

Problems of Teaching and Learning Science in Junior Secondary Schools in Borgu Local Government Area of Niger State, Nigeria

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Abstract

Scientific knowledge is the common heritage of all mankind. It is the only treasure that can provide a possible remedy to conquer inequality and to bring about an acceptable quality of life and purpose, for a majority of the people of the world. Science and science education should be made compulsory even in the poorest and the least-developed countries of the world. It should be the main problems that should be overcome for a sustainable and proper development. The purpose of this work is to find out reasons for poor teaching and learning of science in junior secondary schools in Borgu Local Government Area of Niger State, Nigeria. The instrument used was a structured questionnaire. Data for the study were obtained by administering 60 questionnaires to students and 12 to science teachers in six public junior secondary schools. Students were sampled randomly from each secondary schools. The data were analyzed using frequency and percentages. Regrettably, the teaching and learning of science in junior secondary in Nigerian cannot be said to be effective because of the poor performance of students resulting from inappropriate teaching methodologies, lack of adequate knowledge of subject matter, competencies, skills, inadequate teacher training and lack of in-service training and refresher courses. The study recommended that government should employ more qualified science teachers, science laboratories should be well equipped, teacher salary and quality of teaching and learning resources be provided. All these factors affect largely the way science is taught particularly in junior secondary schools.

Introduction

Science has been and would continue to be of tremendous importance because of its ability to explain many natural occurrences and the central role it plays in the world's current technology development. In our century, it is the soul of the prosperity of nations and it is an economic and technological development as well as improving the quality of life of the individuals and the society at large.

Science, as a subject taught in schools, has over the years gained prominence in the school curriculum worldwide. In the last five decades, the world has witnessed scientificCurriculum innovations and several changes in the teaching of the content in different levels of Education.

Some of the most distinct characteristics of science are experimentation, observation, and discovery. these provides the development of skills of students to ask questions and making investigations, hypothesis, inference of results of experiments to students. The success of science programmes depends largely on the classroom teachers, which constitute the most important agent in the teaching and learning of science. According to (Awotua – Efebo, 1999) Science Teachers have the potentials for enhancing the quality of education by bringing life to the curriculum and inspiring students to curiosity and self-directed learning. For Science to be taught effectively and efficiently, there are some demands that must be meant. For examples teacher most seek new information on new teaching techniques, regular in-service training, regular or frequent evaluation of the students, modification of teaching method. These listed demands constitute themselves into a number of definite problems in the classroom. Generally, the education of a nation is evaluated in part by the quality of its teachers. The quality of teachers itself depends largely on the kind of training they received both at academic and professional levels. For these reasons, teachers of science need good training to enable them meet a better requirement and enough academic information in a variety of science subject as said by Bajah S.T. (1982).

In addition, Akueshi (1997) warned that the world is developing scientifically and technologically in every sphere of human endeavors we should thrive to join this technologically train or else we shall be left behind and it will be disastrous and unpleasant. According to Adebayo (1999) on educational policy 1977, he stated that Lack of finance to execute the project, shortage of manpower, lack of facilities and lack of policy itself (i.e., the planning and implementations) are factors responsible for poor performance in science subjects in our secondary schools.

Despite all the efforts made by Government to promote Science Education in Nigeria coupled with several research works that has been carried out, the problems of Teaching and Learning science are still persisting. The problems are according to Bajah (1982) between 1959 and 1982: are Lack of laboratory, lack of qualified science teachers, and institutional objectives in science teaching.

Adeyemi (1993) and Adeyegbe (1990) stated that even though a number of science curriculum reforms were inquiry based and problem – solving in style research finding have continued to show that teaching and learning in science remain problematic.

Ayodele (1999) stated the problems as inadequacy of textbooks, lack of learner’s interest, unqualified science teachers and psychological fears of science subjects as factors responsible for poor performance. Textbooks are not adequately available. The ones that are available are written by foreigners with their language and cultural background, making it difficult for indigenous teachers to complement these written textbooks, most of the work lack standard, probably because they are horridly written just to bridge gabs, without adequate research.

Most laboratories are not well equipped, schools rely more on imported laboratories apparatus, equipment and grants are never enough. Although government took a giant step by establishing science laboratory manufacturing industries like ‘PRODA’ in Enugu State, “SEDI” in Minna such industries have been long neglected by the same government that established them.

Large class and lack of incentives for teachers. One teacher to 25 students is the recommendation but remains a dream in schools’ classes are over populated to the tune of 100 and above students to a teacher. Some students’ attitude has made up their mind that they are not going to study science because of its

difficulty. Poor Primary school background in science subjects.

With these problems in mind the researcher decided to investigate the extent to which these demands are being met and possibly suggest ways in which they could be successfully met.

Statement of The Problem

This study was carried out in an attempt to identify the problems hindering the effective teaching and learning of sciences in junior secondary schools in Borgu Local Government Area of Niger State Nigeria. Despite the fact that Government has invested a lot on science education, there are some persistent problems in our schools.

