UDOSEN, I. N., *Ph.D* & Onuoha Peace CHISARA, *Ph.D*

Lecture Capture Technology and Glaser's Model as Correlates of Students' Achievement in CCA in Upper Basic Education

BY

UDOSEN, I. N., *Ph.D*
Department of Educational Technology/Library Science
Faculty of Education
University of Uyo, Uyo

AND

Onuoha Peace CHISARA, *Ph.D*
Department of General Studies,
Imo College of Education, Ihitte-Uboma, Imo State

ABSTRACT

The effects of lecture capture technology teaching method and Glaser's model was investigated among students of CCA in Upper Basic Education. The quasi-experimental research design, which involves intact groups, pre-test, treatments, post-test, and non-randomization, was adopted for this study. The population of this study comprises all the 32,763 Junior Secondary School (JSS1 to JSS3) students in all the 285 Public Secondary Schools in Imo State. The sample size for the study is 88 Cultural and Creative Art students in Upper Basic School two students sampled using a multi-stage cluster, purposive and simple random sampling techniques. The two instruments used for this study were researcher-made Multiple-choice Cultural and Creative Art achievement tests for Pre-test and Post-test. The first instrument is a multiple-choice Cultural and Creative Art Achievement test for pre-test (CCAAT-PRE). The second instrument is also multiple-choice Cultural and Creative Art Achievement test for post-test and follow-up, (CCAAT-POST). The CCAAT-PRE and CCAAT-POST were given to one experienced Cultural and Creative Art, (CCA) teacher, two Educational Technologists and two specialists in measurement and evaluation for content and face validation. Internal consistency coefficients of 0.774 and 0.784 were obtained for CCAAT-PRE and CCAAT-POST respectively using Kuder-Richardson formula twenty, (KR$_{20}$). Descriptive statistics (mean and standard deviation) were used to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance. The findings of the study showed that there is significant difference between the mean achievement scores of the students taught Cultural and Creative Art using lecture and Glaser's teaching methods in the post-treatment level. It also revealed that the mean achievement scores of male and female students taught CCA using lecture capture and Glaser's teaching methods is not significantly different. The recommends that lecture capture teaching method be integrated into the Upper Basic Education as a method for teaching CCA.

KEYWORDS: Lecture Capture Technology, Glaser's Model, Students' Achievement and Upper Basic Education

Introduction

Cultural and Creative Art is like a catalyst that speeds up and controls the process of cultural diffusion in a most meaningful way that will give the Nigerian child a sense of

direction and sound judgment to re-enact the Nigerian cultural heritage. The subject is also aimed at expressing the emotions, experiences, ideas and feelings, beyond the reach of language. Hence the subject was very much recognized and rated by Wangboje (1982) as the foundation programme that would serve the needs of students in developing their creative imagination, self-realization, self-actualization as well as sharpening intelligence and creativity. A truly creative and well-educated person learns how to work with his/her hands, head and every kind of work can be noble when a person gives it his/her best effort (Buoro, 2002). This suggests that Cultural and Creative Art (CCA) programme can offer manipulative skills for human development. The programme will be able to produce creative, patriotic, and productive Nigerians who will contribute optimally to national development (Orlean, 2009).

Consequently, in 1971, the Nigerian Education Research and Development Council (NERDC, 2007) organized a workshop where specialists in drama, education, music, fine and applied arts met to spell out what the programme should cover for the secondary school education level. As a result of the conference, Cultural and Creative Art (CCA) programme was adopted for secondary education but due to logistic problems such as lack of instructional resources and qualified teachers, the programme could not start until the introduction of the 9-Year Universal Basic Education (UBE) in 2008 (NERDC, 2007). The curriculum stated that CCA should be made core and compulsory subject at the UBE levels which consist of Lower Basic Education (primary 1 - 3); Middle Basic (primary four to six); and Upper Basic Junior Secondary School (JSS 1- JSS 3). The learning activities in the curriculum for CCA are exciting, interesting and gainful with useful knowledge and skill acquisition. Omole (2007) contends that this type of curriculum is strategically packaged to build confidence in the recipients.

