

**EFFECTS OF REALIA AND TEXTS ON ACHIEVEMENT OF BASIC TECHNOLOGY STUDENTS IN WOODWORK IN TECHNICAL COLLEGES IN TARABA STATE, NIGERIA****Prof. I. S. Daramola<sup>1</sup>, Prof. M. S. Abifarin<sup>1</sup>, Denen Daniel Mom<sup>2</sup> & Dr. S. S. Manabete<sup>1</sup>****<sup>1</sup>Department of Science and Technology Education, Faculty of Education, University of Jos, <sup>2</sup>Department of Civil Engineering, Taraba State Polytechnic, Jalingo, Nigeria****ABSTRACT**

*The main objective of the study was to determine the effects of utilization of texts and realia on achievements of Basic Technology students in woodwork in Technical colleges in Taraba State, Nigeria. Two specific objectives were identified. Two research questions were answered and two hypotheses were tested at 0.05 level of significance. The study adopted the quasi-experimental design. The population of the study comprised of 236 students. A sample of 82 students from two technical colleges took part in the study. Descriptive statistics were used for answering the research questions, while inferential statistics of t-test were used to test the hypotheses. Findings revealed that texts and realia as vital instructional strategies were effective in improving students' achievements where the experimental group performed better than the control group. That is the study found that after the treatment in the experimental group using realia and texts as instructional materials, majority of the students were found at a high achievement level. The finding also revealed that there was no significant difference in the achievements of male and female students. Recommendations were made on the use of texts and realia in teaching Basic Technology.*

**Key words: Achievement, Basic Technology, Realia, Technical College, Texts****INTRODUCTION**

Education is widely acknowledged as an instrument per excellence for development of the society. The priority given to education as a veritable tool for development is predicated on its relevance to the needs, problems and aspirations of human society. Indeed, throughout history, developed and under-developed societies have used education as a relevant instrument for effecting desirable social, economic, political and technological changes. Education is a means of building human resources, which determine the excellence and expectation of any society. It is a precise course for shaping and improving the minds of members of a society in a purposeful way.

The purpose for educating members of any society is to inculcate in them the appropriate knowledge, skills and self-discipline to carry out adult responsibilities. Similarly, people should be educated to behave according to their social values and rules; they should be educated to participate effectively in their political institutions and should be learning appropriate skills and types of interactions to allow them to take up different types of work. Calhoan, Light and Keller (2006, p.46) sum up the rationale of education by arguing that education "is a form of socialization in which cultures, knowledge, skills and values are formally transmitted from one generation to the next". The aim of education is therefore, the growth and development of individuals and societal potentialities.

The National Policy on Education (Federal Republic of Nigeria, FRN, 2014) has emphasized on education being an instrument per excellence for effective national development and part of its philosophy emphasizes that "education and training facilities shall continue to be expanded in response to societal needs and progressively accessible to afford the individual a far more diversified and flexible choice". Encouragingly, there is growing and widespread awareness that, the pedagogical expertise of the teacher is absolutely critical here. Nigerian Policy on Information and Communication Technology is geared towards ensuring the attainment of qualitative education for the enhancement of sustainable socio-economic development, global competitiveness and individual's ability to survive in the contemporary environment. According, it

is hoped that the implementation of the policy will lead to speedy transformation of the teaching and learning in Nigeria. The objectives of the National Policy on Instructional Media in Education are to, among others things, facilitate the teaching and learning processes; promote problem-solving, critical thinking and innovative skills and enhance the various teaching and learning strategies required to meet the needs of the population.

Educational Technology is the application of scientific knowledge and the use of technology which include people, materials, equipment, as well as making complex and abstract ideas simple to the learner thereby making teaching and learning more sequential, explicit, interesting, practical oriented and pleasurable (Abifarin, 2010). In the teaching-learning process, teachers are concerned with optimum learning taking place in learners. In order to achieve this, teachers employ varieties of instructional materials like chalkboard, realia and pictures, charts and other tools which bring about effectiveness and efficiency in the teaching-learning process, and invariably promote achievement of instructional objectives (Okeke, 2004). According to Iyang-Abia (2008), verbalization has been found inadequate for effective instruction. It has often failed to register the needed instructional impression, and as such it should be supplemented and made alive through the use of instructional materials like realia and texts, charts, and models, since they are used to support the lecture method of instruction thereby helping the learners to visualize or form a mental picture of whatever topic that is taught. They are pivot on which the wheel of teaching-learning process rotates.

Basic Technology education will be effective as it enables individuals to capitalize on their interests, aptitudes and intrinsic intelligence to the highest possible degree. The lecture method in which the teacher assumes a domineering function should be de-emphasized. Rather, new methodologies such as problem solving, project method and utilization of realia and texts which place emphasis on the ability and ultimate participation of students, need to be emphasized.

