Computer Instructional Approach and Students' Creative Ability In Sculpture Education in Nigeria Universities: Obafemi Awolowo University as a Case Study

Bada Tayo Abass
Department of Educational Technology, Faculty of Education,
Obafemi Awolowo University. Ile-Ife, Osun State Nigeria
Tel: 234-(0)803-405-9495 E-mail: badatayo2@yahoo.com

Received: April 23, 2011 Accepted: May 12, 2011 Published: October 1, 2011
doi:10.5430/wje.v1n2p130 URL: http://dx.doi.org/10.5430/wje.v1n2p130

Abstract

This paper assessed the use of computer assisted instruction in enhancing students' creative ability in sculpture education in Obafemi Awolowo University, Ile-Ife. The study adopted non- randomized pretest, posttest control group. Data were analyzed using mean, standard deviation and analysis of Covariance (ANCOVA). The mean score were used in testing the only research hypothesis. There was no significant difference in students' creativity ability in sculpture when taught using computer instructional and conventional approach. The results of data analysis using Analysis of Covariance (ANCOVA) and scheffe post – hoc showed that students with high and average creative ability benefited most than their counterparts in conventional teaching methods. It was concluded that application of computer in learning environment has significant influence on the student's performances in sculpture.

Keywords: Computer instructional approach, Students' creative ability, Sculpture education, Nigeria universities

1. Introduction

The incursion of the electronic computer system into the educational parlance, according Sherman (2005) provides the wherewithal to solve teaching and learning problems even more rapidly and accurately than hitherto conceived. This has eventually made the computer system the doyen of the community as it continues to exert greater acceptance. Computer, according to Jayesimi (1993) has become the 'nowology' in our society and possibly futuristic years ahead. The typical conventional classroom teaching reflects an authoritarian, didactic approach to classrooms management. Obviously, this pedagogical pattern does not prepare students for the information age and globalization. In other words, it is not equipping students to live effectively in our modern age of technology education. There is need to brace up to the new challenges of educational system through the deployment and use of computer to aid instructions in schools. Already, Nigeria is almost two decades behind in embracing the use of computer in primary and secondary classrooms (Ezekuta, 2000). Application of varieties of information and communication facilities to teaching and learning diverse subjects have been reported. These include the internet, world wide web (www), e-mail, digital calculator, CD-ROM audio tape among others (Brenton , 2000: Falio , 2000; Pinker , 20010)

Computer education should as a matter of urgency be given its rightful place in the national Policy on Education .Most secondary schools do not have enough computers for any meaningful learning to take place. Even the ones available do not have software for computer to be functional. Some computer are not properly maintained due to lack of funds, lack of qualified technicians and prior maintenance culture (Odunsi ,2001). Okegbile (2003) reported that computer application in educational processes contributes immensely to the teaching and learning process, and its electronic nature improves the quality ans quantity of both teaching techniques and learning modes.

Sculpture education has not fully achieved the aims and goals of the society by acquiring sufficient skills to enhance the development of the society. Computer education should be made one of the key areas of sculpture education, therefore , it implies that appropriate instructional materials are not just limited to charts, real objects but extend to instructional materials such as audio-visual instructional packages and computer- aided instruction . Sculpture is three-dimensional art work created by shaping or combining hard materials - typically stone - or marble, metal, glass, or wood. Softer ("plastic") materials can also be used, such as clay, textiles, plastics, polymers and softer metals. The computer is the

ability to provide rich learning experiences for students giving them the power to influence the depth and direction of their learning. With the use of the computer as an instructional tool , the creative ability level (high , medium, low) of the sculpture students will be greatly enhanced by computer – aided instruction as it has been proven or shown to have statistically positive effects on learning (Miller , 2002). According to Kulik (1995), this indicates certainty that with the use of computer –aided instruction, the students' creative ability level escalates. The computer –aided students accomplish more in less time and with a better quality. The creative ability level gaps of student will close and eventually the lower level disappears (Miller 2002).

The underlying idea is that computer education should enable students to acquire the competencies needed in their future professions and society as a whole. Although efforts are made by the Federal Government of Nigeria in implementing computer education in the right direction but they appear not to be sufficient. After one decade of the introduction of the programme, very little seems to have been achieved. There is no practical examination written on computer studies in the Junior or Senior Secondary School. No wonder Jegede (2002) observes that the society is too slow in the uptake of computer education.

The importance of computer in the teaching and understanding concepts that are abstract cannot be overemphasized. Therefore, there is need to try Communication Techniology (computerization) for the purpose of enhancing learning and teaching.

1.1 Purpose of the Study

The purposes of this study was to determine the effectiveness of computer –aided instruction on students creative ability (high , medium, low) in skill development in sculpture education in Obafemi Awolowo University,Ile-Ife,Nigeria.

