Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol.9, No.28, 2018

AN EVALUATION OF GENDER LEARNING OUTCOMES IN VOCATIONAL AND TECHNICAL EDUCATION USING CONTEMPORARY TEACHING STRATEGIES AMONGST SENIOR SECONDARY SCHOOL STUDENTS IN EKITI STATE, NIGERIA.

Dr Oke J.O. Fabamise D.B. Ajibare A. Y. Ogundola C.M.

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

FACULTY OF EDUCATION, EKITI STATE UNIVERSITY, ADO EKITI NIGERIA

ABSTRACT

The study evaluated the effects of power point presentation and gaming simulation on gender learning outcomes amongst senior secondary schools students offering Vocational and Technical education subjects in Ekiti State. The purpose was to find out whether there exists any disparity in gender learning outcomes using contemporary teaching strategies in Ekiti State Senior Secondary Schools in Vocational and Technical Education subjects. The study employed the Quazi experimental research design. The sample consisted of 47 senior secondary school student chosen from the three senatorial districts in Ekiti State. The instrument used to collect data was the Vocational and Technical Education Achievement Test (VTEAT). Two research questions and two hypotheses were formulated. Mean and standard deviation were used to analyze the data for answering the research questions while Analysis of Covariance (ANCOVA) was used to the hypotheses of no significance at 0.05 level of significance. Results of the study showed that students taught with contemporary teaching strategies had higher post test scores in the vocational and technical education achievement test than those taught with conventional method of teaching. There were also no significant difference in the performance of male students taught with contemporary teaching strategies and female students in the senior secondary schools. It was recommended that the teachers of vocational and technical education in senior secondary school should take the advantage of using the contemporary teaching strategies their teaching procedures on the basis of enriching their students academic success.

Key Words: Contemporary teaching strategies, vocational and technical education, gender, learning outcome, senior secondary school students.

Introduction

Vocational education is a type of education that is meant to produce semi-skilled and technical manpower necessary to restore, revitalize, energize, operate and sustain the national economy and substantially reduce unemployment (FME, 2000). It includes guidance and counseling in connection with training and other instruction directly related to an occupation. The major occupational areas of vocational education are vocational agriculture, distributive education, home economics education, health occupations, trade and vocational education, business and office education and technical education (Osuala, 2004).

These vocational courses or subject are offered mostly in Technical colleges as well as secondary schools in Nigeria. According to Federal Government of Nigeria (2004), one general objective of secondary education in Nigeria among others is to provide trained manpower in the applied science, technology and commerce at the sub-professional grades.

Vocational education provides a wider range of skill levels, from basic entry level skills to very technical skills requiring a high degree of specialization and conference. Vocational education programmes are offered at the secondary, post-secondary and adult levels. Considering the place of vocational and technical education in social, economic and political development of any country, issues relating to its sustenance should not be over looked.

Unfortunately, despite all effort by the government to ensure qualitative education at the secondary level and of the level of all other institutions offering vocational trades in order to enhance high quality products both in academics and employability, there have been persistent reports of high rate of failure among graduates of this vocational trades (FGN, 2001). In Nigeria, the West Africa Examination (WAEC) and National Examination Council (NECO) oversees the conduction of O'level examinations. Also, more importantly the

National Board for Technical Education (NABTEB) oversees technical education while the onus of conducting technical examinations rests on the National Business and Technical Examination Board (NABTEB).

An overview of WAEC, NECO, NABTEB examination results over the year has revealed consistently high failure rates. A five (5) years comparative analysis of May/June examination results revealed that:

Failure rates on Science subjects ranged from 28-25% in arts subjects, the range of failure is between 20-40%.

Combination of both arts and sciences recorded a failure of 42-75%.

The steady fall in the performance level is indicative of the available infrastructure as well as the strategies for the teaching as well as the strategies for the teaching and learning of vocational and technical subjects. Oranu (2003) observed that the teaching and learning methods used in teaching the trade subjects are mostly lecture and the demonstration methods. An appropriate strategy for teaching vocational and technical education may foster academic and psychomotor achievements of vocational trades students in senior secondary schools.