CCA facilitates more functional organization of learning because the learner can draw experiences from the wider subject area to solve contemporary problems (Offorma, 2002). CCA should be taught in a holistic manner in order to bridge the gaps that exist between the separated subjects (NERDC, 2008). Meanwhile some teachers and students do not take the subject seriously as a career, especially, at the JSS level. It is noticeable in schools that teachers in JSS level teach more of theory lessons than practical in CCA which may be as a result of adoption of poor teaching methods by the teachers. Activities in CCA are practically oriented and can expose the students to acquire manipulative skills, knowledge, and practical values. That is why the teaching and learning of CCA require good and interest arousing teaching methods.

A teaching method comprises the principles and methods used by teachers to enable students learning. These strategies are determined partly by the subject matter to be taught and partly by the nature of the learner. For a particular teaching method to be appropriate and efficient it has to be in relation with the characteristic of the learner and the type of learning it is supposed to bring about. Suggestions are there to design and selection of teaching methods must take into account not only the nature of the subject matter but also how students learn, (Westwood, 2008). In today's school the trend is that teaching method encourages a lot of creativity. It is a known fact that human advancement comes through reasoning. This reasoning and original thought enhance creativity. There are many teaching methods that can be used by teachers, but in the context of this study only lecture capture and Glaser's teaching methods are discussed. A subject like CCA requires teaching method that incorporates technology in the teaching process. Such teaching method is lecture capture.

Lecture capture technology is a technology that simplifies the recording, processing, storage, and distribution of lectures along with accompanying slides and other media. This

method is becoming prevalent on college campuses. Analysts have predicted that the market for lecture capture systems will quadruple by 2020 (Ramaswami, 2009,). Commercial systems such as MediaSite, Panopto, and Tegrity are helping colleges and universities provide students with a study tool that allows them to watch lectures they missed or to review all or part of a lecture that they didn't understand the first time (Educause Learning Initiative, 2008). Lecture capture technologies also known as "web-based lecture technologies (WBLT)" (Germany, 2012) are used for "capturing face-to-face lectures for web delivery" (Woo, Gosper, McNeill, PRestone, Green & Philips, 2008).

Lecture capture technologies are resource-intensive and require ongoing commitment by the institution and its faculty. That commitment is difficult to sustain without the assurance that students will achieve better academic success because of the technology involved. However, research conducted thus far on the impact of lecture capture technology has focused largely on students perceptions and attitudes; few have measured student achievement, especially when used in conjunction with the flipped classroom model.

Robert Glaser teaching model or the lecture teaching method was developed in 1962. It explains the relationship between teaching and learning. It provides a simple and adequate conceptualization of the teaching process. This model according to Farooq (2014) belongs to the category of psychological models of teaching. Glaser's teaching method is the basic teaching method because: it presents the basic analysis of the process of teaching in terms of the elements of teaching applicable to all levels of education i.e., elementary, secondary, higher institutions of learning. The Glaser's teaching method explains the wholistic teaching-learning process; it divides it into four basic components of Instructional objectives, Entry behaviour, Instructional procedures and Achievement assessment. The Glaser's teaching method is developed on the assumption that every lesson assumes some knowledge on the part of the learner and that through instructional procedure, the teacher will guide the learner from the entry behaviour to terminal behaviour.

Achievement of students can be low or high and this has been recognized as the natural phenomena in the schools. Students fail to do well not because of lack of interest in the content presented or the instructional resources available. The weakness that students' sometimes exhibit in school subjects confirms that something is wrong in the way such subjects are taught. According to Habor–Peters in Anaduaka (2008), some of the factors responsible for poor achievement of students emanate from sources which are psychological and environmental. Okonmah (2010) on music text books, tools, equipment and workshop though assumed that teaching and learning is made effective when used, but they are not easy to come by. The researcher opined that musical instruments make music what they are, the teaching and learning of it become uninteresting. Drama is also affected in the way it is taught with inadequate instructional resources due to their scarcity (Buoro, 2000). Okonmah concluded that poor teaching methods adopted by teachers in the area of music and drama tend to affect learners' achievement in music and drama components of CCA.

