



Effect of Demonstration Method on Students' Academic Performance in Basic Technology in Secondary Schools in Ogba/Egbema/Ndoni Local Government Area, Rivers State, Nigeria

¹Ochogba, C.O, ¹Ogide, C.J & ¹Ogide, C.G

**Department of Vocational and Technology Education
Rivers State University, Port Harcourt
ochogbachukwumela@yahoo.com**

ABSTRACT

This study examined the effect of demonstration method on student's academic performance in Basic Technology in secondary schools in Rivers State. This study adopted a quasi experimental design. The population of the study comprised all the basic seven junior secondary school students in Ogba/Egbema/Ndoni Local Government Area (ONELGA). A cluster sampling method was used to select Government Secondary School (UBE) Ndoni that was used for the study. Furthermore, simple random sampling method was used to select two intact classes that were used for the experimental and control groups respectively. Therefore, the sample consisted of 82 basic technology students which comprised 50 Basic 7^A and 32 Basic 7^B students. The instrument for this study was a Basic Technology Performance Test (BTAT). The instrument was face and content validated by two experts in the department of Vocational and Technology Education in Rivers State University, Port Harcourt and Basic Technology Teacher in the study area. The reliability of the instrument was established using Pearson Product Moment Correlation. The reliability coefficient of the instrument was 0.83. Mean and Standard Deviation were used to answer the research questions, while t-test statistical tool was used to test the hypotheses at 0.05 level of significance. The study found that students taught with demonstration method did better than those taught with lecture method. Furthermore, the study found that there was a significant difference in the mean score of students taught with demonstration method and those taught with lecture method in the production of wood and metal. Therefore, it was recommended that Basic Technology Teachers should adopt the use of demonstration teaching method in teaching production of wood and metal in Secondary Schools in order to enhance student's academic performance.

Keywords: Basic Technology, Demonstration Method & Academic Performance

INTRODUCTION

Education has been described as a veritable tool for the transfer of knowledge, values, cultures, skills, attitude, among others, from one generation to another. This has contributed immensely in the development of communities and nations through innovation. However, to achieve this, different types of education are being developed to train professionals such as: engineers, scientists, architect, educationist, lawyers and others, to be able to innovate and manufacture most of the things in the World today. Basically, students at the primary and secondary schools are taught subjects that can prepare them for the task ahead. One of such subjects that are needed by some of these professions, especially engineering, is basic technology.

Obomanu (2001) opined that basic technology is an aspect of general education which provides relevant learning experiences for students to understand the technological aspects of live through instructions in selected areas of metal work, wood work, electricity, plastics, ceramics, textiles, and technical drawing. Form the foregoing, basic technology could be described as an introductory subject that teaches students how to apply scientific knowledge for practical purposes.

This type of education produces technologists, technicians, craftsmen and skilled artisans who will be relevant in various sectors of technological development that can help transform the economy of any nation (Ogide, 2017). According to Aava in Ighberadja (2015), an enhanced technological sector can elevate Nigeria from being a consuming nation to a producing nation that will be regarded as a developed country. This is to say that for Nigeria to develop technologically and to become an exporting nation, it is necessary for students in primary and secondary schools to perform effectively in basic technology.

Unfortunately, different report of different states about basic technology in Nigeria shows that students perform poorly in Junior Secondary School Examinations (Nwoji, 2000 & Lenda, 2001). In confirmation, the statistics elicited from Rivers State Ministry of Education on Junior West African Examination Certificate results for 2013- 2015 shows that 37.1%, 37.7%, and 38% of students passed in 2013, 2014, and 2015 respectively. As a result of this, Ekefre in Abdullahi (2016) assert that many Basic Technology Students cannot interpret simple machine drawings due to poor performance. Student's performance could be regarded as the observable and measurable behaviour of a student in a particular situation (Yusuf, 2006).

