

## USE OF INSTRUCTIONAL MATERIALS FOR STUDENTS ACHIEVEMENT IN BASIC TECHNOLOGY IN RIVERS STATE (A CASE STUDY OF COMMUNITY JUNIOR SECONDARY SCHOOL MOGHO)

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### **ABSTRACT**

*The concept instructional materials are those materials both printed and non-printed, tools, equipment, gadgets, machines etc. used by the teacher or instructor in delivering instruction or lesson in order to inspire the learners. The study aimed at finding out whether or not there is an effect of the use of instructional materials on student academic achievement in basic technology. The design adopted for this study was that of experimental design of the pre-test and post-test session. The posttest means scores of both the experimental and the control group was used in analyzing the Z-test tool. The population consist of students of JSS1,2 and3.each class were 41,43 and 50 respectively, which was used as the sample size since the students were not too much. In JSS1, there were 17 boys and 24 girls, in JSS2,there were 20 boys and 23 girls, while in JSS3,there were 20 boys and 30 girls. The analysis revealed that there was a statistically significant difference in the mean scores of the post test scores of students taught with instructional materials. Among others, it was recommended that, teachers of basic technology should ensure proper use of instructional materials, teachers of basic technology should also use creativity in improvising locally made instructional materials.*

**Keywords:** Instructional materials, Academic Achievement, Community Junior Secondary School, Basic Technology.

### **INTRODUCTION**

Basic technology is a subject offered in Nigerian secondary schools in the junior section, which formally was called Introductory Technology. Basic technology as a subject is expected to make the student self-reliant, knowledgeable and employable, especially when the subject is

split at the senior secondary school level into various trades like metal work, wood work, technical drawing, electrical and electronics, building, welding work, mechanical technology etc. (NPE 2004). Basic Technology as a science subject must be developed effectively because science has been regarded as the bedrock of technological development (Mbah 2013). Nigeria as a country striving hard to develop in science and technology to meet up with the global world since the world is turning scientific which is in agreement with Ogunleye (2002), that science is a dynamic human activity concerned with understanding the workings of our world. The Teaching of Basic Technology as a science subject requires adequate resources to provide instructional materials. According to Isola (2010), Instructional materials are objects or devices that assist the teacher to present their lessons, logically and sequentially to the learners. But to a surprise in Nigeria, there were inadequate resources for teaching science subjects in secondary schools as reported by Obioha (2006) and Ogunleye (2002), and further stated that even the available ones are not usually in good condition, which calls for improvisation. Therefore, instructional materials are essential materials that enhance effective delivery of instruction.

### **PURPOSE OF THE STUDY**

Specifically, this study aimed at finding out whether or not, there is an effect of the use of instructional material on student academic achievement in Basic Technology in junior secondary school section.

### **STATEMENT OF THE PROBLEM**

This study tried to determine the extent to which the use of instructional materials influences the students' academic achievement in Basic Technology.

### **SIGNIFICANCE OF THE STUDY**

This study is significant in the following ways, specifically:

- i. To determine the extent to which the use of instructional materials affects student's academic achievement in Basic Technology.

- ii. The suggested recommendation that emanates from this study would help both the teachers and students of the importance of instructional materials in teaching Basic technology.
- iii. The suggested recommendation that emanates from this study would help government in terms of creating awareness of funding science education at junior secondary school levels, good policy planning and good science curriculum development and its implementation.

### **RESEARCH QUESTION**

1. What is the effect of instructional materials on the student's academic achievement in Basic technology?
2. To what extent does gender affect student academic achievement when taught with and without instructional materials in Basic Technology?
3. Are there any difference in the performance of male students taught with and without instructional materials in Basic Technology?
4. Are there any difference in the performance of female students taught with and without instructional materials in Basic Technology?

### **RESEARCH HYPOTHESIS**

The under listed hypothesis were formulated to guide the study and they were all tested at 0.05 level of significance.

**Ho<sub>1</sub>:** There is no significant difference between the mean scores of students taught with and without instructional materials.

**Ho<sub>2</sub>:** There is no significant difference between the mean scores of male and female students taught with and without instructional materials.

**Ho<sub>3</sub>:** There is no significant difference between the mean scores of male students in experimental and control session.

**Ho<sub>4</sub>:** There is no significant difference between the mean scores of female students in experimental and control session.

## **LITERATURE REVIEW**

Review of related literature was carried out in a bid to lay a solid foundation for this study.

