EFFECTS OF WEB-ENABLED SCULPTURE PACKAGE ON COLLEGES OF EDUCATION STUDENTS' PERFORMANCE IN FINE ARTS IN SOUTH-WEST, NIGERIA

KAREEM, I.A (PhD)[1], AYELAGBE, S.O (PhD)[2],
[1]Department of curriculum and instruction,
School of Education, Federal College of Education (Special) Oyo, Oyo State, Nigeria.
[2]Department of Educational Technology,
Adeyemi College of Education Ondo, Ondo State, Nigeria
Email:iaabdulkareem2009@gmail.com, oayelaabge@yahoo.com
Phone No: +234-803-370-3168

Abstract
This study investigated the effects of web-enabled Sculpture package on Colleges of Education students' performance in Fine Arts in South-west, Nigeria. The study adopted quasi-experimental design, the experimental group taught using web-enabled sculpture package while the control group was exposed to conventional teaching method. And total number of 48 Fine Arts students formed the sample in this study. There were 26 students in experimental group and 22 in the control group. The respondents were purposively sampled from Adeyemi College of Education, Ondo and Federal College of Education (Special) Oyo. The instruments used in this study are Sculpture Achievement Test (SAT), Sculpture Skill Test (SST) and Sculpture 'on the Spot' Skill Assessment Instrument (SOSAI).These instruments were validated by 12 Educational Technology experts from University of Ilorin. The reliability test was done in Federal College of Education (Technical), Akoka, Lagos and Pearson's Product Moment Correlation (PPMC) statistics was used to analyse the SAT while the remaining two instruments, SSTand SOSAI were subjected to Cronbach alpha statistics, the value yielded 0.87, 0.92 and 0.76 respectively. Data obtained were analysed using t-test and ANCOVA at 0.05 level of significance. The findings of the study revealed that Fine Arts Students' in the experimental group performed significantly better than the control group and there was a significant difference among high with 82.67, medium with 61.00 and low ability levels with 48.86 mean scores of Fine Arts Students' performance in Colleges of Education; there was no significant interaction effect of treatment and ability levels since calculated sig. 0.133 is greater than the critical level 0.05, of the Fine Arts Students' performance in Colleges of Education. The study concluded that Fine Arts Students exposed to web-enabled Sculpture package performed better than those taught using the conventional method. Based on the findings it was recommended that lecturers in Colleges of Education should endeavour to adapt and utilise web-enabled Sculpture package for teaching Fine Arts.

Keywords: Fine Art, Sculpture, Web-enabled

Introduction
Educational technology as a pragmatic approach to solving problem is becoming increasingly significant in providing continuous and realistic solution to educational problems in Nigeria. This is so because processes and products of educational technology constitute educational resource material such as instructional media for enhancing both the teacher's and student's performance (Taiwo, 2009). Januszewski and Molenda (2008) defined educational technology as the study and ethical practice of expediting learning and improving performance by creating and utilising appropriate technological process and resources.

Onasanya and Adegbija (2007) opined that educational technology aids the learner in order to achieve systematic solutions to human learning problems. Thus, the learner is the main emphasis for any instructional activity, it also help to support teacher based instruction. Thijs (2002) observed that it is almost impossible to ignore the use of ICT with education because technology has become a valuable resource to educators.

Yusuf (2005) stated that ICT offers opportunities for students, teachers, academic and non-academic staff to communicate with one another more successfully during formal and informal teaching and learning. ICT is affecting the way education is delivered and how researches are piloted. Stephenson (20010) and Oliver (2002) have predicted that with ICT, the role of teachers will transform from being "transferors" of a predefined body of knowledge to being "mentors" and "managers" of the learning environment.

Greece (2010) affirmed that ICT promotes student-centered learning because it enables the learner to construct concepts or ideas in their own learning environment, understanding autonomy and independence. Student-centered learning is focused on the students' needs, abilities, interests, and learning styles with the teacher serving as an architect of learning. In this case, it is the learner who interacts with his or her environment and thus gaining an understanding of its outlooks and characteristics.

Adeyanju (2015) posited that ICT is drastically changing the ways things are done in nearly every field of human activity. In Nigeria, just like other countries, ICT has taken over the operation of every facet of life such as banking, agriculture, law, medicine, communication, sports and games. In this regards, education should not been left out. The Federal Government of Nigeria is convinced that for higher education to make optimum contributions to national development, ICT is an indispensable factor (FRN, 2013). Teacher education institutes should rather assume a leadership role in the transformation of education than to be left behind in the whirl of rapid technological change.