Learning outcomes according to Shirley are statements that describe significant and essential learning that learners have achieved, and can reliably demonstrate at the end of a course or program. In other words, learning outcomes identify what the learner will know and be able to do by the end of a course or program learning outcomes refer to observable and measurable knowledge, skills and attitudes. All these observable and measurable attributes are what the learner is able to achieve, that is a kind of achievement at the end of a course or programme. According to Anene (2005), achievement is qualified by a measure of the students' academic standing in relation to those of other students of his age. Atherson (2003) contended that students' achievement is dependent upon several factors among which are instructional methods, learning environment and the learner. In order to sustain gains in academic and psychomotor achievement, all members of the class must be able to attain a satisfactory level of proficiency regardless of their gender. Besides, gender issue has assumed prominence in technical and vocational education discourse.

Gender is a sense of awareness of being male or female. It is a behavioural pattern and attitude perceived as masculine or famines within a culture. Research reports on the influence of gender on students' academic achievement have been inconsistent and sometimes conflicting. While some study reported high influence of gender on student achievement (Ezeh, 2006). Others maintained that academic achievement if free of gender influence (Bajah and Bozimo, 1989). With the rapid development of technologies the need to find the best teaching technique that will assists students in senior secondary schools to learn vocational and technical subjects and improve their academic achievement had become most important to educators. Out of such teaching techniques is power point and gaming simulation.

Slide presentation software such as PowerPoint has become an embedded part of many instructional settings, particularly in large classes and in courses more geared toward information exchange than skill development. PowerPoint can be a highly effective tool to aid learning, but if not used carefully, may instead disengage students and actually hinder learning (Karen, 2018). PowerPoint enables teacher to prepare his lesson topic into slides accordingly and present such in the classroom in an interactive manner with the learners using computer system and a slide projector. This can be likened with Computer Assisted Instruction (CAI) where teacher uses a media approach (T-media). Using this approach, teacher is free from the use of chalkboard and chalk, therefore concentrating on the subject matter. This method is time saving and allows full interaction between the teacher and the learners.

A simulation game attempts to copy various activities from real life in the form of a game for various purposes such as training, analysis, or prediction. Usually there are no strictly defined goals in the game, with players instead allowed to freely control a character. Well-known examples are war games, business games, and role play simulation.(Ken,1995) From three basic types of strategic, planning, and learning exercises: games, simulations, and case studies, a number of hybrids may be considered, including simulation games that are used as case studies. Comparisons of the merits of simulation games versus other teaching techniques have been carried out by many researchers and a number of comprehensive reviews have been published.
Specifically the study sought to:

(1) Determine the difference in mean achievement scores between the students taught with contemporary teaching strategies and students taught with conventional teaching method.

(2) Ascertain whether any significant difference exists in the mean achievement scores of male and female students exposed to contemporary teaching strategies.

Research Questions

The following research questions were raised in the course of the study:

1. What are the effects of Power Point Presentation in improving the performance of students in learning Vocational and Technical Education?
2. What are the impacts of gaming simulation in improving the performance of students in learning Vocational and Technical Education?
3. Which of the two contemporary teaching strategies will give optimum performance of students in learning Vocational and Technical Education?

Research Hypotheses

From the research questions raised from the study, the following hypotheses were formulated and tested at 0.05 level of significance.

1. There is no significant effect of contemporary teaching strategies and control group in Vocational and Technical Education in Ekiti State Senior Secondary School students' learners' performance.
2. There is no significant difference between the academic performance of male and female students exposed to the three methods.

Methodology

A quasi-experimental design was used in this study. Specifically, the pre-test, post-test, non-equivalent control group design was adopted. According to Gall, Gall and Borg (2007) quasi-experimental design can be used when it is not possible for the researcher to randomly sample the object and assign them to treatment group without disrupting the academic programmes of the schools involved in the study. They state further that in the non-equivalent control group design, it is possible to have all groups receive treatments. This design was considered suitable to conduct this study because intact classes (non-randomized groups) were assigned to the three different teaching methods.

