EFFECTS OF THREE COMPUTER BASED STRATEGIES OF INSTRUCTIONS ON JUNIOR SECONDARY SCHOOL STUDENTS' ACADEMIC PERFORMANCE IN FINE ARTS AT ILE-IFE, IFE CENTRAL LOCAL GOVERNMENT AREA OF OSUN STATE

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Abstract

The study investigated the effects of three strategies of developing computer based instructions on academic performance of junior secondary school students at Ile-Ife, a town in Ife Central local government area of Osun state. The study equally found out if there was significant difference in the academic performance of the students after their exposure to three different strategies of developing computer based instruction. This is with a view to make suggestion on the most effective strategy of developing computer based instruction in the teaching of fine arts in juniorsecondary schools. The population of the study comprised all the junior secondary schools students in ife central local government of Osun state. Four junior secondary schools were purposively selected based on availability of operational fine art studio, access to computer, electricity and readiness of their fine art teachers and management to participate in the study. The instruments used for the study were Graphic Achievement Test (GAT) and Revised Minnesota paper Form Board Test (RMPFBT) which was used in classifying the students into low and high academic ability. The GAT was adapted from Osun state Junior Secondary School Certificate Examination. Findings from the analysis of the result showed significant difference in the academic performance of the students after exposure to the three different strategies ($F = 4.99$; $p < 0.05$). The postHoc multiple comparismtest using Turkey HSD showed that those exposed to simulation perform better than those exposed to any other instructional packages. It was therefore concluded that although those exposed to the different packages performed better academically than those that were taught using teacher expository method, those that were exposed to simulationstrategy performed better than those exposed to the drill and practice strategy or those exposed to tutorials strategy.

Introduction:

The National Policy on Education (2004) regarding the teaching of Fine-Arts at all levels of education is facing challenges of shortage of qualified Fine-Arts teachers (Barnabas, 2005). This school of thought also believes that teachers' quality also affects students' academic performance. There is therefore a need for a deliberate and purposeful training of Fine-Arts teachers for the school system. As a result of shortage of trained teachers, some schools result to the use of teachers who did not study Fine-Arts. On account of this, students are exposed to poor methods of teaching. Consequent upon this defect, the performance of students in Fine-Arts at the secondary school level is adversely affected as Adeyanju, Aladejana and Idowu (2008) and Owokade (2006) have found. The West African Examination Council's Chief Examiners Report, (2010) states that Students perform poorly and are deficient in the practical aspects like graphics.

The other problem area affecting Fine-Arts teaching includes inadequate teaching facilities. Research in Fine-Arts has shown that most secondary schools in Osun State lack Fine-Arts materials and purposely-built Fine-Arts studios. Gofar (2000); Ubangida (2004) and Barnabas (2005), attest to this problem of lack of Fine-Arts materials and facilities. Adeyanju (1996) pointed out that in some cases; Fine-Arts studios were converted to office spaces. This is a serious cause for concern because if facilities are not available, the teaching of Fine-Arts is at best an exercise in futility. It is observed that student-artists cannot acquire artistic skills without the use of relevant Fine-Arts materials required for practice. There is need for spacious environment for Fine-Arts Studio and make up laboratory.

In addition to the problem of Fine-Arts teaching at the secondary school levels, is the ambivalent negative attitude of the Nigerian society and government towards the subject. Government takes interest in funding the sciences. Awards and scholarship are often given to best students in the area of sciences. The issue of social identity is another problem in terms

of material value and position of Fine-Arts in education. Some students and parents often see the Fine-Arts Subject in terms of material value. That is to say that the purchase of materials is unending. Issues like personal interest and capabilities are ignored. 'Important' subjects like medicine, science, engineering and Law among others are therefore endorsed by students and parents to the detriment of Fine-Arts. (Mbahi,1999).

It is therefore pertinent that stake holder take proactive measure to salvage this unpalatable situation. The study of Fine Art had been found worthwhile in courses like Archaeology, Building Engineering, Industrial Design and so on. For people to have the erroneous notion that the study of Fine Art in secondary schools is not a worthwhile venture is not acceptable. Art means life and the cultural values and belief of a community is better preserved through art. All hand must be on deck that the study of Fine Art is made desirable and attractive to the students.

Nigeria is in the age of computer and information technology that has ushered in a complete reformation of the school's curriculum. Fine-Arts programmes also need curriculum review so as to make curriculum richer. Specialists should therefore be given the opportunity to review the Fine-Arts curriculum. The Fine-Arts specialist is supposed to be expert in the use of computers because the production process in publishing is a herculean task. The artist manually illustrates the cover of text books and the text pages. The drawing preparation of layout and the typesetting that the compugraphic machine create makes works of publishing faster and easier, this is why curriculum review is necessary, as manual work will get reduced and more work will get done. Imagine the challenge of the artist pasting of large fonts for display functions, the tasks are difficult to achieve but computers have numerous typefaces and their corresponding characters are unlimited.