This era of information and communication technology is poised such that a simple click on a button may lead to access a number of useful resource materials on the World Wide Web that is, 'www' network. Hence, one may submit that ICT innovation is increasing the demand for reforms in teaching and learning approaches. In recent time, the World Wide Web that is, 'www' which is ICT-based has been used to provide instruction and instructional support (Badmus, 2012; Lawal, 2016) for educational purposes as ICT-based instructional strategies most especially for Web-Based Lesson (WBL) or Web-Based Instructions (WBI). A web-based lesson is simply a lesson that integrates a web site or many web sites (Mendoza, 2006). A web-based lesson can be conducted entirely online or can be a traditional classroom lesson with online components (Maki, 2002).

Mendoza (2006) also observed that a website can be used in education for different purposes which include research, reading, writing, publishing, communication and collaboration with teachers and learners around the world (Mendoza, 2006). Mathew and Doherty-Poiner (2001) explained that WBI creates an atmosphere where teacher will have more time to work with individual students and small groups because instructions are delivered via the web. Teachers are spared the burden of repeating their teaching assignment with the use of WBI, while communication during a given instruction between the teacher and students are more targeted and concentrating (Boer, 2001). In the world of available literature in education, the term "Web-based instruction" has been regularly used, and on account of its novelty, is interpreted broadly as any form of instructional delivery in which the World Wide Web is included as a tool (Relan & Gillani, 1997).

Web-based instruction offers multiple mode of use in education and training environments. As with Computer – Based Instruction (CBI), it is capable of providing direct training to meet individual learning objectives. Due to its networking capability, the Web can play additional roles. In the same manner, Facebook is equally used as a platform for educational process (Hew, 2011). Facebook is a social networking platform not primarily designed for educational purposes. However, it has great potential for teaching and learning due to its unique features and affordances.

Atkin (2016) explained that the delivery of ideas that cannot be expressed through the traditional routes of painting and sculpture could be greatly explored via films and video, animations and other Web-enabled applications. By implication, the use of Web-based instruction can support students' learning of sculpture in Fine Arts

Fine Arts branches entail painting, drawing, printmaking and sculpture. Within the sphere of this group are such branches of Arts like Fine Arts and Applied Arts or Industrial Arts (Bluemoon, 2008). As the word implies, Fine Arts are aspects of arts like painting, sculpture, drawing and architecture. These are works that are produced for their aesthetic value and utility use (Bluemoon, 2008). Seeauctions (2009) also portrayed Fine Arts as any piece that was created for a visual appeal and utilitarian use.

Olurinola, Shobayo and Olugboji (2013) agreed that Sculpture is a three dimensional arts concerned with the group of masses and volumes. The two principal types have traditionally been" free-standing" or sculpture in the round and relief sculpture. Sculpture in the round is one with mass and space in three dimensional formats. This can also be viewed from all sides and stand independently on their own. Relief sculpture is attached to a base and such composition is only being viewed from limited positions around the work.

Sculpture is a Fine Arts course studied at tertiary institutions. Tertiary education is the education given after Post Basic education in institutions such as Universities, Polytechnics, Monotechnics, School of Health and Technology, Colleges of Agriculture, National Teachers' Institute (NTI) and Colleges of Education (FRN, 2013).

Colleges of Education are tertiary institutions under Teacher Education Programme. Junaids (2012) asserted that the mandate of the teacher training programme at the National Certificate in Education (NCE) level, which is the approved minimum teaching qualification in Nigeria, is to produce quality teachers for the Basic education sub-sector. The Basic Education sib-sector encompasses five categories of education, viz; Pre-primary Education or Early childhood and care Education, Primary Education, Junior Secondary Education, Adult and non-formal Education, Special Needs Education.

The philosophy of this programme is to provide academic and professional training for NCE teachers in Fine and Applied Arts. It aims at developing student's aesthetic perception, artistic talent and expression as well as stimulates interest and enquires in the practical and theoretical areas, particularly as they affect the teaching of Fine Arts at the primary and junior secondary school levels (FRN, 2012).Such noble educational programmes should be supported with a better teaching method such as Web-enabled instructional package.