Agun&Imogie (1988) prompted out the shortage of qualified teachers in many of our secondary schools particularly in the rural community. This will invariably affect the use of instructional materials in the teaching and learning of sciences particularly in junior secondary schools.

Adesenuga (1981) commented that if any science is to be taught well, it should be taught practically, hence the need for sufficient materials for effective teaching of science within and outside the laboratory is of paramount important.

In view of the above, it is, therefore, important to evaluate once again if there has been any significant improvement in the availability of these materials and qualified teachers in our schools.

Purpose of the Study

The purpose of this study was to investigate the problems militating against the effective teaching and learning of Science in Junior Secondary Schools in Borgu Local Government Area of Niger State Nigeria and suggest ways to enhance the teaching and learning of science in Junior secondary schools in Nigeria.

Towards the achievement of this aim the study set out the following objectives:

1. To identify the factors that are militates against the teaching and learning of science in the junior secondary schools in Borgu Local Government Area.
2. To examine the strategies that could be used to remedy the difficulty in the teaching and learning of science in Junior Secondary Schools.
3. To make suggestions on the ways forward in enhancing the teaching and learning of science in our Junior Secondary schools.

Research questions

To guide this study, the following research questions were raised and answered after thorough investigation.

1. What are the factors responsible for the difficulty in the teaching and learning of science in the Junior secondary schools?
2. What strategies could be adopted to enhance better teaching and learning of science in Junior secondary schools?

Research Methodology

The research was conducted using the survey research design method. This design was most appropriate and

suitable for the study since questionnaire was the major instrument used for collection of data from sample segment of the society of interest. As a rule, any study which employs the questionnaire in data collection is a survey research. A little part of the study employed both oral interview and observational study design. This is to fish out some of the information which was not revealed in the questionnaire. The data collected was limited to science students of junior secondary schools and their teachers. The findings from the sample segment of the population were used to generate for the entire population.

Population for the Study

The population of the study consists of six Junior secondary school (6) in Borgu Local Government Area, Niger State Nigeria. Namely

1. Borgu Junior Secondary school
2. Kitoro Junior Secondary School
3. Ubandoma Junior Secondary School
4. Junior Secondary Schools, Wawa
5. Junior Secondary School, Malale
6. Junior Secondary School, Awuru

Sample and Sampling Technique

The samples of the study include sixty (60) science students selected from six (6) Junior secondary schools in Borgu Local Government Area of Niger State while (12) Twelve science teachers were also involved in the study. The study employed a proportionate random sampling technique in the collection of samples.

Method of Data Analysis

This study employs a descriptive survey research design. It involves the collection of data from a simple to make inferences on the condition obtaining in a population. (Salau, 2010). The descriptive design is a useful tool for educational fact findings. This is because it has an added advantage of wide scope thereby allowing in-depth study of the variables of interest. A Checklist was used to gather information from the science teachers and students at the sampled schools. This design was suitable for the study because the study was concerned with identifying the problems of teaching and learning of science at the junior secondary school level

All the questionnaires were collected from the respondents as soon as they finished with their responses. Their responses were scored and organized in tabular forms. The modified four-point Likert-type rating scale was adopted for the questionnaire, responses were of the types Strongly Agreed, Agreed, Disagreed and Strongly Disagreed. Sample percentages was used to analyze the data. In decision making, any calculated of percentage of 50% and above is "Accepted" while calculated percentage of below 50% is "Rejected".

Results and Discussion

Question 1.

What factors are responsible for the difficulty in the teaching and learning of science in junior secondary schools in Borgu Local Government Area?

Responses to the first seven items in the teachers' and students' questionnaire were used to answer the above

research question. The responses were computed using simple to evaluate them. The four- point Likert scale was used. The percentage value for acceptance is $X \geq 50$ otherwise rejected.

Teachers' opinion on factors responsible for the difficulty in teaching and learning of science subjects in junior secondary schools in Borgu Local Government Area, Niger State.

S/N	ITEMS	RESPONSES				PERCENTAGES
		SA	A	D	SD	
1.	The foundation of pupils in primary school posses a great problem in the learning of science	10	2	-	-	83.3%
2.	There is no incentive to motivate teachers to put their best	8	2	1	-	66.6%
3.	Students possess fear of the science possess fear	7	3	1	-	58.3%
4.	Most teacher do not teacher science well because of poor foundation	6	2	3	3	50%
5.	Lack of instructional Aids makes teaching of science Very difficult	10	2	-	-	83.3%
6.	There in adequate number science teachers	8	4	-	-	66.6%
7.	Large number of students in classes	8	4	-	-	66.6%

Teachers' opinion on the factors responsible for the problems of teaching and learning science in junior secondary schools in Niger State.

