Archives of Current Research International

16(4): 1-10, 2019; Article no.ACRI.47130
ISSN: 2454-7077

Edutainment Teaching Technique and Students' Skills Performance in Building Drawing in Technical Colleges in Akwa Ibom State

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Authors' contributions

This work was carried out in collaboration between both authors. Author ADU designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author OEB managed the analyses of the study and also the literature searches. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/ACRI/2019/v16i430096
Editor(s):
(1) Dr. Gokhan Duman, Associate Professor, Department of Primary Education, Education Faculty, Gazi University, Turkey.
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Complete Peer review History: http://www.sdiarticle3.com/review-history/47130

Original Research Article

Received 15 December 2018
Accepted 21 February 2019
Published 16 March 2019

ABSTRACT

The study was on edutainment technique and students' skills performance in building drawing in Technical Colleges in Akwa Ibom State. The study sought to find the effect of edutainment technique and demonstration method on students' performance in building drawing. Three research questions and null hypotheses were formulated to guide the study. A quasi-experimental design was adopted for the study. The population used for the study was three hundred and eighty (380) senior technical college II students in all the seven (7) public Technical Colleges in Akwa Ibom State. The sample comprised one hundred and ten (110) students drawn from two (2) intact classes. A 30-item multiple-choice performance test called Performance Test on Building Drawing (PTBD) was developed to determine performance level of the control and experimental groups and building drawing lesson plan for the treatment of the experimental group. The instrument was validated by three experts. Two from the Department of Vocational Education, one from Test and

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Measurement Unit of the Department of Educational Foundations. Cronbach alpha reliability was used to determine the internal consistency of the instrument. The instrument yielded a reliability coefficient of 0.86. Mean and standard deviation were used to answer research questions while analysis of covariance was used to test the null hypotheses at .05 level of significance. The results showed that students taught using edutainment technique have higher mean scores than those taught with demonstration method. It also showed that the mean score of male students was slightly higher than that of female students in the experimental group. The post-test analysis on Building Drawing Performance Test (PTBD) was in favour of the experimental group. However, there was no significant difference between males and females on building drawing performance test as a result upon treatment. Based on these results, it was recommended among others that edutainment technique should be adopted by building drawing teachers in teaching building drawing in Technical Colleges in Akwa Ibom State to solve the problem of poor performance of students.

Keywords: Technical education; building drawing; edutainment; teaching technique; skills; performance.

1. INTRODUCTION

Education is a process of acquiring knowledge, skills, adding value to a person's life in order to affect and adapt to his or her environment. Education is the transmission of knowledge (learning) to learners. According to Gergen [1] education is designed to transmit learning to the students of all ages as teachers are increasingly facing new roles and responsibilities in the ever changing and demanding environment. Teachers are facing serious instructional challenges as the diversity of students within each classroom continues to widen [2].

This increase results from the effects of globalization and rapid technological changes which informed the recommendation by United Nation Education Scientific and Cultural Organization [3] that all technical and vocational education system in the 21st century should be geared towards life-learning. Students need life-learning training in order to develop mentally and acquire life skills that will make them compete favourably in today's world.

Vocational Technical Education is capable of developing students' mentally creating environment for continuous knowledge and skills needed in the world of work. Vocational Technical Education according to the [4] are those aspects of the educational process involving in addition to general education, the study of technology and related science and acquisition of practical skills, attitude, understanding and knowledge relating to occupation in various sectors of economic and social life.

Vocational technical education and training is a type of education that leads to acquisition of practical skills, which will enable an individual to be generally employed in a chosen vocation to become self-reliant, in order to contribute to the overall national development. It is education which is designed to equip individuals with knowledge and skills in order to be self-employed and effectively compete and adapt to the environment.

Evanson and Ekong [5] recorded that vocational technical education is a workshop-based education designed for equipping individuals with the cognitive, psychomotor, affective and perceptual skills. The aim of Vocational technical education is to provide education for self-reliance and to earn a successful living in an occupation. It is a catalyst for employment, prime agent for empowerment and self-actualization.

