphology concept

1. Introduction

In the world of technology today, learners do understand concepts faster and vividly recall them easily when they are exposed to instructional materials with less verbalization. Research findings like Olayinka, (2008) have continued to reveal that our classrooms are heavily dominated by the use of traditional teaching methods (Barde, Ezugwu, Muhammad & Mustapha2003). These methods emphasize procedure of instruction in which majority of learners are merely passive listeners, while teacher plays the role of dispenser of knowledge. Recent researches like Nuruddeen, (2013) have debunked the use of this mode of instruction because of inadequacies to solve and address learner's immediate problems. Therefore, learners are to be actively involved in constructing knowledge and video advance organizers have such potentials (Ausubel, 2000). This problem of non-utilization of instructional materials is an impediment to good performance of students in geomorphologic concepts in Umar Suleiman College of Education Gashu'a (USCOEGA). The previous result of geomorphology revealed that from 2009-2014 students' performance was not quite encouraging, this is due to the fact that the dominant method employed by the teachers is a traditional teaching method which is deficient in boosting learner moral to participate and also contribute to classroom activity Academic office (2014). Geography is a discipline that studies space and spatial relation, Geographical space varied widely over space thus having a physical contact with all varying Geographical phenomena and processes is not possible to a larger extent. Therefore, integrating information technology teaching method would break this learners' contact with geographical phenomena that are thousands of kilometers away from their local environments.

Reports and studies reveal that there is a difference in interest in the use of information technology gadgets between sexes, in African culture of northern Nigeria there is a lot of differences in gender social attitudes, the use of educational technology teaching methods may have an influence between the different sexes.

The learner previous experience is important in the choice of teaching methods Bello, (2014) The use of ICT technological materials in teaching in recent time, attracted the attention of education academic communities; the parent socio-economic status, community advancement among others, can affect student access, electronic devices programmes etc. Northern Nigeria communities are among, the poor and less advance societies of the world. Therefore, the main thrust of the study is to examine the impact of video advance organizer on NCE students' interest, performance, and retention on geomorphological concepts in College of Education Gashu'aYobe State.

From the literature reviewed in this study it could be said that there are many empirical works that has been conducted in the area of advance organizers as a teaching strategy. The major concerns found from the review is that, most of our teachers' adopted pedagogy is teacher centred activity, which is inadequate to immediately capture students'

interest, retain and subsequently recall with much ease, which subjected majority of our students to mere passive listeners and prone to forgetfulness.

This has provided an empirical data on the video advance organizer as an ICT strategy that enhance effective teaching of Geomorphological concepts and other earth science related subjects in our classrooms. The studies proven the integrity of video advance organizer with a focus on students' interest, performance and retention. This is why this study investigated the impact of video advance organizer on NCE students' interest and performance in geomorphological concepts in Yobe State, Nigeria. To ascertain its efficacy the studies highlighted the use of ICT as a strategy in teaching which this study explores during treatment. The summary of the reviewed literature shows a degree of agreement, disagreements as well as the differences in the present and previous researches: Adediji, Foloruno&Adedji (2013) in their work discovered that advance organizers improve students' performance and retention this in line with the findings of this research work. But the present research worked on both students' interest and gender respectively. Sharma and Agnihotri (2013) found that an advance organizer was effective in increasing students' achievement. This agreed with findings of present research that video advance organizer improve students' performance and retention but it does not affect interest. Tseng, Wang, Lin, and Hung (2002) suggest that students who are exposed to computerized advance organizer demonstrated high level of achievement; this is in consonance with present work that revealed the suitability of video advance organizer in improving students' performance and retention. Oyelede (2011) found that pictorial advance organizer is more reliable in improving students' performance than written advance organizer and non-advance organizer group was found to be the least in improving students' academic performance. Therefore present research differs only with Oloyede in measuring students' interest and retention. Chen (2007) in his research on the effectiveness of advance organizers on learning and retention. The result shows significant different in both learning and retention. Therefore his work differs with present research only on students' interest. Lin and Chen (2006) found that advance organizer is not effective in improving students' performance. But in present research, it is found that video advance organizer improved students' performance. Wolfson (2010) in his research revealed that older students tended to perform worse than younger adults and that does not age significantly predicted recall performance. This is in contrary with present research which also predicted significantly the effectiveness of video advance organizer in terms of performance, retention and differs in interest. Chung (2008) reported that were not effective on students cognitive ability but present research argued that video advance organizer improve students' performance and retention. Lee (2009) in work found that advance organizers do not improve academic achievement this is in disagreement with present research that revealed the effectiveness of video advance organizer.