Udeze (2008) commenting on gender differences and achievement in a learning environment recognized that boys and girls have psychological feelings of different degrees of intelligence and creativity. Culturally, boys and girls have peculiar ways of behaving and thinking. This orientation stems from the homes where they perform different roles or functions. Kleinfield (2000) reports that this attitude is carried over to school. While boys may be drawn to subjects such as science and physical education in schools, girls may be drawn to subjects such as social studies and arts. The researcher noted that girls consistently score higher grades at school in virtually most art subjects while Gunn (2003) asserts that

females often perform better than males in languages and liberal arts. There is a need to determine the influence of gender on students' achievement in CCA. Hence the researcher in this study used gender as a moderating factor.

Statement of the Problem

Cultural and Creative Art (CCA) is an important subject in the Nigerian educational system. It is a subject that ought to produce students who are self-reliant. This suggests that CCA can offer manipulative skills for human development. The subject will be able to produce creative, patriotic, and productive Nigerians who will contribute optimally to national development. Students' learning as portrayed in their external and internal examination results show poor achievements. Also, through the researchers repeated visits to some schools, it was observed that students lack interest in the subject. Many factors may have contributed to these problems of poor achievement in CCA in Secondary Schools. Some studies have found that some factors such as unavailability of instructional materials and poor teaching methods contribute to poor achievement of students in the subject. Nigerian CCA teachers, who teach the subject, seem to ignore alternative ways of teaching that will make the lesson real for the students.

Could this poor achievement of students in CCA be improved by using alternative method of teaching Cultural and Creative Arts? In particular, could the use of Lecture Capture and Glaser's (or lecture) teaching methods bring greater achievement in Cultural and Creative Arts? These dissatisfying situation and doubts constitute the problem of this study.

Purpose of the Study

The general purpose of this study is investigate the effects of lecture capture technology teaching method and Glaser's model on students achievement in cultural and creative art in Upper Basic Education in Imo State.

Specifically, the study is focused on ascertaining:

1. the mean achievement scores of students in Cultural and Creative Art using lecture capture and Glaser's teaching methods in the pre-treatment and post-treatment tests;

2. the mean achievement scores of male and female students taught Cultural and Creative Art using lecture capture and Glaser's teaching method in the post-treatment test.

Research Questions

The researcher posed the following research questions to guide the study:

1. What are the mean achievement scores of students in Cultural and Creative Art using lecture capture and Glaser's teaching methods in the pre-treatment and post-treatment tests?

2. What are the mean achievement scores of male and female students taught Cultural and Creative Art using lecture capture and Glaser's teaching method in the post-treatment test?

Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance:

H0₁: There is no significant difference between the mean achievement scores of the students taught Cultural and Creative Art using lecture capture and Glaser's teaching methods in the pre-treatment and post-treatment tests.

H0₂: The mean achievement scores of male and female students taught Cultural and Creative Art using lecture capture and Glaser's teaching methods do not differ significantly.

Methods

The quasi-experimental research design, which involves intact groups, pre-test, treatments, post-test, and non-randomization, was adopted for this study. The design is symbolically represented as shown below:

