CHALLENGES ENCOUNTERED BY BIOLOGY TEACHERS WHEN ORGANIZING AND CONDUCTING BIOLOGY PRACTICAL

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Abstract

This study sought to investigate the challenges encountered by Biology Teachers when organizing and conducting Biology Practicals in Orumba North and South Local Government Areas. Twenty eight Biology teachers from all the public schools in Orumba North and South Local Government Areas were used for this study. Questionnaire on challenges Biology teachers encounter when organizing and conducting Biology practicals with a reliability value of 0.72 was used for data collection. The data obtained were analyzed using mean. The result of the data analysis showed that insufficient laboratory equipment, lack of fund, insufficient specimen amongst others are the major challenges Biology teachers encounter when organizing and conducting Biology practicals. The possible solution to these challenges include improvisation of laboratory materials by the Biology teachers, students and principals.

INTRODUCTION

Background of the Study

Biology is one of the core science subjects taught in all secondary schools in Nigeria. The teaching of Biology starts from the nursery school through primary to secondary school and tertiary institution. Nwagbo (2008) stated that as a science subject in school curriculum, Biology is designed to produce individuals some of whom mayor may riot take biological studies in their professional pursuits. It is however hoped that in whatever profession they finally find themselves, the Biology education they acquire in school would be of value to the totality of their education.

The Biology curriculum as a teaching syllabus has four main objectives derived from the National Policy on Education (2004). These objectives include:

i. Adequate laboratory and field skills in Biology
ii. Meaningful and relevant knowledge

iii. Ability to apply scientific knowledge to everyday life on matters of personal and community health and agriculture.

iv. Reasonable and functional scientific attitudes.

In accordance with the above stated objectives, the content and context of the syllabus place emphasis on field studies, guided discovery and conceptual studies and hence laying emphasis on practical approach on the teaching of Biology. The study of Biology involves both practical and theoretical work. Biology practical according to Ndioho (2007) is any learning experience" which involves students in activities such as observing, counting, experimenting, recording, observation and carrying out field work. These activities are opposed to the theoretical work which involves listening to talk and taking down notes from such talks. Practical work is an aspect of great importance in the learning of Biology and yet one of the commonest errors observed in secondary schools is the teacher’s omission of some practical work activities in the teaching. This could be attributed to the challenges Biology teachers encounter in the teaching and learning of practical Biology practicals. Nwagbo (2008) noted that the use of practical activities in teaching Biology should be a rule rather than an option for teachers; if the students are to acquire the necessary knowledge, skills and competencies needed to live functionally in the society. Due to several contrasting factors ranging from facilities to teacher factor, the required practical experiences are not usually possible in most schools (Egbunonu and Okeke 2005). The West African Examination Council (WAEC) syllabus (2007) stipulates six major aims of teaching and learning practical Biology to be:

- to promote the power of observation;
- To develop the power to recognize general characteristics of animals and plants;
- Interpretation of data which illustrates certain known biological principles;
- To develop ability to perform simple experiment and draw inferences from result obtained.

These objectives can only be achieved if Biology teachers posses the competencies/skills for organizing practical classes in Biology. The competencies/skills of Biology teachers should be enhanced if the problems Biology encounter are identified and proper strategies for the elimination of the problem adopted.
This paper therefore examines the challenges teachers encounter in organizing and conducting Biology practicals.

**The Purpose of the Study**

This study is aimed at finding out the challenges teachers encounter in organizing and conducting Biology practicals.

Specifically, this study set out to identify the:

1. challenges Biology teachers encounter in organizing and conducting Biology practicals;

2. possible solutions to the problems teachers encounter in organizing and conducting Biology practical.

**Research Question**

The paper was guided by these research questions:

1. What are the challenges Biology teachers encounter in organizing and conducting Biology practicals?

2. What are 'the possible solutions to the problems teachers encounter in organizing and conducting Biology practicals?

**Design of the Study**

This study was a survey research design.

**Area of the Study**

This study was carried out in Orumba North and South L.G.As of Anambra State. It covered all public secondary schools in Orumba North and South L.G.As of Anambra State.

