
Biology Teachers' Attitude Towards Invention of Instructional Materials in Sabon- Tasha
Inspectorate Division, Kaduna State, Nigeria

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Abstract

This study investigated Biology teachers' attitude towards improvisation of instructional materials: a case study of Sabon-Tasha Inspectorate Division of Kaduna State. In the survey, 21 teachers from randomly selected schools in Sabon Tasha Inspectorate Division were used. One instrument was adopted, validated and used for collecting data. Chi square and Percentages were used in data analysis. Three (3) research questions and three (3) hypotheses were addressed and tested, the findings revealed that majority of the Biology teachers were females (57.13%) and that there was no significant difference ($P = 0.970$) between female and male teachers in carrying out improvisation of instructional materials. As part of the recommendations, ministry of education should organize workshops on improvisation for Biology Teachers to improve skills and make them have positive attitude towards improvisation.

Key Words: Improvisation, Instructional Materials, Teachers, Biology.

INTRODUCTION

Biology is the branch of science that involves the study of living things (Sarojini, 2007). It is a fascinating study that ranges from microscopic cellular molecules to the biosphere and its living organisms (Amber, 2011). According to Science Teachers Association of Nigeria (STAN, 1992), the following objectives are to be achieved in the teaching of biology as a science subject in secondary schools in Nigeria; to maintain continuity with the junior secondary school integrated science, to present biology as a continuing activities in which man tries to find solutions to his never ending problems, to initiate the learner into the procedures adopted by research biologist, to equip the

learners to be able to solve problems through application of biological knowledge. Also, biology curriculum objectives are to prepare pupils to acquire adequate laboratory and field skills in biology, to prepare pupils to acquire ability to apply scientific knowledge in biology, to prepare pupils to acquire ability to apply scientific knowledge to everyday life in matters of personal, community health and agriculture. These could be achieved through quality teaching, which is a function of the academic standing of teachers and their attitudinal disposition towards instruction and use of relevant instructional materials (Demir, 2017). Attitude consists of beliefs, feelings, interest, likeness, perception and motivation about something. It is the

energizer of human behavior which explains why the attitude of teachers and the instructional materials they use influences their students' learning and performances on the subject (Biswas, 2011). Instructional materials are print and non-print items such as textbooks, pictures and recorded videos that are designed to pass information to students in the educational process, which promotes meaningful communication and effective learning thereby ensuring better retention (Olibie, *et al.*, 2013). For the effective teaching and learning of biology in secondary schools, there is need for instructional materials, which, however, are not adequately provided to teachers and as such, teachers are left with the option of improvisation to make teaching and learning effective. This study therefore, investigates biology teachers' attitude towards improvisation of instructional materials: A case study of Sabon Tasha Inspectorate Division, Kaduna State, Nigeria.

Statement of the Problem

In spite of the importance attached to production and utilization of instructional materials and the emphasis laid on its efficacy, there is still inadequate production, improvisation and utilization of resources in biology education as revealed by the findings of Olagunju (2000), who found out that less than average number of teachers produce materials resources. Having known the various benefits of instructional materials to learning and the benefits of improvisation especially in the area of cost effectiveness, it is quit disheartening to state that instructional materials are not adequately provided to teachers and as such, teachers are left with the option of improvisation to make teaching and learning effective. However, it

is still very common to find biology classes dominated by lecture method with inadequate or no instructional materials. The concern here is learners will be passive and have very little grasp of the basic concepts of Biology.

The curriculum of biology emphasizes that, theory should be integrated with practical, but this has not been fully achieved in most senior secondary schools in Nigeria which has led to student's poor performance in biology examination (WAEC, 1996). This research therefore seeks to investigate the attitude of Biology teachers to improvisation under Sabon Tasha inspectorate Division of Kaduna State, the extent to which it is carried out and the factors militating against the improvisation of instructional materials.

Purpose and Research Questions

The purpose of the study was to investigate Biology teachers' attitude towards improvisation of instructional materials: A case study of Sabon-Tasha Inspectorate Division, Kaduna State Nigeria.