1.2 Research Question

One research question was generated to guide the study. What difference exist among the performance of student in skill development in sculpture education when taught using computer- aided instruction and when taught using the expository teaching methods considering their creative ability (High , medium, low)

1.3 Hypothesis

The following hypothesis was generated to give direction to the study. There is no significant difference among the creative ability of students in skill development when taught using computer –aided instruction and when taught using the expository approach.

1.4 Research Methods

This study adopted non- randomized pre-test control groups design

1.5 Population

The population of the study consisted of all 800 sculpture students in all Nigerian Universities.

1.6 Sample and Sampling Techniques

The sample consisted of 48 sculpture students of the Department of Fine and Applied Arts, Obafemi Awolowo University,Ile-Ife. Purposive sampling technique was used in selecting the school. The sample selected were randomly assigned into experimental and control groups respectively.

1.7 Instrumentation

The instrument in data collection was Creative Ability test (CAT) developed by the researcher to test the students creative ability in indentifying and drawing of objects and symbols for sculpture.

1.8 Data Collection Techniques

The data were collected from the sample of forty-eight (48) sculpture students drawn from the department of Fine and Applied Arts, Obafemi Awolowo University, Ile-Ife. The 48 students were divided into control and experimental groups.

1.9 Data Analysis Technique

Data collected were analyzed using mean, standard deviation and Analysis of Covariance (ANCOVA). The mean score were used in answering the research question, while NACOVA results were used in testing the only research hypothesis.

1.10 Results and Discussion of Findings

The result of the study is presented in terms of the study hypothesis and questions.

<Table 1 about here>

The hypothesis was tested using the result in 1-3, these result were also used in answering the research questions. The result displayed in Table 1 present the mean and standard deviation of pre-test and post – test scores of the students in creative design development classified by treatment groups and creative ability. The means scores of the students with high creative ability in the computer graphics –aided group were 52.86 in pre-test and 67.14 in post- test . these gave achievement gain of 14.28 as regards those with average creative ability in the same group- 14.28; 6.25 and 14.00 respectively suggests comparative high gains for those with high average creative ability. That means only those with high gains for those with high average ability. That means only those with high and low ability benefited from the instruction given. However, a comparison of their post- test mean scores – 67, 14 , 63.75 and 53.50 respectively for those with high, average and low ability suggest that those with high ability had the best performance followed by those with average and low ability decreasing order.

With respect to the performances of the students in the expository teaching methods group, the result in table 1 shows that those with high ability had mean scores of 14.67 and 55.85 in pre-test and post- test respectively. These gave than achievement again of 14.16. Those with average creative ability ha mean scores of 32.86 and 522.86 in pre-test and post-test respectively, thereby indicating achievement gain of 20.00. the mean scores of those students with low creative ability in the expository methods group are 32.50 and 46.50 in pre- test respectively.

These gave them achievement gains, 14.16, 20.00 and 14.00 for those with high, average and low creative ability, respectively, suggests achievement by those with average ability but comparable achievement of those with high and low ability. in comparing their post- test score,55.83,52.86 and 46.50 for those with high, average and low creative ability respectively suggest that students with high creative ability had the best performance, followed by those with average and low creative ability in decreasing order. The overall perfo4mances of the students in both computer-graphics and expository methods groups displayed in table 1 shows mean scores of 47.87 and 61.92 in pre-test and post –test respectively for those with high creative ability, 46.00 and 58.67 in pre-test and post-test respectively for those with average ability; and 36.00 and 50.00 respectively for those with low creative ability. To determine where observed variations in the mean performances of the students with high average and low creative ability taught using computer –graphics and expository teaching methods were statistically significant, the students post-test scores were subjected to a 2x3 Analysis of Covariance (ANCOVA) using their pretest scores as covariate. The results are summarized in Table2.

<Table 2 about here>

The results in Table 2 show that, the F-cal for the main effect of the student' creative ability on their performance in textile design, given the instructional approaches is 9.03 while its corresponding critical value, F-crit (3.22). This implies that the F-cal is statically significant. That is, the students' creative ability has a significant effect on their performance in sculpture development. With this observation, the null hypothesis was rejected. To determine the direction of significance a scheffe post- hoc comparison of the mean scores of the student post –test was done and the results are summarized in Table 3.

<Table 3 about here>

The result in Table 3 shows that, the mean difference between the performances of the student with high and average creative ability is 3.26 while its calculated significance level is 0.18 alpha: the mean difference between the performances of student with high and low creative ability is 11.92, while its calculated level of significance is 00; and that the mean difference between the performance of students with average and low creative ability is 8.67 while its calculated level of significance is .00. As indicated, the calculated level of significance for the mean difference between the performance of students with high and low creative ability and average and low creative ability is .00 alpha. This is less than the 0.05 alpha level in which the decision is based; hence, these means differences are statistically significant. That is, the students with high creativability performed significantly better than those with low ability, also the students with average ability performed significantly better than those with low creative ability. The result in table 3 shows, with regard to the mean difference the performance between students with high and average ability, that its calculated level of significant of 0.18 alpha is greater than .05 alpha, indicating that this mean difference was not statistically significant. In order words, there was no significant difference between the performances of students with high and average creative ability.