The study was carried out in senior secondary schools in Ekiti state, Nigerian. The population for the study consisted of all senior secondary two (SSS II) Vocational and Technical students. The schools and their corresponding SS11 enrolment are: Ekiti Baptist High School, Igede - Ekiti (Ekiti Central Senatorial District) (15), A.U.D High School, Ikole – Ekiti (Ekiti North East Senatorial District) (16),Amoye Grammar School, Ikere - Ekiti (16) (Ekiti South West Senatorial District).

The purposive sampling technique was adopted for the study; this is because all the 47 students in the three senior secondary schools that made up the population for the study also form the samples. Two of the senior secondary schools were randomly assigned to experimental group: Ekiti Baptist High School, Igede -Ekiti and A.U.D. High School, Ikole -Ekiti and the other one was assign to the control group Amoye Grammar School, Ikere - Ekiti .

The instrument used for data collection in this study was the Vocational and Technical Education Achievement Test (VTEAT). The VTEAT consisted of twenty – five objective questions with four options each. Furthermore, the VTEAT items were based on the senior secondary school curriculum content for SS11 students.

The instrument was validated by three test and measurement experts in the Department of Vocational and Technical Education, Ekiti State University, Ado Ekiti, Ekiti State. The experts ascertained the suitability of the items with respect to the adequacy of content, logical sequence and suitability of the technical terms used. Their comment and suggestions were used to refine the final instrument. Split half technique and Cronbach alpha reliability method were used to determine the internal consistency of the instrument. A reliability coefficient of 0.67 was obtained.

Experiment Procedure

The research involved two main stages which were the administration of pre – test and post – test that contained the same questions arranged in different order. The study was conducted for a period of six weeks during which the topic; transmission systems were taught to students. The pre-test was administered in the first

week of the research exercise to the whole students before the experimental groups were subjected to the treatment. After the administration of the pre–test, students in the experimental group were taught using power point presentation and gaming simulation.

At end of the treatment, both groups were administered an achievement post–test. The data obtained through the achievement tests were analyzed in order to determine the effects of the contemporary teaching strategies on the achievement of the experimental group. The data obtained from the pre-test and post–test were scored. Since the achievement test included twenty five items, each correct item was graded as 4.0 points out of 100 in general. The data collected from the students' scores were analyzed using mean scores and standard deviation for answering research questions and analysis of covariance (ANCOVA) to test the hypotheses of no significant difference

Results

Descriptive Analysis

Question 1

What are the effects of Power Point Presentation in improving the performance of students in learning Vocational and Technical Education subjects?

Table 1: Impacts of Power point Presentation in improving the performance of students in learning Vocational and Technical Education

Teaching Strategies	N	Pretest		Posttest	
		Mean	SD	Mean	SD
Power point presentation	16	5.62	1.20	17.25	1.44
Control	16	6.44	1.37	10.25	1.65

Table 1 reveals that students in the Power Point Presentation and conventional groups had pretest mean scores of 5.62 and 6.44 respectively. On exposure to treatment, those taught using Power Point presentation had higher mean score of 17.25 than their counterparts in the control group with a posttest mean score of 10.25. This implies that Power point Presentation had impact in improving the performance of students in learning Vocational and Technical Education. The result is further presented in Figure i.