The Objectives of this Study are to:

1. Determine the attitude of Biology teachers towards improvisation of instructional materials in the teaching and learning of Biology.
2. Determine the extent to which improvisation is carried out based on gender of the teachers.
3. Determine the factors hindering the improvisation of instructional materials in the teaching and learning of biology.

Three research questions were formulated in other to guide the study

1. What is the attitude of biology teachers toward improvisation?

2. Do male biology teachers in Sabon Tasha Inspectorate Division of Kaduna State carry out improvisation more than their female counterparts?
3. What are the factors that militate against the improvisation of instructional materials?

Research Hypotheses

Three null hypotheses were formulated in other to guide the study.

- H₀₁: There is no significant relationship between Teachers attitudes and improvisation of instructional materials for the teaching of Biology in Sabon Tasha Inspectorate Division, Kaduna State.
- H₀₂: There is no significant relationship between Teachers gender (male and female) and improvisation of instructional materials for the teaching of Biology in Sabon Tasha Inspectorate Division, Kaduna State.
- H₀₃: There is no significant relationship between the factors hindering the improvisation of instructional materials in the teaching and learning of Biology in the study area.

METHODOLOGY

The research design employed was a case study method. This is a non-experimental method that will enable the researcher collect, process, analyze and interpret the data collected on the study, from a narrow perspective from which generalization's will be drawn. The area of this study was Kaduna State located in the North-West Geo-political zone of Nigeria, the targeted population consists of all the biology teachers in secondary schools under

Sabo-Tasha Inspectorate Division Kaduna State Nigeria. Simple random sampling technique was employed. A total of twenty-one (21) biology teachers were randomly selected. The research instrument employed was Teachers' Attitude towards Improvisation Questionnaire (TAIQ). The questionnaire was in two parts (A and B) and it contain 25 items. Section A contains teachers' bio data and section B in the form of 4-points likert scale containing statements related to the research hypotheses raised. The content of the instrument was validated by English language, Statistics and Research experts. The instrument used was adopted from Olagunji (2000) which has a Cronbach alpha measure reliability index of 0.88. Cronbach's alpha is the most common measure of internal consistency (reliability). The instrument was administered to the biology teachers in the sampled schools and the data collected were analysed using percentages and chi square in statistical package for social sciences version 20 (SPSS v.20) to answer the research questions and test the null hypotheses at 0.05 level of significance.

RESULTS AND DISCUSSION

Research questions one: What are the attitudes of biology teachers toward improvisation? The results required to answer this research question are presented in Table1. The results show that, 52.4% of teachers agreed while 19.0% strongly agreed that teachers find it easier to teach theory than improvise instructional materials for the teaching and learning of biology. Similarly, 52.4% agreed while 14.3% strongly agreed that improvisation is a tedious exercise. Therefore,

these could be said to be two major negative attitudes of teachers towards improvisation of instructional materials for the teaching and learning of biology.

Research questions two: Do male biology teachers carry out improvisation more than their female counterparts in Sabon Tasha Inspectorate Division of Kaduna State?

The results required to answer this research question are presented in Figure 1. The results show that, more of the female (9.52%) than male (4.76%) do not improvise instructional materials due to the crude nature of improvised instructional materials. This result is contrary to the findings of Iliya, (2012), who observed that female teachers carry out improvisation more than male.