Poor performance leads to undesirable wastage through dropouts and repeating classes. It also denies the learner the furtherance of schooling through the formal system of education. The quality education forms the window of hope for poverty eradication and combating other social evils in the society. It also contributes to equity, economic growth and expansion of employment opportunities (Adesoji & Olatunbosun, 2008).

Student performance in Fine and applied art should to be much better because it is an optional subject in schools done by few students out of volition. It has a great potential to compare favorably among other subjects in the curriculum (Otati, 2013). There is also very high expectation for better student performance in Fine and Applied Arts coming from school administrators, teachers, parents and even Fine and Applied Arts students. On the other hand, Fine and Applied Arts is a practical course that utilises diverse resources, and each year, schools incur substantial expenditure to facilitate its operations. School administrators and managers might be skeptical to continue spending on an optional course that does not appear to show value for money (Otati, 2013).From the observation done by the researcher in analyzing of Fine Arts students' result at Emmanuel Alayande College of Education, Oyo, Oyo State and Federal College of Education (Special)Oyo, Oyo State, Nigeria between 2011/2012 to 2015/2016 academic session, it was found out that the average performance Grades of Fine arts students in Sculpture with high ability level A and B have 11.61%, medium ability level of grade level C have 12.66% and low ability of grade level D, E and F have 75.73%.Therefore, based on finding, it was necessary to examine students' performance using various medium which they can interact with and learn purposefully. This study justify the need for the package on colleges of education students' psychomotor ability in Fine Arts in South-West, Nigeria.

Research Questions

The study sought and provided answers to the following research questions.

(i) What is the effect of Web-enabled Sculpture package on Fine Arts students' performance in Colleges of Education?

(ii) What is the effect of ability levels on Fine Arts students' performance in Colleges of Education?

(iii) What is the interaction effect of treatment and ability levels on Fine Arts students' performance in Colleges of Education?

Research Hypotheses

The following research hypotheses were formulated and tested at 0-05 level of significance

H_{O1}: There is no significant difference between experimental group and control group mean scores of Fine Arts students' performance in Colleges of Education.

H_{O2}: There is no significant difference among high ability; medium ability and low ability levels mean scores of Fine Arts students' performance in Colleges of Education.

H_{O3}: There is no significant interaction effect of treatment and ability levels on the mean scores of Fine Arts students' performance in Colleges of Education.

Methodology

The study employed a quasi-experimental design that is, pre-test, post-test, non-equivalent, non-randomized control group, with two levels of variables (Web-enabled Sculpture package and manual method of modeling), and three levels of academic ability (high, medium and low) were investigated in the study. The population for this study comprised of all Fine and Applied Arts students in Colleges of Education in South-West, Nigeria, while the target population for this study comprised of all Fine and Applied Arts students in Government owned Colleges of Education in South-West, Nigeria. Multi-stage sampling technique was used for selection of sample for the study. There are six states in South-West, Nigeria with 11 government owned Colleges of Education. In the first stage, the Four States out of the six states in which at least two Colleges of Education are running Fine Arts courses were purposively selected for the study. In the second phase, random sampling technique was used to select 22 students from Adeyemi Colleges of Education, Ondo and 26 students from Federal College of Education (Special) Oyo for the study. Lastly, random sampling technique was used to allocate Federal College of Education (special) Oyo to experimental group and

Adeyemi College of Education, Ondo to control group. The sample for the study was intact class of 200 level at the two Colleges of Education that were used for experimental and control groups. Out of 48 students that participated in the study, 22 (45.8%) of the students from Adeyemi College of Education, Ondo participated in conventional teaching group while the remaining 26 (54.2%) students from Federal College of Education (Special), Oyo, were in Web-enabled sculpture package group.

The 100 Level Fine and Applied Arts students were not selected because they were considered not to have had sufficient knowledge background in sculpture. They are only exposed to elementary three dimensional craft work (FAA 116) and (FAA 126). The 300 Level Fine and Applied Arts were not selected because they were considered usually occupied with their teaching practice throughout first semester. In second semester, they will be busy with their project and at this level, sculpture is not compulsory. The 200 Level Fine and Applied Arts students were considered suitable for the study. At this stage, they are exposed to sculpture in the first and second semester and sculpture is a compulsory course of credits unit (FAA 216) and (FAA 226).