The use of letraset materials for display typography are expensive and scarce in the present decade but the computer have sufficient capacity to reduce the labour of the artist.

The various stages of production in the Fine-Arts discipline are indeed painstaking, time consuming and the end products are sometime inferior to what the computer can do.

Aside the use of Fine-Arts products in the industrial setting is the use of the skill for preparing instructional materials for teaching. Mutebi and Matora (2004) have emphasized the effect of instructional materials utilization in teaching and learning. The author put it that it is easy to learn and remember 10% of what we hear, 40% of what we discuss with others and 80% of what is experienced directly or practiced. However, whether the use of instructional materials really influence students' learning outcome or whether teaching effectiveness become enhanced by the use of computer driven instructional materials are some of the variables of learning that needs investigation.

The ubiquity of the technology is clear, not only its availability in schools, but also in its permeation of everyday life. The reality of the situation, however, is that the teaching of Fine-Arts at the secondary school level has not been effectively implemented (Cornelius, 2004; Ubangida, 2005). This is evident in the "talk and chalk" method that the Fine Arts teachers still employ in teaching. In the Fine-Arts classroom, the use of traditional approach is viewed as invisible and imposing, at times, the method is an impenetrable barrier between student and the teacher. In order to break this barrier, it is considered that the design of instruction that will involve three modes of Computer-assisted instruction (CAI) could be used because of its interactive and instructional activities. The computer can be used to present instruction such that the learning that takes place can be further motivated through the combination of text, graphics, sound and video. The use of these media would remove inhibition in the performance of learners.

The state of Fine-Arts has for many years been a source of concern due to neglect. Uzoagba(2002), explains the situation, "if a proper understanding of Art education has been made and better instructions on arts followed in schools and colleges much would have been

done to redeem the subject from the neglect it has always suffered in the society. It is apparent that few students offer Fine-Arts at the senior secondary and tertiary education levels because of its several challenges of its teaching without new approaches. Such situations seem to undermine Fine-Arts teaching. From a study carried out by Lawson and Ajibade (2012) between 2006 – 2011 out of the 2,866 school graduates in a selected group of secondary schools, only 219 students took Fine-Arts subject. This is a clear indication of low interest of students' enrollment into the Fine-Arts discipline and this affects the labour market. Therefore, how to ensure effective Fine-Arts teaching to make it more attractive and productive in the Junior Secondary Schools constitute the focus of this study.

Statement of the problem

The poor performance of students in Fine art over the year is traceable to poor methodology of teaching, inadequate use of instructional materials, inadequate student to teacher, student to students and student to material interaction also is the fact of the enormous depth of content to be covered. In order to enhance the attitude of the students towards fine art and also to enhance academic performance of the students the computer Drill and Practice, Simulation and Tutorial approaches to the teaching of Fine-Arts is been experimented with to ascertain the effect of the package on learning outcomes.

Objectives of the study:

The specific objective of the study is to:

(a) determine the relative effects of these packages on students' performance in Graphics.

Hypothesis 1: There is no significant effect on the students' performance in graphics when exposed to the different strategies.

Methodology:

The study adopted the non-equivalent pretest, posttest control group design. It is structured along the pre-test, post-test randomized experiment that lacks the key feature of the randomized designs. The population for the study consisted of all junior secondary school Fine –Arts students' in Osun State. One hundred and forty seven students of JSS III constitute the sample of the study. The sample was made up of four intact classes of JSS III students in four schools from two Local Government Areas (LGAs). The schools were purposively selected based on the availability of Fine-Arts studio. One intact class each was selected from the first schools using simple random sampling technique. The schools were then randomly assigned to one control and three experimental groups. The instrument used for the study were Graphic Achievement Test (GAT) and Revised Minnesota paper form Board Test (RMPFBT) used to classify students into low and high academic ability. The GAT adapted by the researcher consists of 20-test question items selected from Osun-State junior secondary school certificate examination (JSSCE) past question papers; all in objective items. The GAT was used for pre-test, post-test. The face, content and construct validity of the achievement test was conducted. The researcher gave them to experts and colleagues. Corrections were made according to their observations. The test content was validated by Tests and Measurement specialists from the department of Educational Foundation and Counseling. The comments of the validating specialists, and suggestions were taken into consideration, and the researcher made the necessary modifications before applying the test.The reliability of GAT was determined using the test-retest reliability estimate. The test-retest reliability estimate of the GAT yielded 0.933. The researcher at different times administered the pretest on the four groups at the first meeting using the GAT. The groups include: Simulation group, Drill and Practice group, Tutorial group and the control group that was exposed to teacher expository method. The scripts were marked and graded with a minimum of 20 marks. Mean scores from the four schools were calculated.The first