Table 1: Attitude of teachers towards improvisation of instructional materials

	Easier to teach theory		It is tedious		Wastes time		I do not improvise		Improvisation is boring	
	Freq.	(%)	Freq.	(%)	Freq.	(%)	Freq.	(%)	Freq.	(%)
Agree	11	52.4	11	52.4	5	23.8	3	14.3	1	4.8
Disagree	4	19.0	6	28.6	11	52.4	12	57.1	13	61.9
Strongly agree	4	19.0	3	14.3	2	9.5	2	9.5	2	9.5
Strongly Disagree	2	9.5	1	4.8	3	14.3	4	19.0	5	23.8
Total	21	100.0	21	100.0	21	100.0	21	100.0	21	100.0

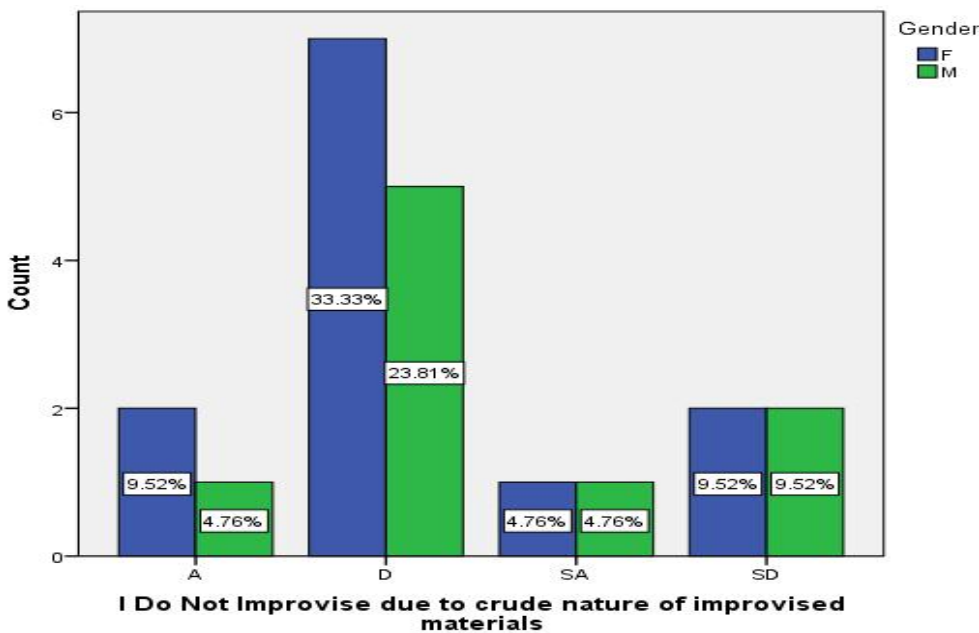


Figure 1: Gender and improvisation of instructional materials.

Research questions three: What are the factors that militate against the improvisation of instructional materials?

The results required to answer this research question are presented in Table 2. The results show that, 47.6 % of teachers agreed while 33.3% strongly agreed that lack

of fund hinders improvisation of instructional materials for the teaching and learning of biology in secondary schools in Nigeria. This is in agreement with the findings of other researchers who also established this assertion (Iliya, 2012).

Table 2: Factors militating against improvisation of instructional materials

	Lack of fund hinders Improvisation		Poor knowledge of Improvisation		Improvisation Wastes time		Improvised materials are crude		Lack of raw materials	
	Freq.	(%)	Freq.	(%)	Freq.	(%)	Freq.	(%)	Freq.	(%)
Agree	10	47.6	1	4.8	5	23.8	3	14.3	5	23.8
Disagree	2	9.5	13	61.9	11	52.4	12	57.1	11	52.4
Strongly agree	7	33.3	2	9.5	2	9.5	2	9.5	5	23.8
Strongly disagree	2	9.5	5	23.8	3	14.3	4	19.0	0	0.0
Total	21	100.0	21	100.0	21	100.0	21	100.0	21	100.0

The test of null hypothesis one is presented in Table 3. The table also reveals that, there was no statistical significant relationship ($P = 0.783$) between the attitude (I find it Easier to Teach Theory than Improvisation) of Teachers and improvisation of instructional material in the teaching of Biology in Sabon Tasha Inspectorate Division, Kaduna State. Therefore, the null hypothesis one (H_{01}) is accepted while the alternate hypothesis is rejected. This implies that most of the Teachers had similar negative attitude of

finding it easier to teach theory than improvise materials for practical purpose. Similarly, 23.81% of teachers agreed that improvisation waste time for teaching (Table 1) while 9.52% strongly agreed that improvisation is a boring exercise (Table 1). These observations are negative attitudes by Teachers which may have adverse effect on students' performance as supported by the findings of Adeyemi and Olaleye (2010), who found out that students improvised instructional material affects students' achievement.