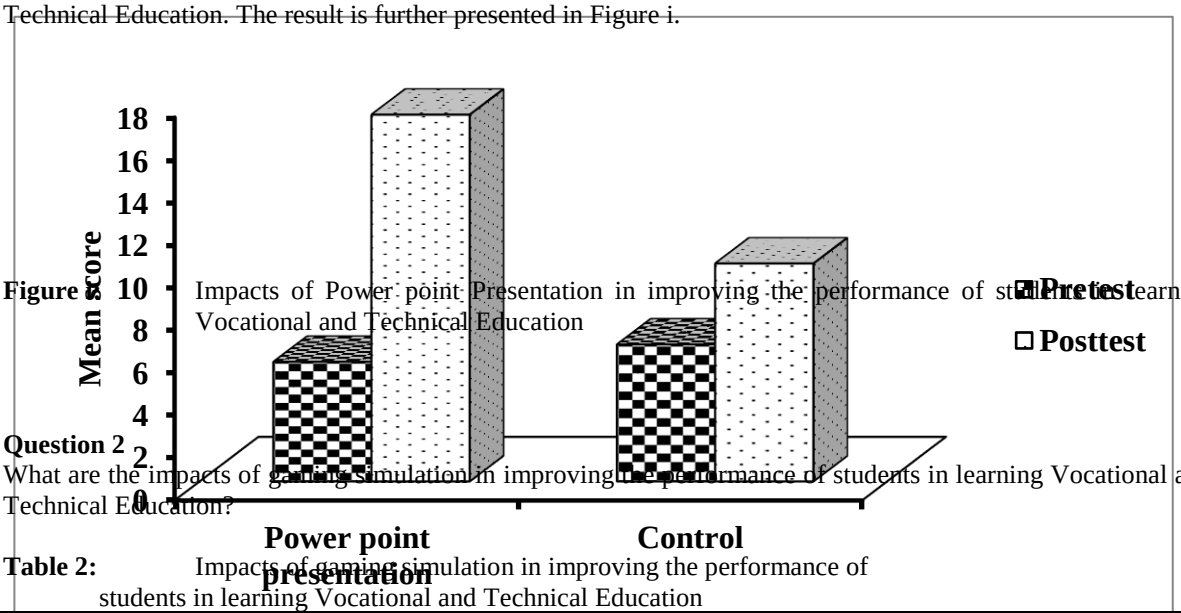

Figure 1: Impacts of Power point Presentation in improving the performance of students in learning Vocational and Technical Education

Question 2

What are the impacts of gaming simulation in improving the performance of students in learning Vocational and Technical Education?

Table 2: Impacts of gaming simulation in improving the performance of students in learning Vocational and Technical Education

Teaching Strategies	N	Pretest		Posttest	
		Mean	SD	Mean	SD
Gaming simulation	15	5.47	1.37	13.00	2.10
Control	16	6.44	1.37	10.25	1.65

Table 2 reveals that students exposed to gaming simulation and conventional teaching methods had mean scores of 5.47 and 6.44 respectively prior to treatment. On exposure to treatment, those taught using gaming simulation had higher mean score of 13.00 than those taught using conventional method of teaching with a posttest mean

score of 10.25. This implies that gaming simulation had impact in improving the performance of students in learning Vocational and Technical Education. The result is further presented in Figure ii.

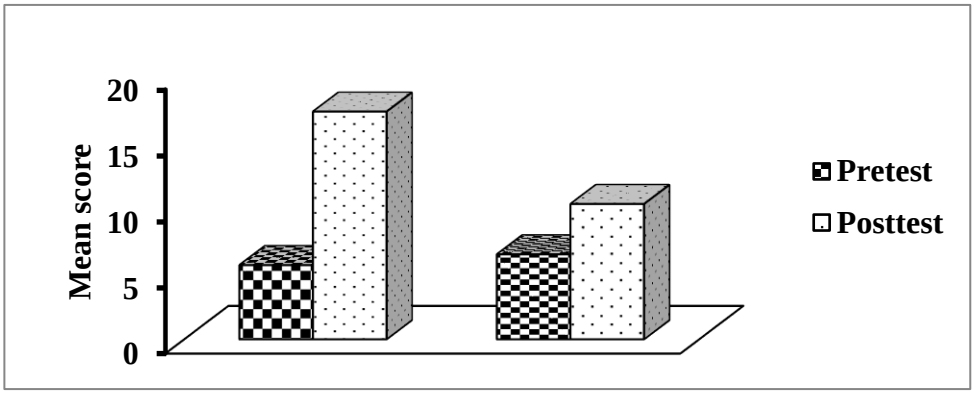

Figure ii: Impacts of gaming simulation in improving the performance of students in learning Vocational and Technical Education

Question 3

Which of the two contemporary teaching strategies will give optimum performance of students in learning Vocational and Technical Education?