Groups	Pre-tests	Treatment	Post-tests
LCTTMG	O_1	X_1	O_2
GTMG	O_1	X_2	O_2

The population of this study comprises all the 32,763 Junior Secondary School (JSS1 to JSS3) students in all the 285 Public Secondary Schools in Imo State. The sample size for the study is 88 Cultural and Creative Art students in Upper Basic School two students sampled using a multi-stage cluster, purposive and simple random sampling techniques. The two instruments used for this study were researcher-made Multiple-choice Cultural and Creative Art achievement tests for Pre-test and Post-test. The first instrument is a multiple-choice Cultural and Creative Art Achievement test for pre-test (CCAAT-PRE). The second instrument is also multiple-choice Cultural and Creative Art Achievement test for post-test and follow-up, (CCAAT-POST). The CCAAT-PRE and CCAAT-POST were given to one experienced Cultural and Creative Art, (CCA) teacher, two Educational Technologists and two specialists in measurement and evaluation for content and face validation. Internal consistency coefficients of 0.774 and 0.784 were obtained for CCAAT-PRE and CCAAT-POST respectively using Kuder-Richardson formula twenty, (KR₂₀). Descriptive statistics (mean and standard deviation) were used to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance.

Results

Research Question One: What are the mean achievement scores of students in Cultural and Creative Art using lecture capture and Glaser's teaching methods in the pre-treatment and post-treatment tests?

Table 1: Group Size (n), Mean ($\overline{X}$) and Standard Deviation (S) of Scores of Students Taught with Glaser's Teaching Method and Lecture Capture Teaching Method at Pre-test and Post-test

Group	n	Pre-test $\overline{X}$	Pre-test S	Post-test $\overline{X}$	Post-test S
GTM	40	36.90	11.29	37.05	11.58
LCTTM	48	39.46	9.95	66.67	10.83

Presented in Table 1 are the group sizes, means and standard deviations of students taught with Glaser's teaching method, GTM, and lecture capture teaching method, LCTTM at pre-test and post-test. From the table the mean scores of the students in GTM, and LCTTM at pre-test are 36.90 and 39.46 respectively. Similarly, their respective standard deviations are 11.29 and 9.95. Also, the mean scores of the students exposed to the Glaser's teaching method, and lecture capture teaching methods at post-test are 37.05 and 66.67 respectively. The mean score of the students in the LCTTM groups is higher than the mean score of the students in the GTM group, which shows that the students exposed to lecture capture method performed better than the students exposed to Glaser's teaching method. Their respective standard deviations are 11.58 and 10.83. The standard deviations for the two groups at both pre-test and post-test are large (because when the standard deviation is added to the corresponding mean, it gives value approximately equal to the highest score), indicating that the scores of the individual students are spread further away from the mean. This suggests that many of the scores are either far higher or lower than the mean score.

Hypothesis One: There is no significant difference between the mean achievement scores of the students taught Cultural and Creative Art using lecture capture and Glaser's teaching methods in the pre-treatment and post-treatment tests.

Table 2: ANCOVA Summary Table for Testing Hypothesis One

Tests of Between-Subjects Effects

Dependent Variable: Posttest

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	1330.595	1	1330.595	69.427	.000	.455
Pretest	9103.725	1	9103.725	475.010	.000	.851
Treatment	15718.243	1	15718.243	820.139	.000	.908
Gender	1.951	1	1.951	.102	.750	.001
Error	1590.723	83	19.165			
Total	278988.000	88				

a. R Squared = .947 (Adjusted R Squared = .944)

Presented in Table 2 is the ANCOVA F-value for the treatments. From the table, the calculated F-value is 820.139, the p-value is 0.000, while the tabulated F-value is 3.00. Since the calculated F-value is greater than the tabulated F-value and the p-value is less than the alpha level of 0.05 the null hypothesis one is rejected. Hence, the mean achievement scores of the students taught Cultural and Creative Art using lecture capture and Glaser's teaching

methods at post-test differ significantly. This shows that the lecture capture teaching method had significant effect on the students' achievement in Cultural and Creative Art.

Research Question Two: What are the mean achievement scores of male and female students taught Cultural and Creative Art using lecture capture and Glaser's teaching method in the post-treatment test?