1.1. Empirical Studies

The issue of Video Advance Organizers as a teaching strategy has greatly attracted the attention of many researchers and a number of studies were conducted on the effectiveness and suitability of advance organizers in teaching and learning. Adediji, Folorunso and Adediji, (2013) in their study 'Historical Simulations as Narrative and Graphic Advance Organizers on Nigerian Junior Secondary School Students' Learning Outcomes in Basic Science'. The study was conducted in all Secondary Schools (JSS) II students in Osun State Nigeria. The sample comprised 126, four hypotheses were tested using t-test, One-way Analysis of Variance (ANOVA) and Post hoc (Tukey) multiple comparison test. The results showed that historical simulations (SIS and SCIS) were significantly effective in improving students' performance in Basic Science with significant difference in the pre and post treatment scores for SIS ($t = 22.85$, $p < 0.05$) and SCIS ($t = 14.42$, $p < 0.05$). A significant difference also existed among the three groups (SIS, SCIS and CTEM) in students' posttest performance ($F = 140.59$, $p < 0.05$) with the performance of students taught using SIS and SCIS statistically better in posttest than the CTEM treatment. There was also no significant difference in the attitudes of students toward Basic Science when SIS and SCIS were used as advance organizers ($t = 1.53$, $p > 0.05$). In addition, the results showed that SIS and SCIS had significant effect on the retention ability of the students and a significant difference existed in the retention ability of students exposed to use of SIS and SCIS as advance organizers ($t = 3.34$, $p < 0.05$) with SCIS being the most effective. It was concluded that advance organizer strategies, SIS and SCIS, could be used to effectively enhance students' learning and retention of Basic Science.

Sharma, and Agnihotri, (2013) carried out study title 'Effectiveness of Instructional Material Based on Advance Organizer Model for Teaching Educational Technology to B.Ed. Students in Terms of Achievement and Reaction' Devi Ahilya Vishwavidyalaya, University of Indore. The samples were consisting of both male and female students. The finding shows a reliable effect that the calculated t-value for achievement in Educational Technology is 12.837 with df of 49 and its two-tailed probability of significance is .000 which is less than 0.01. Hence this value is significant at 0.01 levels which suggests that the mean scores of achievement in Educational Technology of B. Ed. Students at pre-test and post-test stages differ significantly. Meaning that instructional material based on advance organizer was effective in increasing the achievement in educational technology of B. Ed. Students.

Oloyede, (2011) A Meta-analysis of Effects of the Advance Organizers on Acknowledgment and Retention of Senior Secondary School (SSS) Chemistry Science Education Programme, Abubakar Tafawa Balewa University, Bauchi, Nigeria. An investigation into the effect of pictorial and written advance organizers on students' achievement in Senior Secondary School chemistry was carried out with 138 senior secondary school two (SS2) chemistry students on the concept of energy change. Evidences of poor performance and declining enrolment point to the fact that the most desired technological, scientific and engineering application of chemistry cannot be sustained (Oloyede 1996; Demide 2000). The implications consist in the fact that chemistry teaching does not lead to students understanding of concepts, functionality and application of its ideas, hence any learning. This makes it imperative to search for an approach for teaching of chemistry