Building Drawing is an aspect of building construction. Building Construction is a vocational trade (programme) offered in Technical Colleges. Building Drawing includes: graphical conventions, equipment and materials, scale and basic principles and considerations in designing building, preliminary sketch design, production drawing and component details, electrical service plan, preparation of schedules, working drawings and reproduction [6].

For building construction in technical colleges to succeed, students should be taught to be skillful and competent in drawing and interpretation so as to gain employment in a highly competitive construction industry. A good building construction student is one who is able to

accomplish various tasks in building drawing project.

In order to acquire skill in building drawing, students must constantly practice and carry out task using relevant materials, tools, equipment and instructional methods. Inuwa [7] outlined list of instructional methods employed by teachers to direct instruction for the acquisition of knowledge and skills to include: lecture, question, explanation, discussion, role-play, demonstration, observation, project and practical methods applied in classroom.

Several authors [8,6] reiterated that the listed traditional methods of teaching presently in use in teaching building drawing is inappropriate. Campbell and Campbell [9] supported that the traditional teaching method seems not to have adequately encouraged students to develop wide range of knowledge and acquire skills that would make them functional in today's world of work.

National Board for Technical Education in Nigeria (NBTE) has specified demonstration method for the teaching of Building Drawing. This conventional approach fall short of accomplishing the intended objectives of Building Drawing. The consequence is that, there is emphasis on strategies of repeat after me and do as I do, rather than problem solving and collaborating skills to boost retention and academic achievement.

Today, Building Construction taught in Technical Colleges has virtually no weight attached to psychomotor domains through the objectives and learning experiences, as teacher teach with very ill equipped classrooms and workshops [10]. Building Drawing requires skills and a good proficiency in carrying out tasks. The fact still remains that building industries need the services of talented building construction graduates to be readily absorbed in the industry. Usoro [11] contented that majority of the graduates are not employed, they roam the street for white collar job, join keke riding, causal labour, where less skill is required because they lack professional skills.

Vocational technical education subject, which building construction is a part, was devoid of practical research. Findings have shown that teaching and learning in the school system remains pre-dominantly teacher-centered and teacher-directed [12]. Learners are reduced to passive learners and do not engage fully in the leaning process. The short coming of this method of teaching accounted for poor performance of vocational education students at public examination and work place [2].

Ukpong [13] asserted that this conventional method of teaching is not logically sequenced to fit the ability of the learners, as teachers cannot provide teachers-led practice to engage in reciprocal teaching. Adieze [14] noted that this method seems to have failed to produce the desirable learning outcome. The author further opined that the challenges of using conventional method of teaching are that students' attention are not ordered, as students are not entertained. Students are not too motivated in this method of teaching.

It is therefore very important to train students for self-direction and self-growth as teaching and learning now focuses on guiding the learners to build and modify their own behaviours. With respect to academic achievement, there is a generally observed pattern of female out performing males in most subject but less so in mathematics and sciences. Boyle et al. [12] contended that boys are better than girls in spatial tasks and large motor skills. Form the above contention, it could be deduced that there has been gap in academic achievement between girls and boys which could be bridged by the introduction of edutainment teaching technique in Building classroom. Udofia [2] recorded that teachers should implement edutainment instructional technique in teaching and learning for effective skill development. Traditional methods should be replaced with learner-centered and learner-active process which is edutainment.

Edutainment means education and entertainment. Adieze [14] asserted that edutainment is a technique that combine education and entertainment where the teachers role become that of an adviser, supporter, a modeler, as well as giving hint and tips based on the subject area. Edutainment is an interactive and playful method for teaching and learning specific skills. It is an interactive learning experience designed to teach goals, rules, and problems-solving, represented in a fun or story form. Edutainment gives students the fundamental motivation needs of learning by providing enjoyment, passionate involvement, structure, ego, gratification, adrenaline, creativity, social interaction and emotion. Accordingly Udofia [2] noted that in edutainment class room students could choose to emulate the teacher's behavior by rehearsing the action, taking the

action, comparing their experiences to the experiences of others, and then adopting a new behavior. This implies that edutainment has the characteristic that affect the response of a students to a specific message as well as enabling social behavior to spread through a group of students over a period of time.