The scheffe post –hoc test indicate that, generally, the students with high creative ability were not better than those with average creative ability

The scheffe post-hoc test indicates that , generally , the students with high creative ability were not better than those with average creative ability, however , both of them were significantly better than their counterparts with low creative ability. This observation confirms Odunigi (2001) and Regbile (2003) that application of computer in learning

environment improves the quality of both teaching and learning modes.

2. Conclusion

The application of computer in learning environment has exerted significant influence on the student's performance in sculpture. The students with high and average ability performed significantly better than their colleagues with low creative ability. The use of computer – graphic in teaching and learning of sculpture education in Nigeria Universities should be encouraged.

3. Recommendations

In line with the facts raised in this paper, the following recommendations are made to enhance sculpture education.

Government should furnish the study of sculpture with computer in secondary schools. In addition, government should organize seminars and workshops for sculpture teachers on computer appreciation and programming to help them function effectively in the classroom situation.

References

Brenton, O.T. Martin & Onyekabu, O.P**. (**2000). *The Experiences of learning.* Edinburg. Scottish Press.

Ezekuta, N.D. (2000). *The teaching of concepts: "A review of instructional design research literature".* Review of Education. 30 (3) 54-57.

Fadare, T.O. (2002). *Learn how to sculpt.* Ibadan. Macmillan.

Fallo. T. & Debloois, M. (2000). *"Designing a visual factor" – based screen display interface. Lagos. Oxford University Press.*

Jayesimi, S.B. (1993). *Programming the unprogammable.* Inaugural Lecture Series 76, Obafemi Awolowo University, Ile-Ife.

Jegede, O. (2002). *Computer and learning of Biological concepts*: *Attitude achievement of Nige*ria *students.* Science Education. 75 (6) 701-706

Kulik, J. (1995). The effectiveness of computer – based audit education: A meta- analysis. *Journal of Education Computing Research*. 2, 235-252. http://dx.doi.org/10.2190/02HM-XCWG-Q1VY-5EMQ

Miller, L.W. (2002), Computer instruction by vocational teachers education. University of Idaho Journal. 1-12.

Odunsi, C.O. (2003).*Computer and society. Lagos.* University Press.

Okegbile, F.O. (2003).Computer aided learning. Central Education. 2 (3) 10-14

Pinker. S. (2010). Visual Cognition. Ibadan. Longman.

Sherman, D.O. (2005). *Computerization of examination results.* Ibadan. Macmillan.

Table 1. Mean and standard deviation of the students pre-test and post –test performance in creative ability of students in skill development classified by treatment group.

INSTRUCTIONAL MEDIA/ CREATIVE ABILITY	n	PRE-TEST		POST T-EST		
		X	SD	X	SD	ACHIEVEMENT GAIN
Computer- graphics						
High	7	52.86	15.24	67.14	4.88	14.28
Average	8	57.50	6.55	63.75	2.32	6.25
Low	10	39.50	10.66	53.50	8.55	14.00
Expository method						
High	6	41.67	13.66	55..83	55.85	14.16
Average	7	32.86	9.51	52.86	3.93	20.00
low	10	32.50	7.90	46.50	8.52	14.00
Total high	13	47.69	15.09	61.92	7.78	14.23
Average	15	46.00	14.91	58.67	6.40	12.67
Low	20	36.00	9.81	50.00	9.03	14.00

N= sample size; X= means score; SD – Standard deviation score.

Table 2. Summary of analysis of Covariance (ANCOVA) of the students' post –test score, classified by treatment groups and creative ability with pre-test as coversine

SOURCE OF VARIANCE	SUM OF SQUARES	df	MEANS SQUARE	F.CAL	F.CRIT	DECISION
Covariance (pre-test)	57.24	1	57.24	1.39	4.07	NS
Main effects:						
Instructional methods	516.08	1	516.08	12.51	4.07	S
creative ability	745.08	2	372.54	9.03*	3.22	S*
2way – Interaction instructional methods x Creative ability	29.14	2	4.57	.35	3.22	NS
Error	1691.81	41	41.26			
Corrected Total	4132.81	47	-	-	-	-

F-Cal = calculated F-ratio; F-Crit = Critical F-ratio at 0.05 alpha, S* = mean effect of creative ability on students performance in textile design is significant at df=2,41 and P< .05 alpha.

ISSN 1925-0746 E-ISSN 1925-0754

Table 3. Scheffe post- hoc comparison of the students' post-test performance in sculpture skills development classified by creative ability

Grand mean 58.68 (I) ability	(J) ability	Means difference (I-J)	Significance level	Decision
High	Average	3.26	.18	NS
	Low	11.92*	.00	S*
Average	High	- 3.26	.18	NS
	Low	8.67*	.00	S*
Low	High	- 11.92*	. 18	S*
	Average	- 8.67*	.00	S*

S* = mean difference is significance at < .05 alpha.