Web-enabled Sculpture package (WESP) is the instrument used in the experimental group. The treatment used for instrument, (WESP) was developed by the researcher and the instructional video designer where the researcher took care of the content and video production of the Sculpture video package and the instructional video designer designed the package. The instruments used for the analysis of the study were Sculpture Achievement Test (SAT) consist of 50 multiple choice questions with options A-D on the methods, materials and tools in sculpture, Sculpture Skill Test (SST) designed to assess student practical skill in sculpture. The test item which is "Sculpting of human head". And Sculpture "on the Spot" Skill Assessment Instrument (SOSAI) is equally adapted to assess the learner's practical skills, adapted from Jaji (2014).The three instruments were validated by experts. The validated instrument was used to test reliability data, a pilot study was conducted for three weeks of two hours lesson per week on all eleven 200 Level Fine and Applied Arts students from Federal College of Education (Technical) Akoka, Lagos State, Nigeria. The reliability were determined by subjecting them to test re-test method. The Pearson's Product Moment Correlation (PPMC) statistics was used to analyse SAT while the remaining two instruments SST and SOSAI were subjected to Cronbach alpha statistics. The values yielded 0.87, 0.92 and 0.76 respectively.

The t-test statistics analysis was used to test hypothesis one which was derived from research questions one. Hypotheses two and three were derived from research questions two and three and they were analysed using ANCOVA. All hypotheses were tested at 0.05 significant level.

Results

HO_1: There is no significant difference between experimental group and control group mean scores of Fine Arts students' performance in Colleges of Education.

Fine Arts students who were taught using conventional teaching method had the mean score of 49.50 with standard deviation value of 12.32 while the students that were exposed to Web-enabled video packaged had the mean score of 55.96 with standard deviation value of 8.63. This result is presented in table one below.

Table 1:Summary of t-test on Fine Arts Students' Performance Exposed to Web-enabled Sculpture Package

Variable (Posttest scores)	N	Mean	Std	df	T	Sig(p)	Remark
Conventional teaching	22	49.50	12.32	46	2.130	0.000	S
Web-enabled Sculpture packaged	26	55.96	8.63				

Table 1 shows the difference in the performance of control group taught with conventional teaching method and experimental group taught using Web-enabled Sculpture package. The table shows that there is a significant difference between experimental group and control group mean scores of Fine Arts students' performance in Colleges of Education. (df = 46; t = 2.130; $p<0.05$). Based on this result, hypothesis 1 is rejected.

HO_2: There is no significant difference among high ability; medium ability and low ability levels mean scores of Fine Arts students' performance in Colleges of Education.

Table 2: Summary of ANCOVA Showing Difference in the Performance of Low, Medium and High Ability Level of Fine Arts Students

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Remarks
Corrected Model	3828.285[a]	3	1276.095	32.726	.000	
Intercept	13381.186	1	13381.186	343.164	.000	
Pretest	43.276	1	43.276	1.110	.298	
Ability	3725.029	2	1862.514	47.765	.000	S
Error	1715.715	44	38.994			
Total	140376.000	48				
Corrected Total	5544.000	47				

R Squared = .691 (Adjusted R Squared = .669)

Table 2 indicates that the calculated F-value is 47.765 with calculated sig. 0.000 computed at critical level of (0.05). Since the calculated sig. 0.000 is lesser than the critical level 0.05, hypothesis 2 is hereby rejected. This implies that there is a significant difference among high ability; medium ability and low ability levels mean scores of Fine Arts students' performance in Colleges of Education. To explain where the significant difference lies, Scheffe post Hoc was carried out and the output is shown below.

Table 3: Scheffe Post Hoc Analysis

Ability Level	N	Subset for alpha = 0.05		
		1	2	3
Low	37	48.8649		
Medium	8		61.0000	
High	3			82.6667
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 6.181.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table 4 shows that Fine Arts students with high ability level performed better with mean score 82.67 in subset 3, it followed by Fine Arts students with medium ability level of mean score of 61.00 in subset 2, while the low ability scores or level had mean score of 48.87 on

subset 1. This implies that the high level ability Fine Arts Students performed better than other levels (medium and low).

HO_3: There is no significant interaction effect of treatment and ability levels on the mean scores of Fine Arts students' performance in Colleges of Education.