1.1 Statement of the Problem

Building drawing been used over the years to communicate information on design. Graduates of Building Construction are supposed to feed the construction industry. However, the present methods of teaching building drawing seem to make students incapacitated to retain information and achieve academic excellence. Usoro [6] observed that building drawing instruction transmitted to students do not follow sequential instruction. The traditional method of demonstration in teaching building drawing seems eluded and the optimum result could not be achieved because it offers limited utility when used by teachers to teach difficult and complex drawing.

Students in Building Construction often fail to reach a satisfactory level of proficiency in problems-solving especially in building drawing because of conventional or traditional teaching methods used by teachers. This method lack fun-related instructional materials and as such cannot accommodate individual learning, thereby causing low performance, frustration and loss of interest in building drawing. Felder [15] reiterated that teachers of technologies lack fun-related instructional materials to suit a particular lesson taught to students that would meet their varying interests thereby stimulating academic achievement.

It is not out of place to observe that the absence of fun-teaching technique seems led to poor performance of students in technology subjects. This could also affect building drawing. Also traditional or conventional teaching method does not lay much emphasis on practical, projects based, active learning and students' self-assessment. It is on this note it therefore becomes imperative to, investigate edutainment teaching technique and students' skills performance in building drawing in Technical Colleges in Akwa Ibom State.

1.2 Purpose of the Study

The purpose of the study is to determine the effects of edutainment technique on students' academic performance in building drawing. Specifically, the study sought to:

1. Determine the effects of edutainment technique and demonstration method on students' skill performance when taught visualization in building drawing.
2. Compare the skill performance of male and female students in building drawing taught with edutainment technique.
3. Determine the difference in drawing skill performance of students in sketching when taught with edutainment technique and demonstration method.

1.3 Research Questions

The following questions were formulated to guide the study:

1. What is the effect of edutainment technique and demonstration method on students skill performance when taught visualization in building drawing?
2. What is the skill performance of male and female students in building drawing taught with edutainment technique?
3. What is the difference in drawing skill performance of students in sketching when taught with edutainment technique and demonstration method?

1.4 Null Hypotheses

The following null hypotheses were poised and tested at 0.05 level of significance

1. There is no significant difference between the mean effects of edutainment technique and demonstration method on students skill performance when taught visualization in building drawing.
2. There is no significant difference between the mean skill performance of male and female students in building drawing taught with edutainment technique.
3. There is no significant difference in the drawing skill performance of students sketching when taught with edutainment technique and demonstration method.

2. METHODOLOGY

The design used for the study was quasi-experimental design, specifically, the pre-test, post-test design. It consisted of two groups, the experimental group and the control group. This

implies that intact classes were used for the study. The design was adopted it was not possible for the researcher to randomly sample the subjects and assign them to groups without the subject not being sensitive to the experiment procedure.

The design is represented as follows:

O_1 X O_2
O_3 ---- O_4

Where O_1 and O_3 represent the initial observation (pre-test) for experimental and control groups O_2 and O_4 represent the final observation (post-test).

X represents the treatment
- represents no treatment

The study was carried out in Akwa Ibom State, Nigeria. The population used for the study comprised 380 senior Technical two students offering Building Drawing in all the seven public Technical Colleges in Akwa Ibom State. Technical Colleges include: Abak, Uyo, Ikot Akata, Ikpa Eket, Oron, Mbioto and Iko Uko Ika. Simple random sampling technique was used for selection of two Technical Colleges out of seven. The sample for the study was 110 building construction students drawn from two intact classes. Building Construction students were used for the study because they are the ones offering building drawing.

Three instruments were used in the study, these were edutainment lesson plan for the experimental group, demonstration lesson plans for the control group as well as Building Drawing Performance Test (BDPT).

The edutainment lesson plan, demonstration lesson plan and a 30 multiple-choice items Building Drawing Performance Test (DBPT) was validated by three experts. Two from the Department of Vocational Education, one from Test and Measurement Unit of the Department of Educational Foundations, all in the University of Uyo. Their suggestions were used to improve the final version of the instruments. Cronbach alpha reliability was used to determine the internal consistency of the instrument. The instrument yielded a reliability coefficient of 0.86.