experimental group was taught using the computerized simulation with students in the group exposed to simulated software package of Corel Draw 12. The second experimental group was taught using the computerized drill and practice mode. Students in this group were exposed to a drill exercise in form of a quiz. The third experimental group was taught using the computerized tutorial mode such that students were exposed to a video and slides shows simultaneously. The control group was exposed to the teacher expository method of the talk and chalk method. The researcher had three instructional sessions per week for six weeks. Data collected were analyzed using appropriate descriptive and inferential statistics.The RMPFBT was administered to identify students' academic ability for the purpose of categorizing them into low and high academic ability. This RMPBFT was used to assess the effectiveness of the instructional strategy based on the academic ability of the students.The treatment commenced a week after the pretest. The period lasted for seven weeks of three lessons per week of 45 minutes. This treatment was for each group, exposing each class to 18 lessons contact with the researcher.Four classes were taught in all. The main characteristics of each instructional technique were explained to each group and detailed instructions spelt out. The post-test was conducted in the fifth week of the study in the four schools using GAT. Two weeks after the posttest, a retention test was conducted.

Result and Discussion:

Hypothesis 1: There is no significant effect on the students' performance in graphics when exposed to the different strategies.

To test this hypothesis, the students' posttest performance scores in graphics were subjected to a test of between subject effect using Analysis of Covariance using the different instructional packages as the differentiating variables and the pretest scores as the covariates. The result is presented in table 1

Table 1: Tests of Between-Subjects Effects in students' performance across the three instructional packages

Dependent Variable: Post

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	136.324[a]	3	45.441	4.990	.003
Intercept	24066.921	1	24066.921	2642.598	.000
Grp	136.324	3	45.441	4.990	.003
Error	1302.343	143	9.107		
Total	25559.000	147			
Corrected Total	1438.667	146			

a. R Squared = .095 (Adjusted R Squared = .076)

Table 1 presents the result of the test between subject effects in the performance scores of the students when exposed to the three instructional packages. It can be seen from the table that The F-value obtained in the test is 4.99 at p-value of 0.003. Since the p-value fails to attain the 0.05 threshold. Hence the hypothesis cannot be accepted and it can be concluded that there is a significant effect of the instructional packages on the performance of the students in Graphics.

In order to trace the relative effects of the instructional strategies a post hoc multiple comparison tests was carried out on the post test scores via Turkey HSD and the result is presented in table 2

Table 2 Posthoc Multiple comparison of students' posttest scores

(I) Grp	(J) Grp	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
	traditional	-2.52237*	.72938	.004	-4.4181	-.6267
Simulation	Drill	-2.47678*	.76009	.008	-4.4523	-.5013
	Tutorial	-1.51494	.74364	.179	-3.4477	.4179
	Simulation	2.52237*	.72938	.004	.6267	4.4181
Traditional	Drill	.04559	.75106	1.000	-1.9065	1.9976
	Tutorial	1.00743	.73442	.519	-.9014	2.9162
	Simulation	2.47678*	.76009	.008	.5013	4.4523
Drill	traditional	-.04559	.75106	1.000	-1.9976	1.9065
	Tutorial	.96184	.76492	.591	-1.0262	2.9499
	Simulation	1.51494	.74364	.179	-.4179	3.4477
Tutorial	traditional	-1.00743	.73442	.519	-2.9162	.9014
	Drill	-.96184	.76492	.591	-2.9499	1.0262

*. The mean difference is significant at the 0.05 level.

Table 2 presents the Post Hoc Multiple comparison test using Turkey HSD. It can be seen from the table that those students who were exposed to simulation seem to perform better than any other instructional package. Those exposed to simulation were significantly better than those exposed to drill (mean difference = 2.476, $p < 0.05$), they are also better than those exposed to the tutorial package (mean difference = 1.515, $p < 0.05$) as well as those exposed to the traditional approach (mean difference = 2.522, $p < 0.05$). Although students exposed to other instructional strategies showed some difference among themselves, however, the p-values in all the cases were greater than 0.05. Hence these differences are not

significant. It can therefore be concluded that the simulation instructional package is the best for enhancing the performance of learners in graphics. Other packages may be useful, however, no significant difference was found in comparing learners exposed to them and those exposed to traditional instructional method. The result showed a significant effect of the instructional packages on the performance of the learners. The findings are in consonance with Moore and Calvert (2000), Hancer and Tuzeman (2008) Raninga(2010) Ragassa (2008), Abante (2006), Al qumol (2005), Yussuf (2010), Cadangonan (2004). Further, the relative effect was traced among all the groups to ascertain which group performed better. It was found that those that were exposed to simulation package performed significantly better than all other groups. This is in agreement with Singh (2010) when he demonstrated that simulation mode is more effective than tutorial and drill and practice modes of CAI for teaching.It could therefore be concluded that each of the three treatments were effective in improving Junior Secondary School students' academic performance in Fine Arts.