### **STATEMENT OF THE PROBLEM**

Out of all the Basic Technology subjects, woodwork has been noted as the one in which the students lose the greatest interest in (Agbo, 2009). Despite the importance of woodwork as a foundation of Basic Technology education, especially in the construction trades in technical colleges, students' achievement in the subject has not been encouraging. Literature abounds with evidence of this poor achievement in woodwork. Despite the emphasis that education should be student-centered for maximum self-development and fulfillment (FRN, 2014), many teachers still use lecture method which is teacher-centered.. Students' lack of adequate skills in woodwork practical work, poor retention of learned materials, lack of motivation and achievement, may all be attributed to teachers' use of ineffective teaching methods. The problem of this study therefore can be hinged on the broad question: To what extent will utilization of realia and texts improve achievements of students in Basic Technology courses in woodwork in technical colleges in Taraba State, Nigeria?

### **OBJECTIVES OF THE STUDY**

The following objectives were formulated to guide the study:

1. To determine the level of achievements of students in woodwork after exposure to texts and realia based on gender?
2. To find out SSII students' levels of achievement in woodwork before and after exposure to texts and realia

### **RESEARCH QUESTIONS**

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

1. What is the level of achievements of students in woodwork after exposure to texts and realia based on gender?

2. What are SSII students' levels of achievement in woodwork before and after exposure to texts and realia?

### TEST OF HYPOTHESES

1. There is no significant difference between the pre-test achievement mean score of students in the experimental and control groups.
2. There is no significant difference between the post-test achievement mean scores of students in the experimental and control groups.

### METHODOLOGY

Descriptive and inferential statistics were employed in analyzing the data for answering the research questions and testing the hypotheses. The data from the pre-test and post-test scores were captured and analyzed using statistical package for social science (SPSS) version 20.

### PRESENTATION OF RESULTS

#### Research Question One

What is the level of achievements of students in woodwork after exposure to texts and realia based on gender?

The data presented in Table 1 was used to answer research question one.

**Table 1: Male and Female Students' Achievement in Woodwork after Exposure to the Use of Texts and Realia.**

Achievement levels	Range Score %	Male		Female	
		N	%	N	%
High	60 – 100	14	46.7	5	41.6
Average	50 – 59	9	30.0	5	41.6
Low	0 – 49	7	23.3	2	16.6
<b>Total</b>		<b>30</b>	<b>100</b>	<b>12</b>	<b>100</b>

Table 1 analysis shows that 46.7%, 30.0% and 23.3% of male students were in the high, average and low levels of achievement respectively. On the other hand, 41.6%, 41.6% and 16.6% of the female students recorded achievement in the category of high, average and low respectively. This result is generally for the students in the two experimental groups in the post-test that was administered to the students. This indicates that realia and texts when used effectively can improve students' achievements.

#### Research Question Two

What are the SSII students' levels of achievement in woodwork before and after exposure to texts and realia? The data presented in Table 2 was used to answer this research question.

**Table 5: Levels of Students' Achievement in Woodwork before and after Treatment with Texts and Realia.**

Achievement levels	Range Score %	Before		After	
		N	%	N	%
High	60 – 100	–	–	51	48.57
Average	50 – 59	3	2.86	23	21.91
Low	0 – 49	102	97.14	31	29.52
<b>Total</b>		<b>105</b>	<b>100</b>	<b>105</b>	<b>100</b>

The data of Table 2 shows that before students were treated to realia and texts as instructional materials, 97.14% were at low achievement level (0 – 49), 2.86% were of average achievement level of 50 – 59% and none of the students were at high achievement level. After

the treatment in the experimental group using realia and texts as instructional materials, 48.57% of the students were found at a high achievement level, 21.91% were found at average achievement level, and 29.52% were found at the low achievement level. The result indicated that texts and realia when used effectively would improve students' achievement in woodwork courses.

### Hypothesis One

There is no significant difference between the pre-test achievement mean score of students in the experimental and control groups. The data presented in Table 3 were used to test hypothesis one.

**Table 3: Results of t-Test Analysis of Pre-test Achievement Mean Score of Experimental and Control Groups**

Group	Number	Mean	SD	Df	t-cal.	t-crit
Experimental	42	22.15	9.84	80	0.30	0.38
Control	40	21.16	6.91			

$P > 0.05$

The result in Table 3 revealed that the calculated t-value of 0.30 is less than the critical t-value of 0.38 at  $df = 80$  and  $\alpha = 0.05$  level of significance. Since the calculated t-value is less than the critical t-value, the null hypothesis is therefore, upheld. This implies that there is no significant difference between the pre-test achievements means scores of experimental and control groups.

### Hypothesis Two

There is no significant difference between the post-test achievement mean scores of students in the experimental and control groups.

Hypotheses two was tested by using the data presented in Table 4.