that aim at understanding rather than memorizing and juggling of facts. This study is, therefore, designed to find out the effects of pictorial and written advance organizers on the achievement of SSS two students in chemistry, as a measure towards ensuring appreciable achievement and retention in chemistry learning. The population was made up of all the SS21 chemistry students in five senior secondary schools in Bauchi Local government area of Bauchi State. The total population was 1,167 students but only one hundred and thirty-eight (138) students took part in the study. The research design adopted for the study was 3 x 2 factorial designs. There are three (3) levels of experimental factors and two (2) levels of gender. The Criterion sampling technique was used in to select schools from the target population. The data collected were analyzed using t- test, Analysis of covariance (ANCOVA) using pretest scores as covariates and multiple correlation analysis. All hypotheses were tested at $P=0.05$ levels of significance. Pictorial found to be most facilitating, followed by written organizer and non-advance organizer was the least in enhancing students' achievement in chemistry. This might have been due to the stability and clarity of anchoring ideas that the organizer provided in the cognitive structure of the experimental group of the chemistry students. This study corroborated the findings of (Kang, (2002); Mayer 2003; Shihusa and Keraro2009) that advance organizers enhance students' performance and facilitate meaningful learning and improve retention.

1.2. Objectives of the Study

The main objectives of the study were to examine the effect of video advance organizer on NCE II students' interest, performance, and retention of geomorphological concepts. Specifically the objective of the study was to:

- Investigate the impact of video advance organizer on students' interest in learning Geomorphology concept before and after treatment.
- Examine the impact of video advance organizer on students' performance in geomorphology concepts.

1.3. Research Questions

The following research questions were used to guide data collection:

- What is the difference in the interest levels of students taught geomorphology concepts using Video Advance Organizer strategy before and after treatment?
- What is the difference in the mean score performance of students taught geomorphology concepts using video advance organizer strategy.

1.4. Research Hypotheses

The following null hypotheses were treated at alpha (λ) level of 0.05

- H_{01} : There is no significant difference between the pretest and posttest interest of students taught using video advance organizer strategy.
- H_{02} : There is no significant difference between the performances of students taught using video advance organizer strategy and those taught the conventional method.

2. Methodology

This study employed quasi-experimental research design with pre-test and post-test. The study involved the use of experimental and control groups of NCE II Geography students, and digit of randomization were used to select the two groups. Both experimental and control groups were abruptly pre-tested on academic performance and prior interest, this is done in order to get the differences in terms of ability level between experimental group and control groups. The experimental group was exposed to Video Advance Organizer. And control group were taught using lecture method without treatment. Posttest was administered after the treatment to determine the effectiveness of two instructional methods on students' academic performance and post interest on Geomorphological concepts.

The population of this study is 234 which consist of all NCE II (2013/2014) students' intake of Umar Suleiman College of Education Gashu'a (USCOEGA), Department of Geography. From the NCE II class of 234 male and female students, 60 were randomly selected for experimental and control groups. The selection was guided by employing Tuckman's (1972) digit of randomization on the population. The intact class of NCE II students was of equal ability level because they were exposed to the same instructional technique and same geomorphological concepts before the study. Two instruments were developed to generate data for this study. Geomorphic Performance Test (GPT) and Geomorphic Interest Test (GIT) were developed on topics in Geomorphological concepts and consist of multiple-choice questions, fill in the blank and true or false. To ascertain the validity of the instruments used for the research; Geomorphology Interest Test (GIT) and Geomorphology Performance Test (GPT), experts in the field of instructional technology and geography as well, they have established the appropriateness, statement clarity and content validity of items in the test and in the questionnaire. They have experts checked for possible errors in the instruments and certify if the questions are appropriate for the level under study. They also validate and corrected some errors noted. Some items that were irrelevant were also removed with overall adjustments for the questions to measure what is set up to measure.

A pilot study was conducted on geomorphological concepts in Umar Suleiman College of Education Gashu'a and the participants are NCE II students in the department of Geography, which are no longer part of the research, in order to ascertain the suitability and reliability of the instrument to measure what is purported to measure. To determine the reliability of Geomorphic Performance Test (GPT) thirty (30) students were exposed to pretest and their results were collected for compilation.

The reliability coefficient of Geomorphology Performance Test (GPT) instrument was established using Pearson Product Moment Correlation (PPMC). The result collected was found that, the instrument has a reliability of 0.87, this depicts that the instrument is consistent and reliable for the study. As for Geomorphic Interest Test (GIT) it was administered to thirty (30) students and their results were divided into two, odd and even numbers, and then finally correlated using Spearman Rank Correlation, from the result obtained r was found to be 0.98 which indicates a strong positive relationship, thus, the instrument is reliable to measure students' interest.