Table 3: Effect of two contemporary teaching strategies on the performance of students in learning Vocational and Technical Education

Teaching Strategies	**N**	**Pretest**		**Posttest**	
		Mean	**SD**	**Mean**	**SD**
Power point presentation	16	5.62	1.20	17.25	1.44
Gaming simulation	15	5.47	1.37	13.00	2.10
Control	16	6.44	1.37	10.25	1.65

The result in 3 reveals that students exposed to power Point Presentation had highest posttest mean of 17.25 in Vocational and Technical Education. This is closely followed by those taught using gaming simulation with a posttest mean score of 13.00 while the subjects in the control group had the least posttest mean score of 10.25. This implies that the use of Power Point Presentation strategy will produce optimum performance of students in learning Vocational and Technical Education. The result is further presented in Figure iii

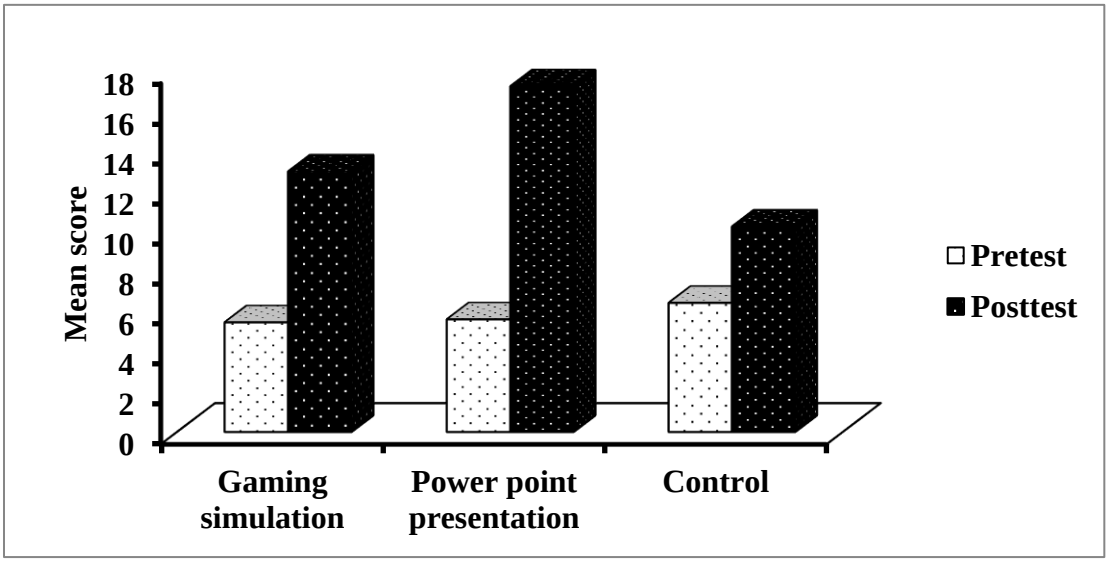

Figure iii: Effect of two contemporary teaching strategies on the performance of students in learning Vocational and Technical Education

Hypothesis 1

There is no significant effect of contemporary teaching strategies and control group in Vocational and Technical Education on Ekiti State Senior Secondary School students' learners' performance.