According to Ogide (2017), the reason for student's poor performance in basic technology is as a result of the teaching method, such as lecture method adopted by some teachers. This is in line with Adgoke in Ogide (2017) which states that in our tertiary institutions, teachers use mainly the lecture method which is a teacher centred method and the implication is that learners are passive and learning tends to be superficial. Therefore, adopting this method by some basic technology teachers could be the reason why there is poor performance of students in basic technology.

This is because, as a practical subject that deals with the study of metal work technology, wood work technology, electrical electronics technology, building technology, automobile technology and technical drawing, the teaching of basic technology will require more student centered method of teaching, whereby students will be fully involved in teaching and learning process. Daluba (2013) aver that for better performance of students, the use of activity stimulating and student-centered approach like demonstration method instead of depending on the conventional approach like lecture method need to be embraced.

Demonstration teaching method could be described as a display or an exhibition usually done by the teacher while the students watch with keen interest (Mundi, 2006). Also, demonstration teaching method could be described as a method whereby the teacher does whatever the learners are expected to do at the end of the lesson by showing them how to do it and explaining the step-by-step process to them (Ameh, Daniel & Akus, 2007).

This method has some advantages over other teaching methods like lecture method. Mundi (2006) opine that demonstration teaching method is advantageous in the following ways: it saves time and facilitate material economy; is an attention inducer and a powerful motivator in lesson delivery; students receive feedback immediately through their own products; it gives a real-life situation of course of study as students acquire skills in real-life situations using tools and materials; it help to motivate students when carried out by skilled teachers and it is good in showing the appropriate ways of doing things.

Having examined the advantages of demonstration method, and relating it to the teaching of basic technology, it will be pertinent to carry out a study to ascertain demonstration teaching method will have positive effect of students' academic performance in Basic Technology in Rivers State. Therefore, the problem of this study is: what is the effect of demonstration methods on student's academic performance in basic technology in secondary schools in Ogba/Egbema/Ndoni Local Government Area (ONELGA), Rivers State?

Purpose of the study

This study examined the effect of demonstration methods on student's academic performance in Basic Technology in Secondary Schools in ONELGA. Specifically, the study sought to:

1. Determine the effect of demonstration method on students' academic performance when taught production of wood in secondary schools in ONELGA.
2. Determine the effect of demonstration method on students' academic performance when taught production of metal in secondary schools in ONELGA.
3. Determine the effect of demonstration method on students' academic performance when taught production of ceramics in secondary schools in ONELGA.

Research Questions

1. What is the effect of demonstration method on student’s academic performance when taught production of wood in secondary schools in ONELGA?
2. What is the effect of demonstration method on student’s academic performance when taught production of metal in secondary schools in ONELGA?
3. What is the effect of demonstration method on students academic performance when taught production of ceramics in secondary schools in ONELGA?

Hypotheses

The following null hypotheses were tested at a 0.05 level of significance:

1. There is no significant difference in the mean score of students taught production of wood using demonstration method and those taught using lecture method.
2. There is no significant difference in the mean score of students taught production of metal with demonstration method and those taught with lecture method.
3. There is no significant difference in the mean score of students taught production of ceramics with demonstration method and those taught with lecture method.

METHODOLOGY

This study adopted a quasi experimental design. It was carried out in Junior Secondary Schools in ONELGA in Rivers State. The population of the study comprised all the basic seven junior secondary school students in ONELGA. A cluster sampling method was used to select Government Secondary School (UBE) Ndoni that was used for this study. Furthermore, simple random sampling method was used to select two intact classes that were used for the experimental and control groups respectively. Therefore, the sample consisted of 82 Basic Technology Students which comprised 50 Basic 7^A and 32 Basic 7^B students. The instrument used was multiple choice type of teacher made Basic Technology Performance Test (BTAT) which was carefully constructed using a lesson plan and a table of specification to ascertain content validity. The instrument was face and content validated by two experts in the Department of Vocational and Technology Education in Rivers State University, Port Harcourt and a Basic Technology Teacher in the study area. The reliability coefficient of the instrument was established using Pearson Product Moment Correlation Coefficient. To achieve this, 20 Basic Technology Students of Community Secondary School Obiozimini were randomly selected, assessed and their scores computed. The achieved reliability coefficient was 0.83. Mean and Standard Deviation were used to answer the research questions, while t-test statistical tool was used to test the hypotheses at 0.05 level of significance.