Table 4: Summary of ANCOVA Showing Interaction Effects in the Performance of Treatment and Ability level of Fine Arts Students.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Remarks
Corrected Model	4649.179	10	464.918	19.224	.000	
Intercept	9335.927	1	9335.927	386.032	.000	
Pretest	7.191	1	7.191	.297	.589	
Groups	157.799	1	157.799	6.525	.015	
Gender	3.563	1	3.563	.147	.703	
Ability	3417.087	2	1708.544	70.647	.000	
Groups * Ability	56.965	1	56.965	2.355	.133	NS
Error	894.821	37	24.184			
Total	140376.000	48				
Corrected Total	5544.000	47				

R Squared = .839 (Adjusted R Squared = .795)

Table 4 reveals that the calculated F-value is 2.355 with calculated sig. of 0.133 computed at critical level of 0.05. Since the calculated sig. (0.133) is greater than the critical level (0.05), hypothesis 3 is hereby not rejected. This implies that there is no significant interaction effect of treatment and ability level on the mean scores of Fine Arts students' performance in Colleges of Education.

Summary of Findings

(i) There was a significant difference between experimental group and control group mean scores of Fine Arts students' performance in Colleges of Education.
(ii) There was a significant difference among high ability; medium ability and low ability levels mean scores of Fine Arts students' performance in Colleges of Education.
(iii) There was no significant interaction effect of treatment and ability level on the mean scores of Fine Arts students' performance in Colleges of Education.

Discussion

The use of web-enabled instruction is in line with Badmus (2012) that confirmed that Web Quest instruction brought about a substantial and significant improvement in teaching and learning of educational technology concepts than conventional/traditional instruction. The finding of Shwu (2005) showed that the use of Web helps many students to improve on their performance because many students use the opportunity to learn at their convenience. The result is also in line with the study of Jackie and Laura (2008), Tsai (2006), Leahy and Twomey (2005)and Kortecamp and Bartoshesky (2003) who reported in their studies that Web-enabled were more effective and the students who completed the Web activities were rated higher in performance than traditional method grouping students. However, it contradicts the findings of Strickland (2005), Burke, Guffer, Colter and Riehl (2003) and Milson (2001) who submitted that no significant difference was found in the performance of students who were taught using either Web or traditional activities.

The result shows that the ability level of Fine Arts students' differs from each other, from low, medium to high ability level. This may be as a result of several problems that may

affect the academic achievement of students. This is in line with the work of Johnson, Johnson and Smith (1998) that studied the effect of cooperative, competitive and individualistic efforts on students' achievement and productivity and discovered that students in cooperative learning settings performed better than students in either competitive or individualistic settings.

Conclusions

Based on the findings of this study, Web-enabled Sculpture package was tested and found effective for learning sculpture by Fine Arts students at colleges of education. The Fine Arts students who were exposed to Web-enabled Sculpture package in experimental group performed well as their counterparts taught in the conventional teaching group.

The result from the study revealed that there was a significant difference in the use of Web-enabled Sculpture package among high, medium and low ability levels mean scores of Fine Arts students' performance, interaction effect of Web-enabled Sculpture package and ability level on the mean scores of Fine Arts students' performance in Colleges of Education. Also, it can be concluded that the use of Web-enabled Sculpture package was found to be more effective in enhancing the performance of Fine Arts students at colleges of education than the conventional teaching method.

Recommendations

Based on the major findings of this study, the following recommendations were made:

(i) Lecturers in Colleges of Education should endeavour to adapt and utilise Web-enabled Sculpture package for teaching Sculpture in Colleges of Education in order to improve students' performance.

(ii) Nigeria Certificate in Education (NCE) minimum standards curriculum should be reviewed to incorporate the use of Web-enabled Sculpture package because this will help Fine Arts students in College of Education to perform better in sculpture.

(iii) Students should be encouraged to make use of information on internet for instructional purpose such as Web-enabled Sculpture packaged rather than using internet for fun or entertainment.

(iv) Lecturers in Colleges of Education should work hand in hand with the computer programmers or software developers to develop and come out with relevant ICT-Based instructional packages that can develop Fine Arts students in modeling of sculpture.

(v) Government and Curriculum developers should embrace student-centred learning approach in teaching and learning processes so that instructional strategy like Web-enabled will be embraced by all the various stakeholders in the educational sector.

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