A one week intensive classes was organized for the participating teachers on the edutainment technique and did not have access to the test instrument until it was time for administration. However, the researchers were not directly involved in the teaching and administration of the test. The experimental group was taught six (6) weeks edutainment lessons and six (6) weeks demonstration lessons for the control group. Each lesson lasted for 80 minutes (double periods) and the lesson was taught twice a week for 6 weeks. Pre-test and post-test was administered on both groups using Performance Test on Building Drawing (PTBD) questionnaire. Scores obtained from both groups were compared to determine if there was significant difference in their performance.

Data collected were analyzed using mean, standard deviation and analysis of covariance (ANCOVA). Mean and standard deviation were used to answer the research questions while ANCOVA was used in testing all the hypotheses at 0.05 level of significance.

Informed consent was profoundly valued especially with regard to individual responses.

3. RESULTS

3.1 Research Question 1

What is the effect of edutainment model technique and demonstration method on students' skill performance when taught visualization in building drawing?

Data analysis in Table 1 indicates that the mean difference of students exposed to edutainment model (19.43) is greater than the mean difference of students exposed to demonstration method (4.52). The skill performance score of students in visualization using edutainment technique is better than the skill performance score of students in visualization using demonstration method.

3.2 Research Question 2

What is the skill performance of male and female students in building drawing taught with edutainment technique?

Data analysis in Table 2 indicates that the mean difference of male students exposed to edutainment model (10.43) is higher than the mean difference of female students exposed to edutainment model in technical drawing (6.96). This implies that the skill performance of male students in technical drawing using edutainment model was higher than the skill performance score of female students taught technical drawing using edutainment model.

3.3 Research Question 3

What is the difference between technical drawing skill performance of students in sketching when taught with edutainment technique and demonstration method?

Data analysis in Table 3 indicates that the mean difference of students exposed to edutainment model (9.83) is higher than the mean difference of students exposed to demonstration (2.78). This means that the performance of students taught sketching using edutainment model is higher than the mean skill score of students taught sketching using demonstration.

3.4 Null Hypotheses 1

There is no significant difference between the mean effects of edutainment technique and demonstration method on students' skill performance when taught visualization in building drawing.

The summary of data analysis in Table 4 presented the observed F- value as 3.12. This value was compared with its significant value of .013 at.05 alpha level. Since the significant value of .013 is less than the alpha level of .05, null hypothesis which stated that there is no significant difference between the mean effects of edutainment model technique and demonstration method on students skill performance when taught visualization in building drawing was not rejected.

3.5 Null Hypotheses 2

There is no significant difference between the mean skill performance of male and female students in building drawing taught with edutainment technique.

The summary of data analysis in Table 6 presented the observed F- value as 1.01. This value was compared with its significant value of .068 at 0.05 alpha level. Since the significant value of .068 is greater than the alpha level of .05, null hypothesis which stated that there is no significant mean difference in the skill performance score of male and female students taught edutainment technique was not rejected This showed that edutainment technique enhances male and female students' performance.

Table 1. Mean difference skill performance of students in visualization when taught using edutainment model technique and demonstration method

Group	N	Pretest		Posttest		Mean difference
		$\bar{x}$	SD	$\bar{x}$	SD	
Experimental group	57	38.70	5.96	58.13	10.40	19.43
Control	53	39.28	6.13	43.80	6.96	4.52
Total	110					

Table 2. Mean difference of skill performance of students (male and female) in in building drawing taught with edutainment technique

Group	N	Pretest		Posttest		Mean difference
		$\bar{x}$	SD	$\bar{x}$	SD	
Male	42	45.19	5.73	55.62	4.58	10.43
Female	15	39.24	6.76	46.20	4.89	6.96
Total	57					

Table 3. Mean difference of skill performance of students in technical drawing when taught sketching using edutainment technique and demonstration

Group	N	Pretest		Posttest		Mean difference
		$\bar{x}$	SD	$\bar{x}$	SD	
Experimental group	57	35.17	6.90	55.00	10.11	9.83
Control	53	38.92	5.84	41.70	5.32	2.78
Total	110					