Table 3: Group Size (n), Mean ($\overline{X}$) and Standard Deviation (S) of Scores of Male and Female Students Taught with Glaser's Teaching Method and Lecture capture teaching methods at Post-test

	Male			Female		
Group	*n*	$\overline{X}$	*S*	*n*	$\overline{X}$	*S*
GTM	22	36.36	11.77	18	37.89	11.63
LCTM	23	67.48	10.96	25	65.92	10.89

Table 3 presents the group sizes, means and standard deviations of male and female students taught with lecture teaching method, GTM and lecture capture teaching method, LCTTM at post-test. From the table the mean scores of the male students in GTM and LCTTM at post-test are 36.36 and 67.48 respectively. Similarly, their respective standard deviations are 11.77 and 10.96. Also, the mean scores of the female students exposed to the GTM and LCTTM at post-test are 37.89 and 65.92 respectively. Their respective standard deviations are 11.63 and 10.89. The mean scores of the male and female students in the LCTTM group are higher than the mean score of the male and female students in the GTM group, which shows that the male and female students in the LCTTM group performed better than the male and female students in the Glaser' teaching method group. Also, the mean score of females in GTM group is higher than that of male students in the same group. Similarly, the mean score of male students in LCTTM group is higher than that of female students in the same group. The test of hypothesis will prove if these differences in the mean scores of male and female students in the two groups are significant or not.

Hypothesis Two: The mean achievement scores of male and female students taught Cultural and Creative Art using lecture capture and Glaser's teaching methods do not differ significantly.

Table 4: Pairwise Comparison of the Mean Scores of Male and Female Students in GTM and LCTM

Pairwise Comparisons

Dependent Variable: Posttest

(I) Gender	(J) Gender	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
FEMALE	MALE	-.300	.940	.750	-2.170	1.570
MALE	FEMALE	.300	.940	.750	-1.570	2.170

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

Presented in Table 2 and 4 are the ANCOVA summary and pairwise comparison of the mean achievement scores of the male and female students taught with GTM and those taught with LCTTM. The results in the table show that the overall mean difference between

male and female students taught with GTM and those taught with LCTTM is 0.300 when the mean Cultural and Creative Art achievement score of female students is subtracted from that of male students. However, this mean difference is negative (-0.300) when the mean of Cultural and Creative Art achievement score of male students is subtracted from that of female students. This may indicate that male students achieved more than female students. However, from table 2 the calculated F-ratio is 0.102, while the p-value .75. The calculated F-ratio is less than the tabulated F-ratio of 3.00, while the p-value is greater than the alpha level of 0.05, hence, the null hypotheses three is accepted. This shows that the mean-difference (0.300) is not significant. Hence, the mean achievement scores of male and female students taught Cultural and Creative Art using lecture capture and Glaser's teaching methods at post-test do not differ significantly. This indicates that male students did not achieve significantly more than female students and vice-versa.

Discussion of Findings

The findings of the study showed that there is significant difference between the mean achievement scores of the students taught Cultural and Creative Art using lecture capture and Glaser's teaching methods at post-test. Since the mean scores of students taught with LCTTM improved significantly, meaning that the teaching method adopted improved students' achievement scores in Cultural and Creative Art more than GTM. This finding is in line with the findings of Adebayo and Oladele (2016) report that the mean scores of students exposed to lecture capture teaching method differed significantly from that of the students exposed to the Glaser's lecture teaching method.

The findings of this study also revealed that the mean achievement scores of male and female students taught Cultural and Creative Art using lecture capture and Glaser's teaching methods at post-test is not significantly different. Gender had no significant influence on the achievement of the students as measured by their mean score in the Cultural and Creative Art achievement test. The treatment group that was exposed to LCTTM methods did not have a significantly different gender mean score in the Cultural and Creative Art achievement test (CCAAT). The result obtained therefore, indicates that male and female students benefited equally from the treatment. The result is however, in line with a study conducted Onuigbo (2008), which showed that gender had no significant effect on Cultural and Creative Art achievement. The study of Ekwueme and Nenty (2001) also showed no significant sex differences among their students in common errors and achievement of students. This result however, does not agree with the findings of the studies by Viadero (2008), Umoh (2011), Coley (2001), and Newkirt as cited by Onuigbo (2008). These studies showed evidence of girls' superiority over boys in reading. It also differs from studies conducted by Sanguinetty (2013), Okeke, 2010) & Harbor-Peters (1990) which reported that boys achieved better than girls.