The null hypotheses were verified at $P \leq 0.05$ levels of significance with the aid of SPSS Software, H_{01} was tested using Wilcoxon Signed Ranked Test, H_{02} was analyzed using comparative t -test. The research questions were answered descriptively using mean and standard deviation of students' interest and performance for the two research groups.

3. Result

Variable	N	Mean Rank	Sum of Rank	Z_value	P_value	Remarks
Pretest	30	17.12	291.00			
				1.93	0.05	Not Significant
Posttest	30	16.00	128.00			

Table 1: Wilcoxon Signed Rank Test Scores of Students' Interest in the Experimental Group Before and after Treatment Significant at the $P \leq 0.05$ Levels

Statistics in Table 1.1 shows an insignificant difference in the students' interest in the experimental group before and after the treatment; $Z = 1.93$; $P = 0.05$. The level of students' interest between pre and posttest in the experimental group is insignificant with Z value (1.93) which is greater than (0.05). Statistically this signifies that the level of students' interest is insignificant and that hypothesis one is hereby retained. And that, video advance organizer does not have influence over students' interest before and after the treatment. Therefore video advance organizer strategy does not have influence over students' interest. Findings of this study showed non-significant was found to exist among students' interest in the within-subjects group exposed to video advance organizer strategy; therefore video advance organizer strategy does not affect students' interest. However, this is the uniqueness of this study because upon all the literatures that we laid our hands, none of them reports effect of advance organizer on students' interest.

Variable	N	X	SD	SE	df	t_value	p_value	Remarks
Experimental	30	14.50	4.56	4.6				
Control	30	11.12	4.43	4.2	29	3.33	0.002	Significant

Table 2: T-Test Analysis of Mean Performance in Geomorphology for Experimental and Control Groups (After Treatment) Significant at the $P \leq 0.05$ Levels

Statistics in Table 2 shows a significant difference between the performance of students in geomorphology in the experimental group and students in the control group; $t(29) = 3.33$; $p = 0.05$ after treatment. The performance in both groups is significantly different because the observed P value is less than 0.05. Since the performance of students in the experimental group is significantly different from the performance of the students in the control group hypothesis two is hereby rejected. Therefore there is a significant difference between the performance of students treated with video advance organizer strategy and those exposed to lecture.

The findings of this study revealed that there is significant difference in the mean performance of students. The experimental group exposed to video advance organizer strategy performed better than those exposed to lecture method. This might have been due to the suitability, clarity, stability and appropriateness of anchoring ideas that the video advance organizer strategy provided in the cognitive structure of the experimental group exposed to geomorphological concept using VAO. This study is in conformity with the findings of Adedeji, Folorunso and Adedeji (2013); Sharma, and Agnihotri, (2013); Oloyede (2011); Lee, (2009); Lin, and Tsui ping, (2006); and Mayer, (2003) that VAO strategy enhance students' performance and facilitate meaningful learning.

4. Recommendations

Based on the findings from this study, the following recommendations are preferred:

- It has been proven that video advance organizer gadgets have positive effective on students learning interest, and that learning starts with stimulation of interest, therefore, for learner to understand concept faster there is need for these gadgets to be available in our classroom. To achieve this; Federal Ministry of Education and State Ministry of Education nationwide, should made these gadgets obtainable in our various schools nationwide.
- The use of video advance organizer strategy enhanced students' performance, making learning to be more flexible and real. Therefore the use of this strategy should be encouraged in colleges of education for teaching Geography. To achieve this Government should encouraged teachers through capacity building by organizing workshops and seminars on the importance of video gadgets because of its capacity to connect previous knowledge and to be learned concepts for performance and retention to prevail. In addition, Government and NGOs should as a matter of fact contribute video advance organizer gadgets to all levels of education because these gadgets when utilized effectively, reduces teachers activity such as verbalization and give room/opportunity to learners' participation and dominate the whole classroom activity.

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