Results and Discussion

Table 1: Mean scores of students’ academic performance in production of wood.

Groups	N	Mean	Std. Deviation	Std. Error Mean
Control Group	32	33.56	9.96	1.76
Experimental Group	50	43.26	9.54	1.35

Source: field survey, 2019

Table 1 show that the mean score and standard deviation for control group was 33.56 and 9.96, while that of experimental group was 43.26 and 9.54, respectively. This shows that Basic Technology Students taught production of wood using demonstration method performed better than those taught using the conventional method. This finding is in line with Daluba (2013) which aver that for better performance of students, the use of activity stimulating and student-centered approach like demonstration method instead of depending on the conventional approach like lecture method need to be embraced.

Research Question 2:

Table 2: Mean scores of students’ academic performance in production of metal

Groups	N	Mean	Std. Deviation	Std. Error Mean
Control Group	32	30.78	14.53	2.57
Experimental Group	50	42.90	10.07	1.42

Source: field survey, 2019

Table 2 show that the mean score and standard deviation for control group was 30.78 and 14.53, while that of experimental group was 42.90 and 10.07, respectively. This shows that Basic Technology Students taught production of metal using demonstration method performed better than those taught using the conventional method. This finding is in line with Mundi (2006) that opine that demonstration teaching method is advantageous in the following ways: it saves time and facilitate material economy; is an attention inducer and a powerful motivator in lesson delivery; students receive feedback immediately through their own products; it gives a real-life situation of course of study as students acquire skills in real-life situations using tools and materials; it help to motivate students when carried out by skilled teachers and it is good in showing the appropriate ways of doing things.

Research question 3

Table 3: Mean scores of students’ academic performance in production of ceramics

Groups	N	Mean	Std. Deviation	Std. Error Mean
Control Group	32	31.38	15.82	2.80
Experimental Group	50	37.12	11.47	1.62

Source: field survey, 2019

Table 3 show that the mean score and standard deviation for control group was 31.38 and 15.82, while that of experimental group was 37.12 and 11.47, respectively. This shows that Basic Technology Students taught production of ceramics using demonstration method performed better than those taught using the conventional method. This finding is in line with Daluba (2013) which aver that for better performance of students, the use of activity stimulating and student-centered approach like demonstration method instead of depending on the conventional approach like lecture method need to be embraced.

Hypothesis 1:

Table 4: There is no significant difference in the mean score of students taught production of wood using demonstration method and those taught using lecture method

Categories	N	M	SD	DF	t-cal	t-crit	Decision
Control group	30	33.56	9.96	80	4.37	1.98	Rejected
Experimental group	50	43.26	9.54				

Table 4 shows that control group had mean and standard deviation score of 33.56 and 9.96 respectively, while the experimental group had mean and standard deviation scores of 43.26 and 9.54 respectively. The t-cal value was 4.37, while the t-crit was 1.98 at 0.05 level of significance for two tailed test. This result shows that t-cal was greater than t-crit, which means that the null hypothesis was rejected. This shows that there was a significant difference in the mean score of students taught production of wood using demonstration method and those taught using lecture method.