S/N	ITEMS	RESPONSES				PERCENTAGES
		SA	A	D	SD	
1.	The foundation of pupils in primary school posses a great problem in the learning of science	50	10	-	-	83.3%
2.	There is no incentive to motivate teachers to put their best	40	15	5	-	66%
3.	Students possess fear of the science	40	20	-	-	66%
4.	Most teacher do not teacher science well because of poor foundation	50	5	3	2	83.3%
5.	Lack of instructional Aids makes teaching of science Very difficult	60	-	-	-	100%
6.	There is inadequate number of science teachers	50	10	-	-	83.3%
7.	Large number of students in classes	60	--	-	-	100%

The above reveals that the factors listed are responsible for the problems of teaching and learning science in junior secondary schools, it shows that students' response to the items in the questionnaire were more on strongly agree column than agreed.

It should be noted that the teachers and students agreed strongly to the fact that, lack of instructional aids, large number of students on the part of the students and the poor foundation of students are the major problems of teaching and learning of science.

Research question 2

What strategies could be adopted to enhance better teaching and learning of science in secondary schools in Niger State.

Responses to items 8 to 16 on the teachers and student's questionnaire were used to answer the research question above. The responses were evaluated using simple percentage.

Teachers' response on the strategies to enhance better teaching and learning of science in junior secondary schools in Borgu Local Government Area of Niger State

S/N	ITEMS	RESPONSES				PERCENTAGES
		SA	A	D	SD	
1.	The teacher should arouse the interest of learners	10	2	-	-	83.3%
2.	Classes should be reduced to manageable level	8	2	1	-	66.6%
3.	The teacher should use instructional materials to make the lesson more attractive	7	3	1	-	58.3%
4.	Teacher should use sweetable method to teach	8	2	--		66.6%
5.	The teacher should made use of practical to teach	10	2	-	-	83.3%
6.	The facilities needed for teaching and learning should be provided	8	4	-	-	66.6%
7.	The teacher should monitor student's activities regularly	8	4	-	-	66.6%

The response shows that the teachers accept the factors as the strategies that could bring about the effective teaching and learning of science in junior secondary schools in Borgu local Government of Niger State if adopted. This mean that all the above criteria are necessary for teaching and learning of science in schools particularly at the junior secondary schools.

Below are the students' response on the strategies to enhance better teaching and learning of science in junior secondary schools in Niger State

S/N	ITEMS	RESPONSES				PERCENTAGES
		SA	A	D	SD	
1.	Parents should provide learning materials particularly Text and other necessary materials	50	10	-	-	83.3%
2.	The teacher should use instructional materials to make the lesson more attractive	50	10	-	-	83.3%
3.	The learning environment should be conducive	40	20	-	-	66.6%
4.	Students should be made to work extra	50	10	-	-	83.3%
5.	Students should be involved in practical more	50	10	-	-	83.3%
6.	Parents should always keep reworks of their ward performance	40	20	-	-	66.6%
7.	Students should develop studying habitats	50	10	-	-	83.3%

The results as shown reveal that all items of strategies listed above could enhance better teaching and learning of science in junior secondary schools.

Discussion of Findings

From the data analysis, the researcher can now state the problems of teaching and learning science in the junior secondary schools in Borgu Local Government Area of Niger State Nigeria.

It is important to note that the teachers and students agreed strongly to the fact that the poor foundation of students coupled with lack of hard work are some of the major problems of teaching and learning science in junior secondary schools. This agrees with the WAEC examiners Report on sciences (2004) which stated that most of the students fail practical examinations because they lack the basic skill for doing simple experiment in sciences. Lacks of instructional aids also contribute to the problems of teaching science subjects as revealed in the result.

Besides, students shy away from science subjects. Many research including this study have confirmed that students shy away from science class. This may be because we are unable to satisfy their aspiration or goals. Students become more interested in a subject when it has bearing on their practical life in their own goals. In the absence of adequate science equipment or laboratory, there is no way to provide knowledge to students in more practical and interesting way.

Science teachers share the blame on poor performance of science students in various schools. Teachers are not enough while the ones that are on ground are not sufficiently trained to teach science subjects.

Unfortunately, students are not aware of the benefits of a scientists and technologists. They are not even aware of the term "technology Transfer" which they supposed to be the beneficiary.

Conclusion

The findings of this study show that so many things are wrong with the teaching and learning of science in secondary schools in Borgu Local Government Area of Niger State. The absence of conducive environment has

been the cause of poor teaching and learning in junior secondary schools. Apart from the science teachers who are not well positioned to teach science effectively, the poor state of infrastructure has also negatively influenced the teaching and learning of science in as whole.

The problems of poor teaching of science in our junior secondary schools is, therefore, as a result of dearth of resources for teaching science, very few qualified science teachers are competency, these is as a result of poor training of science teachers, large class sizes of science students, the existence of these problems has negatively influenced effective teaching and learning of basic science in our junior secondary schools in Nigeria. Most importantly, there has not been adequate supervision of instruction and monitoring of both teachers and students.

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