### **Meaning of instructional materials**

Instructional materials also known as teaching aids could be defined as all the materials which includes printed, non-printed materials tools, equipment, gadgets, machines etc. used by teacher or instructor in delivering instruction or lesson in other to inspire the learner.

According to Joshua in Abiodun-Oyebanji and Adu (2007), instructional materials are all things that are used to support, facilitate, influence or encourage acquisition of knowledge, competency and skills. Fadeyiye (2005) saw instructional materials as visual and audio-visual aids, concrete or non-concrete, used by teachers to improve the quality of teaching and learning activities in social studies. Ibeneme (2000), defined teaching aids as those materials used for practical and demonstration in the class situation by students and teachers. Oluwagbohunmi and Abdu-Raheem (2015) acknowledged that instructional materials are such used by teachers to aid explanations and make learning of subject matter understandable to students during teaching learning process.

## **METHODOLOGY**

### **Research Design**

The research design used for this study was experimental design of pre-test and posttest session.

### **Population for the Study**

The population for this study consist of students of JSS1, JSS2 and JSS3 in Community secondary school Mogho in Gokana Local Government Area of Rivers State. Specifically, the JSS 1, JSS 2 and JSS 3 students are 41, 43 and 50 respectively, which gives a total of 134 students.

### **Sample and Sampling Technique**

Since the population of 134 students are not much, then the entire population is used as the sample size.

### **Research Instrument**

The research instrument used in this study were a designed Basic Technology Achievement Test (BTAT). The BTAT contains 10 items 5 option multiple choice objective test. These tests scores projected the performances of students in the pre-test and post-test that were administered.

### **Validation of Instrument**

The tests administered were drawn from the content of the lessons taught. The mean and the standard deviation and z-test were all calculated.

### **Reliability of Instrument**

The test re-test was used to measure the reliability of the instrument. It was processed using the PPMC(Pearson Product Moment Co-efficient) of correlation. The following were obtained:

Class	Test-Retest Reliability
JSS 1	0.910
JSS 2	0.860
JSS 3	0.920

### **Method of Data analysis**

The mean, standard deviation and the Z-test statistical tool were calculated and used in testing the hypotheses and the level of significance adopted for this study was 0.05 which form the basis for rejecting or not rejecting the hypotheses.

**Table 1: Result of Z-Test Statistical Analysis to Determine if there is a Significant Difference in the Mean Scores of Students Taught with and without Instructional Materials.**

Class	Group	Pre-Test	Post-Test	Mean Gain	df	Std Dev.	n	Std error	Z-cal	Z-cri	Decision
JSS1	Exp. Contl.	9.59 8.76	16.17 10.63	6.58 1.87	39	1.17 1.19	41	0.26	21.31	1.96	Rejected
JSS2	Exp. Contl.	10.28 8.98	17.14 16.86	6.86 7.88	41	1.62 1.57	43	0.34	0.82	1.96	Accepted
JSS3	Exp. Contl.	9.18 11.08	17.36 16.06	8.18 4.98	48	1.35 1.08	50	0.24	5.42	1.96	Rejected

**Table 2: Result of Z-Test Statistical Analysis to Determine if there is a Significant Difference Mean Scores of Male and Female Students Taught with and without Instructional Materials.**

Class	Group	Sex	Pre-Test	Post-Test	Mean Gain	df	Std Dev.	n	Std Error	Z-cal	Z-cri	Decision
JSS1	Exp. Contl.	M F	8.47 8.38	17.35 15.17	8.88 6.79	15 22	1.50 2.01	17 24	0.55	3.96	1.960	Rejected
JSS2	Exp. Contl.	M F	8.25 10.43	17.45 15.87	19.20 5.44	18 21	1.60 2.92	20 23	0.71	2.23	1.960	Rejected
JSS3	Exp. Contl.	M F	11.70 10.17	18.85 17.90	7.15 7.73	18 28	1.01 1.54	20 30	0.32	2.79	1.960	Rejected

**Table 3: Result of Z-Test Statistical Analysis to Determine if there is a Significant Difference in the Mean Scores of only Male Students Taught with and without Instructional materials.**