Table 4. Analysis of covariance (ANCOVA) of students' skill performance scores taught visualization using edutainment technique and demonstration method

Source	Type III sum of squares	Df	Mean square	F	Sig.
Model	236.103	2	12.426	88.944	.000
Intercept	29.036	1	4.839	34.638	.000
Explained	.013	1	.013	.094	.760
Main Effect	2.184	1	.437	3.12	.013
Error	10.897	109	.140		
Total	247.000	110			

Table 5. Analysis of covariance (ANCOVA) of students' skill performance scores taught technical drawing using edutainment technique

Source	Type III sum of squares	Df	Mean square	F	Sig.
Model	238.920[a]	2	7.466	60.063	.000
Intercept	17.834	1	1.372	11.036	.000
Explained	.024	1	.024	.194	.661
Main Effect	1.515	1	.126	1.01	.068
Error	8.080	56	.124		
Total	247.000	57			

Table 6. Analysis of covariance (ANCOVA) of students' academic performance scores taught using edutainment technique and demonstration method

Source	Type III sum of squares	df	Mean square	F	Sig.
Model	240.802[a]	2	10.033	118.177	.000
Intercept	33.796	1	3.755	44.229	.000
Explained	1.695	1	1.695	19.960	.000
Main Effect	2.671	1	.334	3.93	.001
Error	6.198	109	.085		
Total	247.000	110			

3.6 Null Hypotheses 3

There is no significant difference between building drawing skill performance of students in sketching taught with edutainment technique and demonstration method.

The summary of data analysis in Table 6 presented the observed F- value as 3.93. This value was compared with its significant value of .001 at 0.05 alpha level. Since the significant value of .001 is less at alpha level of .05, null hypothesis which stated that there is no significant mean difference in the academic performance score of students taught Building Drawing using edutainment technique and demonstration method is rejected. This showed that edutainment technique is statistically significant and enhances students' skill performance in sketching.

4. DISCUSSION

The result on the performance of students taught visualization using edutainment technique was higher than the mean score of students taught visualization using demonstration method. The corresponding null hypothesis conducted using ANCOVA statistical tool showed that the differences between the mean score of students were significant in favour of edutainment technique. The significant difference was due to treatment given to the experimental group. This could be concluded that edutainment technique proved to be more effective and efficient in facilitating skill performance of students who are exposed to edutainment technique of acquiring skills in visualization.

This result is in agreement with the findings of Adieze [14] who conducted a research on effects of edutainment, scaffolding instructional models and demonstration method on students' academic performance in business studies in secondary schools in Abia South Senatorial Zone in Abia State, Nigeria. The researcher used book-keeping and office practice. The result of the study by Adieze [14] also showed that edutainment enhances students' academic

performance in office practice and book-keeping in secondary schools in Abia South Senatorial Zone of Abia state as those taught Book Keeping and Office Practice using edutainment model showed significant difference better than those taught using scaffolding and demonstration methods.

This study is also in line with the finding of Adieze [14] who stated that effective teaching approach breeds good performance, poor teaching approach breeds poor performance. This study is also in consonance with [16] who reiterated that any classroom and principle of social learning would increase students' knowledge and skill acquisition. The traditional methods of instruction (demonstration methods) is teacher-centered and teacher-active. However, this traditional method of demonstration in building drawing classroom should be replaced with edutainment technique which is learners-centered, learner-active and learners-facilitated if students' poor performance is to be adverted in building drawing.

The result on the skill performances of male and female students in building drawing taught with edutainment technique showed that the mean score of males was higher than that of females. The analysis of ANCOVA between male and female students taught with edutainment technique showed that the null hypothesis was retained. This showed that there is no significant difference between the mean of males and females in the experimental group in building drawing. Even though the mean score of males was slightly higher than that of female students. The difference in the mean was not high enough to consider it significant. The observed significant differences between males and females could also be attributed to sampling error. Edutainment technique adopted in the teaching of building drawing does not discriminate between both sexes.