Table 3: Chi-Square Tests on attitude of Teachers towards improvisation of instructional materials in teaching of Biology

		Easier to Teach Theory than Improvisation					P-	df	Chi-	Likelihood
		A	D	SA	SD	Total	value	Square	Ratio	
Improvisation is an effective tool for teaching Biology.	A	6	1	1	1	9	0.783	6	3.201 ^a	3.634
	D	1	0	0	0	1				
	SA	4	3	3	1	11				
	Total	11	4	4	2	21				

Key: A=Agree, D=Disagree, SA= strongly agree, SD= strongly disagree, df=degree of freedom.

The test of null hypothesis two is presented in Table 4. The table also reveals that, there was no statistical significant relationship (P = 0.970) between male and female Teachers in the improvisation of instructional materials in the teaching of Biology. This implies that

improvisation of instructional materials has no relationship with gender but rather based on individual differences. This is contrary with the finding of Biswas, (2011) who found out difference in attitude based on gender from his attitude scale experiment.

Table 4: Chi-Square Tests on Improvisation of instructional materials in teaching of Biology by Teachers based on gender

		Gender			Total	P - value	df	Chi-	Likelihood
		F	M					Square	Ratio
I Do Not Improvise due to crude nature of improvised materials	A	2	1		3	0.970	3	0.243 ^a	0.245
	D	7	5		12				
	SA	1	1		2				
	SD	2	2		4				
Total		12	9		21				

Key: A=Agree, D=Disagree, SA= Strongly agree, SD= Strongly disagree, F=Female, M=Male, df=degree of freedom.

The test of null hypothesis three is presented in Table 5. The table also reveals that, there was significant relationship (P = 0.039) between the factors hindering the improvisation of instructional materials in the study area as shown below in

Table 5. Therefore, the null hypothesis was rejected while the alternate hypothesis was accepted. This also means that there are several factors militating against improvisation of instructional materials in secondary schools such as funding and

attitude of Teachers towards improvisation of instructional materials. This is agreement with the findings of Olibie *et al.*, (2013), who also found out that there are numerous

factors affecting instructional material improvisation in schools.

Table 5: Chi-Square Tests on factors militating against improvisation of instructional materials in teaching of Biology

		Biology Equipment cannot be made from local materials				Total	P - Value	df	Chi-Square	Likelihood Ratio
		A	D	SD						
Lack of fund hinders Improvisation	A	4	6	0	10	0.039	6	13.265 ^a	15.408	
	D	0	2	0	2					
	SA	1	3	3	7					
	SD	0	0	2	2					
Total		5	11	5	21					

Key: A=Agree, D=Disagree, SA= Strongly agree, SD= Strongly disagree, df = degree of

CONCLUSION

On the basis of the findings generated from this study the researcher has made the following conclusions:

1. There are more female than male Biology Teachers in Sabon Tasha Inspectorate Division, Kaduna State.
2. There was no statistical significant relationship (P = 0.970) between Teachers' gender and improvisation of instructional materials in the teaching of Biology in the study area.
3. There is significant relationship (P = 0.039) between the factors hindering the improvisation of instructional materials in the study area such as lack of funds which is a problem faced by Biology Teachers in schools.

RECOMMENDATIONS

The following recommendations were made based on the finding of the study.

1. Workshops on improvisation should be organized for Biology Teachers to improve skills and make them have a positive attitude towards improvisation.
2. School inspectors should carry out routine checks to see if biology teachers improvise unavailable instructional materials.
3. The Government should conduct an annual or bi annual inspection of laboratories with the view to making the unavailable materials available for teaching and learning.

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