Class	Group	Pre-Test	Post-Test	Mean Gain	df	Std Dev.	n	Std Error	Z-cal	Z-cri	Decision
JSS1	Exp. Contl.	8.88 8.18	17.71 16.94	8.83 8.76	15	1.77 2.46	17	0.75	1.05	2.131	Accepted
JSS2	Exp. Contl.	8.50 8.40	17.25 16.00	8.35 7.60	18	2.26 1.82	20	0.64	1.95	2.101	Accepted
JSS3	Exp. Contl.	10.80 10.80	14.20 10.50	3.4 0.3	18	2.38 1.37	20	0.61	6.07	2.101	Rejected

**Table 4: Result of Z-Test Statistical Analysis to Determine if there is a Significant Difference in the Mean Scores of only Female's Students Taught with and without Instructional Materials.**

Class	Group	Pre-Test	Post-Test	Mean Gain	df	Std Dev.	n	Std error	Z-cal	Z-cri	Decision
JSS1	Exp. Contl.	9.42 10.21	14.75 11.42	5.33 1.21	22	2.54 8.11	24	1.73	1.92	2.07	Accepted
JSS2	Exp. Contl.	9.43 8.96	17.13 14.78	7.70 5.82	21	2.35 2.98	23	0.61	3.85	2.08	Rejected
JSS3	Exp. Contl.	10.23 8.27	15.83 14.23	5.60 5.96	28	2.77 1.83	30	0.34	4.10	2.05	Rejected

## DISCUSSION OF FINDINGS

Findings from this study revealed that there was a significant effect on student academic achievement after been taught with instructional materials then those taught without instructional materials in JSS 1 and JSS 3, which is in agreement with Adebule and Ayoola (2016) that there was a significant effect of treatment on students achievement in mathematics. Also in agreement with Meremikwu et al.(2012) and Umameh (2011),that students performs better when they are taught with instructional materials than their counterpart taught without instructional materials. In JSS 2, there was no significant difference between those exposed to instructional materials and those that were not exposed to instructional materials. The findings revealed that male students perform academically better than their female counterpart. This maybe attributed to inferiority complex of the female students not been socialized and seen the male students as always been the head and superior in performance in school duties. This is to prove Isaya and Thankgah (2007),Afolabi and Adeleke (2010), Isola et al.(2011) and Ayoola (2015) wrong that gender has a lot to do with mental and intellectual ability.

The findings revealed that in JSS 1 and JSS 2, there was no significant difference in their academic achievement of only male students when taught with and without instructional materials while in JSS 3, there was a significant difference in their performance. Finally, the study revealed that in JSS 1 there was no significant difference in the academic achievement of only female students taught with and without

instructional materials but in JSS 2 and JSS 3, there was a significant difference existed between the female students taught with and without instructional material.

## **CONCLUSION AND RECOMMENDATIONS**

### **Conclusion**

In conclusion, when students are taught with instructional materials they perform better than those taught without instructional materials. And gender also affects students' academic achievement.

### **Recommendation**

With respect to the findings from this study, the following are recommended:

1. Federal, state and local government should provide adequate instructional materials for the teaching of Basic technology in secondary schools.
2. The teachers especially science teachers should develop the consciousness of the use of instructional materials (either improvised or standard instructional materials).
3. The government should encourage the science teachers in the development of creative skills, financially, materially and otherwise.
4. Infrastructural facilities and equipped workshop should be built in all schools to enhance the development of practical skills among teachers and students.
5. The pay package of teachers should as a matter of fact be revisited, promotions and its implementation should be given to teachers which serve as a motivating factor.
6. Up-dated books and materials in Basic technology should be provided in schools.
7. Professional teachers of technology in education should be employed into the teaching of Basic technology in secondary schools.



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## **BIOGRAPHY**

**BEKEE BARI-AARA C.** was born to the family of Bekee in Mogho Gokana Local Government Area of rivers State on October 5, 1982, and obtain B.ED Electrical Technology Education from Rivers State University of Education, Port Harcourt and presently on his Master Degree in University of Science and Technology.

**KPEGARA SAANA** was born on August 29, 1980, in Bori the head quarter of Ogoni. In 2004, he graduated from the Institute of Management and Technology Enugu with Higher National Diploma in Electrical and Electronic Engineering. After his youth service in 2005-2006 he worked with Deawoo Engineering and Construction Company as a safety officer and was later engaged as an academic staff in the now Ken Saro-Wiwa Polytechnic Bori. In 2008 he got married to his beautiful wife and obtain a B.Eng in Electrical and Electronic Engineering in2015.

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