Table 3: ANCOVA showing the effect of contemporary teaching strategies and control group in Vocational and Technical Education on Ekiti State SSS students' performance

Source	SS	Df	MS	F	p
Corrected Model	397.785[a]	3	132.595	42.562	.000
Covariate (Pretest)	.041	1	.041	.013	.910
Group	379.271	2	189.636	60.872*	.000
Error	133.959	43	3.115		
Total	9111.000	47			
Corrected Total	531.745	46			
R Squared = .748 , Adjusted R Squared = .730					

***p<0.o5**

Table 3 reveals that there is significant effect of contemporary teaching strategies and control group in Vocational and Technical Education on Ekiti State Senior Secondary School students learners' performance ($F=60.872, p<0.05$). The null hypothesis is rejected. This implies that there is significant effect of contemporary teaching strategies and control group in Vocational and Technical Education on Ekiti State Senior Secondary School students learners' performance. The treatment accounted for about 74.8% ($Eta^2 = 0.748$) of the observed variance in Ekiti State Senior Secondary School students learners' performance in Vocational and Technical Education. The mean difference among the estimated marginal means of the groups, after correcting for the other effects in the model are presented in Tables 4 and 5.

Table 4: Mean scores by treatment

Group	N	Mean	SD	Estimated Marginal Mean
Gaming simulation	15	13.00	2.10	13.009
PowerPoint presentation	16	17.25	1.44	17.255
Control	16	10.25	1.65	10.236

Table 4 shows that Ekiti State SSS Vocational and Technical Education students exposed to power point presentation strategies had the highest estimated marginal mean of 17.26. This is closely followed by those exposed to gaming simulation (13.01) while the students taught using conventional teaching strategy had the least adjusted mean score of 10.24. It implies that the use of Power point presentation and Gaming Simulation teaching strategies constitutes veritable strategies for enhancing the performance of Students in Vocational and Technical Education.

Table 5: Adjustment for multiple comparisons of estimated marginal means

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Gaming simulation	PowerPoint presentation	-4.246*	.635	.000	-5.829	-2.664
	Control	2.773*	.664	.000	1.118	4.428
PowerPoint presentation	Gaming simulation	4.246*	.635	.000	2.664	5.829
	Control	7.019*	.646	.000	5.411	8.627
Control	Gaming simulation	-2.773*	.664	.000	-4.428	-1.118
	PowerPoint presentation	-7.019*	.646	.000	-8.627	-5.411

***p<0.05**

The result in Table 5 reveals that there is significant difference between performance of Vocational and Technical Education students in the Power point presentation and control, Gaming Simulation and control, Power point Presentation and control groupsat0.05 level of significance in each case.

Table 6: Adjustment for multiple comparisons of estimated marginal means

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Gaming simulation	PowerPoint presentation	-4.255*	.656	.000	-5.599	-2.911
PowerPoint presentation	Gaming simulation	4.255*	.656	.000	2.911	5.599

***p<0.05**

Table 6 depicts that there is significant difference between performance of Vocational and Technical Education students exposed to Power point presentation and Gaming Simulation strategies at 0.05 level of significance.

Hypothesis 2

There is no significant difference between the academic performance of male and female students exposed to the three methods.

Table 7: 2 X 3ANCOVA of students' academic performance in Vocational and Technical Education by gender and treatment

Source	**SS**	**Df**	**MS**	**F**	**P**
Corrected Model	407.351	6	67.892	21.831	.000
Covariate (Pretest)	.410	1	.410	.132	.718
Gender	1.001	1	1.001	.322	.574
Group	371.914	2	185.957	59.797*	.000
Gender * Group	8.817	2	4.409	1.418	.254
Error	124.393	40	3.110		
Total	9111.000	47			
Corrected Total	531.745	46			
R Squared = .766, Adjusted R Squared = .731					

p>0.05

Table 7 shows that there is no significant difference between the academic performance of male and female students exposed to the three methods ($F_{2,40}$=1.418,p>0.05). The null hypothesis is not rejected. This implies that there is no significant difference between the academic performance of male and female students exposed to the three methods. Similarly, the main effect of gender on students' academic performance in Vocational and Technical Education is not significant at 0.05 level ($F_{1,40}$=0.322,p>0.05). However, the main effect of treatment on the academic performance of students in Vocational and Technical Education is statistically significant at 0.05 level ($F_{2,40}$=59.797,p<0.05).