Hypothesis 2:

Table 5: There is no significant difference in the mean score of students taught production of metal using demonstration method and those taught using lecture method

Categories	N	M	SD	DF	t-cal	t-crit	Decision
Control group	30	30.78	14.53	80	4.13	1.98	Rejected
Experimental group	50	42.90	10.07				

Table 5 shows that control group had mean and standard deviation score of 30.78 and 14.53 respectively, while the experimental group had mean and standard deviation scores of 42.90 and 10.07 respectively. The t-cal value was 4.13, while the t-crit was 1.98 at 0.05 level of significance for two tailed test. This result shows that t-cal was greater than t-crit, which means that the null hypothesis was rejected. This shows that there was a significant difference in the mean score of students taught production of metal using demonstration teaching method and those taught using lecture teaching method.

Hypothesis 3:

Table 6: There is no significant difference in the mean score of students taught production of ceramics using demonstration method and those taught using lecture method

Categories	N	M	SD	DF	t-cal	t-crit	Decision
Control group	30	31.38	15.82	80	1.77	1.98	Accepted
Experimental group	50	37.12	11.47				

Table 6 shows that control group had mean and standard deviation score of 31.38 and 15.82 respectively, while the experimental group had mean and standard deviation scores of 37.12 and 11.47 respectively. The t-cal value was 1.77, while the t-crit was 1.98 at 0.05 level of significance for two tailed test. This result shows that t-cal was less than t-crit, which means that the null hypothesis was accepted. This shows that there was no significant difference in the mean score of students taught production of ceramics using demonstration method and those taught using lecture method.

CONCLUSIONS

From the result of this study, it was concluded that there was a significant difference between the mean score performances of students taught production of wood and metal with demonstration method and those taught with the conventional lecture method. On the other hand, there was no significant difference in the mean score of performance of students taught production of ceramics with demonstration method and those taught with the conventional method. Hence, the study concluded that students taught with demonstration method performed better than those taught with the conventional lecture method in production of wood and metal.

RECOMMENDATIONS

Based on the inference made on this study, it was recommended that:

1. Basic technology teachers should adopt the use of demonstration teaching method in teaching production of wood in Secondary Schools in order to enhance student’s academic performance.
2. Basic technology teachers should adopt the use of demonstration teaching method in teaching production of metal in Secondary Schools in order to enhance student’s academic performance.

REFERENCES

Abdullahi, A. (2019). Effect of Team Teaching on Students' Academic Achievement and Retention in General Metalwork in Technical Colleges in Niger State. Retrieved 10th June, 2019 from https://www.academia.edu/.../Effect_of_Team_Teaching_on_Students_Academic_Ac...

Ameh, I. E., Daniel, B. P., & Akus, Y. (2007). *Research and Methods in the Social Sciences*. Ankpa: Rowis Press.

Daluba, N.E. (2013). Effect of Demonstration Method of Teaching on Students' Achievement in Agricultural Science. *World Journal of Education*, 3(6), 1-7.

Igberadja, S. (2015). Factors influencing performance in Basic Technology Among Secondary Students of Delta South Senatorial District in Delta State Nigeria” *Journal of Technical Education and Training*,7(2), 24-34

Lenda, F.K. (2001). Girls` strengths and weakness in learning of science, mathematics and technology subjects proceedings of FEMSA/ AFCLIST Gender workshop Nairobi, Kenya, December 6th – 8th

Mundi, N. E. (2006). The state of students’ academic achievement in secondary school agricultural science in Kogi State. *Teacher Education Journal*, 12 (1) 14-19.

Nwoji, R.J. (2000). Improving the teaching and learning of introductory technology through the use of media. *Journal of Science Teachers Association of Nigeria*, 16 (16). 45- 50

Obomanu, B. J. (2001). Implementation concerns of junior secondary school pre- vocational courses in Nigeria Schools, *Nigerian Journal of curriculum studies*, 18 (1), 173- 178

Ogide, C.J. (2017). Effect of computer simulation instruction on the academic achievement of students in basic technology class in Onelga Rivers State. Unpublished Dissertation submitted to Rivers State University, Port Harcourt.

Yusuf, A. (2006). Effects of field trip method of teaching on students`performance in social studies. *Ilorin Journal of Education*, 25, 8-19.