**Table 4: Results of t-Test Analysis of Post-test Achievement Mean Score of Experimental and Control Groups**

Group	Number N	Mean X	SD	Df	t-cal	t-crit
Experimental	42	53.12	9.79	80	-19.47	0.000
Control	40	22.07	13.09			

$P > 0.05$

The results in Table 4 show that the calculated t-value of -19.47 is less than the t-critical value of 0.000 at  $df = 80$ ,  $\alpha = 0.05$  level of significance. Since the calculated t-value is in the critical region  $P > 0.05$  then the null hypothesis is upheld. This means that there is no significant mean difference between the pre-test and post-test achievement mean score of students in the experimental and control groups. The experimental group has a higher mean (53.12) with a lower standard deviation (9.79) when compared to the mean (22.07) and standard deviation (13.9) of the control group. The result clearly shows the effectiveness of realia and texts as instructional materials on students' achievement in woodwork instructions.

## DISCUSSION

This study investigated the effects of utilization of realia and texts on the achievement of Basic Technology students in woodwork in technical college in Taraba State, Nigeria. The results showed that before students were treated to realia and texts 97.14% were at low achievement

level (0-49), 2.86% were of average achievement level (50-59%), and none of the students were of high achievement level. After the treatment in experimental group to realia and texts, 48.57% of the students were found in the high achievement level. The result indicated that realia and texts when used effectively can improve students' achievement in woodwork courses. The results also showed that students' achievement in woodwork improved significantly after being exposed to treatment. This finding is in line with that of Umaru (2008) who found that students achieve better in woodwork when exposed to realia and texts instructional strategy.

The finding on achievement of male and female students in woodwork technology also shows that, before students were treated to realia and texts, 97.14% were at low level of achievement 0-49%, 2.86% were at average achievement level of 50-59% and none of the students were at high level of achievement. After the exposure of students in the experimental groups to realia and texts, 48.57% of the students moved to high achievement level, 29.52% remained at low achievement level and 21.91% moved to average achievement level. This indicates that realia and texts when used effectively, improves students achievement in high achievement level of learning. This finding contradicted the study by Ozoji (2011) which found that concept mapping strategy was most efficient at low performance level.

The finding from hypothesis one showed that the calculated t-value of 0.30 was less than the critical t-value of 0.38 at  $df = 80$  and  $\alpha = 0.05$  level of significance. Since the calculated t-value was less than the critical t-value, the null hypothesis was upheld. This implies that there is no significant difference between the pre-test achievements means scores of experimental and control groups.

Another finding from hypotheses testing shows that the calculated t-value of -19.47 was less than the t-critical value of 0.000 at  $df = 80$ ,  $\alpha = 0.05$  level of significant. Since the calculated t-value was in the critical region  $P > 0.05$ , then the null hypothesis was upheld. The result clearly shows the effectiveness of realia texts on students' achievement in woodwork. By implication, effective use of realia and texts enhances students' achievement in woodwork technology. It also revealed that the high achievement scores of students after exposure to treatment is an indication that effective utilization of realia and texts helps to improve students' achievement in woodwork technology.

## **CONCLUSION AND RECOMMENDATIONS**

This study determined the effects of text and realia on achievements of Basic Technology students in woodwork in technical colleges in Taraba State, Nigeria. The purpose of educating members of any society, especially children and younger ones, is to inculcate in them the appropriate knowledge, skills and self discipline to carry out adult responsibilities. This brings to fore the need to measure the extent to which learners are able to master what is taught in the school. Achievement of Basic Technology students in technical colleges in Nigeria technical colleges has been of great concern to their teachers over the years. This is not only because Basic Technology subjects such as woodwork is important but because performance of students has dwindled significantly. Literature is replete with evidence of students' poor achievement in woodwork. Therefore, there is the need to explore ways to significantly assist students improve their achievements in woodwork.

The finding on achievement of male and female students in woodwork technology showed that after exposing students in the experimental groups to realia and text instructional materials, both female and male students moved to high achievement levels. This indicated that realia and text instructional materials when used effectively, can improve both female and male students achievement in woodwork.

Another finding from hypothesis testing showed that the calculated t-value of 19.47% was less than p-value of 0.000 at  $df = 80$ ,  $\alpha = 0.05$  level of significance, since the calculated t-value was in critical region,  $p > 0.05$  which the null hypothesis was accepted. This means that there was a significant mean score of experimental group. The result clearly showed the effectiveness of

realia and text instructional materials on students' achievement in woodwork; it implied effective use of realia and text instructional materials enhances students' achievement in woodwork technology. Based on the findings, the following recommendations were made:

1. Teachers will need to use realia and texts to teach concepts in woodwork in the technical colleges. This will assist greatly in enhancing students' achievement.
2. In order for teachers to be effective in their work, educational technology items will need to be provided adequately in technical colleges.
3. There is need for the training and retraining of teachers through workshops and conferences so as to improve their classroom effectiveness in teaching Basic Technology.

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