Discussion of Results

Regarding the findings of this study, the contemporary teaching strategies appears to be more effective than the traditional teaching procedures in teaching Vocational and Technical Education in terms of improving students' academic achievement. This finding, which suggests that the contemporary teaching strategies is more effective than the traditional teaching procedures.

Result In table 7 revealed that there is no significant difference between the mean achievement score of male and female students in the Vocational and Technical Education Achievement Test. This indicated that gender difference has no effect on the achievement of senior secondary school students. Female are as good as male students in the use of contemporary teaching strategies in Vocational and Technical Education subject and sex thus not determine ones achievement.

Conclusion and Recommendations

On the basis of the findings of this work, it was recommended that:

1. Secondary school students should be provided and given access to one computer each during teaching and learning of Vocational and Technical Education subjects to enable them to be familiar with the use of power point in computer in Ekiti State.
2. Teachers and instructors of Vocational and Technical Education should be given or have access to computer and all other instructional media with proper orientation on how to use them for teaching and learning process.
3. Information and Communication Technology Education should be introduced to all secondary school students of Vocational and Technical Education with the use of power point presentation so that students will get familiar with the modern ethics of Science and Technology.
4. Students' interest towards Vocational and Technical Education can be aroused and stimulated through the use of power point and some ICT gadget such as projector, computer / laptop, CDS, Television.
5. The academic performance of Senior Secondary school students in Vocational and Technical Education can be improved by employing Information and Communication Technology (ICT) packages like power point in teaching them.
6. The performance of students in Vocational and Technical Education can be improved through the use of power point irrespective of their sex(male/female).

References

Anene, G.U. (2005). Home Economics and the Academic Performance of a child.*Journals of Home Economics Research,* 6 (1), 99-103.

Artherton, B. (2003). New Pragmatism in Nursing: The value of revisiting the page of popular science. *Nurse Education in Practice,* Volume 7, Issue 6, Pages 355-357.

Bajah, S.T. and Bozimo H. (1989). Low Participation of Girls in Science, Technology and Mathematics Education: Strategies for Redress. *A report on the National Workshop on promoting science, technology and mathematics education among girls and women in Nigeria.*A publication of Women Education Branch of the Federal Ministry of Education, Lagos

Ezeh, M.O. (2006). Effect of the use of scale models on academic achievement and interest of students in map-work, Unpublished Ph.D Thesis.University of Nigeria, Nsukka.

Ezeh, N.C. (1992). Effect of concept mapping on student achievement and interest in algebra. An unpublished masters thesis of the University of Nigeria, Nsukka Federal Ministry of Education (2000). Technical and Vocational Education Development in Nigeria in the 21st century with the blue-print for the Decade 2001-2010. Abuja; Federal Ministry of Education.

Federal Ministry of Education (2004). National Master plan for Technical and vocational education in the 21st century, Abuja: Federal Government Press.

Gall, M.D., Gall, J.P. & Borg, W.R. (2007).*Educational research: An introduction.* Boston: Pearson Educational Inc.

Okonkwo (1995). Investigation into the causes of poor academic performance among students in some selected secondary schools in Egor Local Government area of Edo State. https://www.grossarchive.com/upload/1416833277.htm.

Oranu, 2003 – Influence of Teaching methods on the implementation of Vocational TechnicalEducation.ZT

Osuala, E.C. (2004). *Foundation of vocational education*, Enugu: Cheston Agency Limited.

Karen L. S. (2018) Faculty Center for Teaching and Learning University of Central Florida, Orlando Campus

Ken J. (1995). "Simulations: A Handbook for Teachers and Trainers", ISBN 0-7494-1666-1, p. 21

Shirley Lesch (2013).Learning Outcomes, George Brown College. http://liadgbrown.onca/programs/InsAdult/curllohton