The three strategies enhanced academic performance of Junior Secondary School academic performance in Fine Arts at Ile-Ife. The students that were exposed to simulation performed better than the students exposed to drill and practice mode. They also performed better than those exposed to tutorial package.

Recommendations:

Based on these findings the following recommendations were made:

1. Teachers should be trained to integrate computer in their daily classroom processes.
2. The Government and non-government agencies should equip both urban and rural schools with computers and new technologies for easy access by both teacher and student.
3. The government through the ministry of education should make fund available to schools to purchase / supply laptops and equip computer laboratories for classroom (e- classrooms). They should also equip the same with recent educational media like the three packages developed for this study
4. There should be provision for regular supply of electricity to schools.
5. Teachers should be given free and compulsory computer training to enable them use the new technologies when supplied to them.
6. Teachers should be self-motivated to prepare their lessons base on CAI keeping in view the requirements of the students/classroom.
7. Students in the faculty of education should be made to take courses in Educational Technology at all levels. This will equip them the more to be up to task in teaching and learning process. It will also enable them to design and produce packages for instruction.
8. A media resource centre should be established at local government's public library to see to the storage and maintenance of the educational media materials.

References:

Abante,M. (2006) "Computer-Aided Instructional Materials in TeachingStatistics in the Tertiary LevelC," Master's Thesis, AmangRodriguezInstitute of Science and Technology.

Adeyanju, J. L. (1996). Improvisation in Fine Art. In K. Akanbi, D. Adekomi, & L. Adeyanju (Eds.), Educational technology in methodologies of teaching humanities. Ondo: Ife OluwaEnt. (Nig) Ltd.

Adeyanju, J. L, Aladejana F. O, Idowu L, (2008) Towards A Technology – Oriented Classroom: The Use of Computer Graphic Package. Proceedings of the Paris International Conference on Education, Economy and Society-Paris 17-19 July 2008.

Ajibade, B. and I. Lawson (2011) " The limitations of teaching and learning Fine and Applied Arts at tertiary level in Cross River State," Global Journal of Educational Research, 2(1&2), 27-32

Al-Qomoul M., "The Effect of Using anInstructional Software Program of EnglishLanguage Functions on the Basic Stage Students'Achievements," *PhD Thesis,* Amman ArabUniversity for Graduate Studies, 2005.

Barnabas, S. D. (2005). Teachers' assessment of children creative artwork:Case study of some primary schools in Kaduna State. Unpublished M. A. Thesis, Department of Fine Arts, A. B. U., Zaria.

Cornelius, H. D. (2004). An investigation into the teaching of art in some selected secondary schools in TafawaBalewa L. G. A., Bauchi State. Unpublished Undergraduate Project, Department of Fine Arts, A. B. U., Zaria.

Federal Republic of Nigeria (2004).*National policy on education,* 4th edition.NERDC Press.Yaba, Lagos – Nigeria.

Gofar, D. N. (2000)Measurement of the relationship between continuous assessment score and performance in art.Unpublished M. A. Thesis, Department of Fine Arts, A. B. U., Zaria.

Hancer, A., H. &Tuzemen,A., T. (2008) A Research on the Effects of Computer AssistedScience Teaching. *World Applied Sciences journal*, 4(2).199-205.

Mbahi, A. A. (2000). *Art teacher.*Kingswell Publishers Ltd., Maiduguri.

Moore, M. & Calvert, S. (2000). Brief report: Vocabulary acquisition for children with autism: Teacher or computer instruction. Journal of Autism and Developmental Disorders, 30, 359-362

Owokade, O.O (2006) Facilitating Effective Performance of Students inMathematics, Science and Technology in Secondary Schools. *Paper presented at the FGN-UNESCO Workshop for Inspectors, University of Lagos, Lagos, Nigeria*

Ragasa, Y. (2008). A Comparison of Computer Assisted Instruction and theTraditional Method of Teaching Basic Statistics.*Journal of Statistics Education* V 16 (1), 1-10

Raninga, N. (2010). Effectiveness of CAI for Teaching of Mathematics of Standard VII.*Journal of Advances in Developmental Research* 1(2)186-187.

Ubangida, M. B. (2004). An evaluation of art programmes in some selected secondary schools in Taraba. Unpublished M. A. Thesis, Department of Fine Arts, A. B. U. Zaria.

Uzoagba, I. N. (2002) Understanding Art in General Education. Onitsha: Africana-Feb Publishers Ltd.

Yusuf, M., O. (2010).Effects of Computer Assisted Instruction (CAI) on Secondary Schools Students' Performance in Biology.*TOJET: The Turkish Online Journal ofeducational Technology*, 9(1), 62-69.