This result agrees with [2] who affirmed that there is no significant difference between boys and girls in the experimental group of the introductory technology achievement scores taught using edutainment instructional technique. The non-significant difference could be as a result of the treatment by teachers which might have translated to better performance of the experimental group. Teachers who taught the lesson were very much committed to their teaching; in like manner students were equally committed to the learning process. This also is in agreement with [17] who posited that edutainment brings concrete experiment, observation, abstracts conceptualization and active experimentation for students to build strength and work towards improving their quality of learning. There is no obvious reason for gender to account for difference in skills performance using edutainment instructional technique since both male and female students think and show no physical or psychological difference in their thinking process approaches.

The good performance of both male and female students using edutainment technique was also due to the fact that edutainment technique is stable and enhances clarity of ideals. This technique makes students to remember lessons taught and are able to apply and relate activities to prior knowledge. Bonwell and EIson [18] stated that related learning approach facilitates active stimulation, problem solving and adaptation skills, improves memory and enhances transfer of learning to other situations. Edutainment technique enables male and female students to evaluate their learning abilities which leads to self-assessment and self-confidence which leads to good performance of students.

The result of the analysis of skill performance of students in building drawing taught sketching using edutainment technique method showed that edutainment technique had greater mean score than those taught using demonstration method. The analysis of covariance (ANCOVA) showed higher significant difference value in favour of edutainment technique. The null hypothesis was rejected. It therefore means that edutainment technique enhances student's skill performance in sketching. This finding is in line with [2] who contended that the adoption of edutainment as an instructional framework greatly improves student's academic performance. Edutainment has positive effect on student's academic performance. It also gives students the enthusiasm necessary for motivation, assimilation and interest, whereas demonstration does not.

This will also help students to learn in groups, improve their interpersonal relationship and their academic performance. The finding is also in support of [19] who affirmed in a adoption of the edutainment theory as an instructional frame work greatly improves student's academic achievement.

5. CONCLUSION

Edutainment technique which is fun-related instruction has begun to enter academic consciousness. Based on the finding was concluded that edutainment technique proved to be more effective and efficient in facilitating skill performance of students in acquiring skills in visualization. Traditional method should be replaced with edutainment technique which is learners-centered, learner-active and learners-facilitated if students' poor performance is to be adverted in building drawing. Edutainment technique enables male and female students to evaluate their learning abilities which leads to self-assessment and self-confidence which leads to good performance. Edutainment has positive effect on student's academic performance, gives students the enthusiasm necessary for motivation, assimilation and interest, whereas demonstration does not. Therefore it should be adopted as a teaching method in technical colleges in Akwa Ibom State.

6. RECOMMENDATIONS

In the light of the above, the following recommendations are made:

1. Edutainment technique should be adopted by building drawing teachers in teaching building drawing in Technical Colleges in Akwa Ibom State to solve the problem of poor performance of students.
2. Principals in Technical Colleges in Akwa Ibom State should ensure that building drawing teachers use edutainment technique in teaching building drawing.
3. Teachers should always employ fun-related learning approach in order to facilitate active simulation, learning and mastery by students.
4. The State Ministry of Education should as a matter of priority organize training and retraining of building drawing teachers in the use of edutainment technique to keep teachers abreast with this innovation that can enhance academic performance.
5. Students should be encouraged to actively participate and interact with their teachers and colleagues as it would improve their performance on class.

ETHICAL ISSUES

Information gathered by the researcher from the respondents was treated in privacy. The gathered data were held with great secrecy. Confidentiality was strictly observed, henceforth, the researchers only assigned a code representing the respective respondents. Only the researchers had access to the data. To enhance the trustworthiness of this study, the researcher reported objectively the statements of the respondents after a precise transcription of raw data.

The researcher did not conceal any information from the subjects if such information will not allow the subject to participate in the study. The researcher ensures that procedure of the research did not cause any physical issue or emotional harms to the respondents as all data gather from the respondents was treated confidentially with falling into wrong hands. The researcher did not dishonestly distort any information given by the respondents as all recorded from the questionnaire was kept in a safe storage.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sdiarticle3.com/review-history/47130