The implication of the findings of this study to Curriculum planners is that they can develop appropriate Curriculum that will make provision for the teacher to adopt lecture capture method, LCTTM that will appeal to each student's learning interest to enable them to learn effectively.

Conclusion

The study of the effects of lecture capture technology teaching method and Glaser's model on students' achievement in cultural and creative art in Upper Basic Education in Imo State was explored for deeper insight. The study showed that lecture capture technology teaching

method is an effective method for teaching cultural and creative art in Upper Basic Education.

Recommendations

The following recommendations were made:

1. Lecture capture teaching method should be integrated into the secondary school teaching methods for the teaching of Cultural and Creative Art.

2. Short time training, workshops and seminars should be organized by ministry of education and related government agencies should train of teachers on how to make use of LCTTM for teaching Cultural and Creative Art and other subjects effectively.

REFERENCES

Buoro, E.A. (2000) Art in the service of technology. *Journal of Art Education* Proceedings of Africa and the Middle East Regional Congress of INSEA 27 (1) 83-87.

Buoro, E.A. (2002). Art education for the development of children. *Journal of Counseling and Human Development*, 2 (1), 92-97.

Ekwueme, C. O. & Nenty, J. H. (2001). Common errors and performance of students in junior secondary three mathematics certificate examinations in Cross River State of Nigeria. *Global Journal of Pure and Applied Sciences* 7(3), 591 – 596.

Farooq, U. (2014) *Study Lecture Notes*. Retrieved from http://www.studylecturenotes.com

Germany, L. (2012). Beyond lecture capture: What teaching staff want from web-based lecture technologies. *Australasian Jour. of Edu. Tech.,* 28(7), 1208-1220.

Gunn, C. (2003). *Determinant, or Difference*: Gender issues in computer supported learning. New Zealand. Retrieved from http://www.Sloan-c.org/publications/jain/

Harbor-peters, V. F. A. (1990). *The target-task and formal method of presenting some secondary school geometric concepts*. Their effects on retention. In U. S. Anaduaka (2008). Effects of multiple intelligence teaching approach on students' achievement and interest in geometry: (Unpublished Ph. D Thesis, University of Nigeria, Nsukka).

Kleinfield, E. (2000). Sex-related differences in education: Myths, relatives and intervention. Retrieved from: http://swww.loanc.org/kleinfield/

Nigerian Educational Research and Development Council (NERDC), (2007). *The 9–Year basic education curriculum at A glance.* Abuja: NERDC Pub.

Offorma, G.C. (2002). *Curriculum theory and planning.* Enugu: Family Circle Publication.

Offorma, G.C. (2009). *Curriculum cross languages*. An Inaugural lectures of the University of Nigeria, Nsukka.

Okonmah, N. (2010). *Constraint to the teaching of music education in secondary schools in Onisha North Local Government Area of Anambra State*. (Unpublished B.Ed Project Report, University of Nigeria, Nsukka.)

Orlean, G. L. (2009). *Implementation of mathematics curriculum in school*. Retrieved from: http://www.ajol./Index.Php/afev /article/view/47534/

Onuigbo, L. N. (2008). *Effects of elaborative rehearsal and self-questioning strategies on reading comprehension of students with visual impairment*. (Unpublished Ph.D Thesis, University of Nigeria, Nsukka.)

Ramaswami, R. (2009) *Capturing the Market*. Retrieved from: http://campustechnology.com

Wangboje, I. N. (1982) *A Textbook on Art for Junior and Senior Secondary Schools*, Evans Publishers.

Woo, K., Gosper, M., McNeill, M., Preston, G., Green, D., & Phillips, R. (2008). Web-based lecture technologies: Blurring the boundaries between face-to-face and distance learning. *Alt-J, Research in Learning Technology,* 16(2), 81–93.