**Population of the Study**

The population consists of all Biology teachers in Government owned secondary schools in Orumba North and South local Government Areas. There are 28 Biology teachers in government owned secondary schools in Orumba North and South.
Sample and Sampling Technique

There are 28 Biology teachers in Orumba North and South Local Government Areas. The researchers chose the entire population, as the sample for the study because of the fewness of the population.

Instrument for data Collection

Structured Questionnaire was used for data Collection. The items in the questionnaire were formulated based on the research questions.

Validation of Instrument

The drafted questionnaire were validated by two experts in Biology and measurement and Evaluation. Areas found defective were corrected.

Reliability of Instrument

To establish the reliability of the instrument, 10 copies of the questionnaire were administered to Biology teachers of Aguata L.G.A. of Anambra State who were not part of the sample used for the study. Their responses were subjected to a reliability analysis using Cronbach alpha;¹ which gave a coefficient of 0.72.

Method of Data Collection

A total number of 28 questionnaire were personally administered to the Biology teachers in Orumba North and South Local Government Areas. All the questionnaire administered were collected and used for the study.

Method of Data Analysis

The data was analysed using mean. A mean of 3.5 was used as cut-off point. Therefore any item with a mean of 3.5 and above was accepted, while a mean of less than 3.5 was rejected.

Results

The data was analysed and result presented as follows in the tables below in line with research questions: What are the challenges Biology teachers encounter in organizing and conducting Biology practicals?
Table 1.1: Mean responses of Biology Teachers on the challenges Biology teachers encounter when organizing and conducting Biology practicals

<table>
<thead>
<tr>
<th>S/N</th>
<th>ITEMS</th>
<th>SA</th>
<th>A</th>
<th>UD</th>
<th>D</th>
<th>SD</th>
<th>X</th>
<th>REMARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The equipment is not sufficient for Biology practicals</td>
<td>15</td>
<td>12</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>4.5</td>
<td>Accepted</td>
</tr>
<tr>
<td>2</td>
<td>Teachers do not know how to manipulate some of the equipment</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>15</td>
<td>11</td>
<td>1.8</td>
<td>Rejected</td>
</tr>
<tr>
<td>3</td>
<td>Some of the specimens for Biology practicals are not available</td>
<td>10</td>
<td>16</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>4.2</td>
<td>Accepted</td>
</tr>
<tr>
<td>4</td>
<td>Lack of fund for purchasing the equipment and materials for Biology practicals</td>
<td>9</td>
<td>15</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>4.10</td>
<td>Accepted</td>
</tr>
<tr>
<td>5</td>
<td>Some students are not interested in practical classes</td>
<td>15</td>
<td>10</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>4.2</td>
<td>Accepted</td>
</tr>
<tr>
<td>6</td>
<td>Teachers do not possess the necessary skills for conducting practicals</td>
<td>14</td>
<td>9</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>4.0</td>
<td>Accepted</td>
</tr>
<tr>
<td>7</td>
<td>Laboratory assistants and technologists do not help the teachers in organizing and conducting practicals</td>
<td>10</td>
<td>15</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>4.1</td>
<td>Accepted</td>
</tr>
<tr>
<td>8</td>
<td>Available materials are not accessible to the teachers</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>12</td>
<td>8</td>
<td>2.5</td>
<td>Rejected</td>
</tr>
<tr>
<td>9</td>
<td>Enough time is not allotted to practicals</td>
<td>15</td>
<td>10</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>4.3</td>
<td>Accepted</td>
</tr>
<tr>
<td>10</td>
<td>Teachers are not sponsored to workshops, seminars and conferences to acquire practical</td>
<td>18</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.6</td>
<td>Accepted</td>
</tr>
</tbody>
</table>
The Biology class is normally large and difficult for Biology teacher to manage

What are the possible solutions to the problems teachers encounter in organizing and conducting Biology practicals?

**Table 2.1: Mean responses on the possible solution to challenges encountered by Biology teachers when organizing and conducting Biology practicals**

<table>
<thead>
<tr>
<th>S/N</th>
<th>ITEMS</th>
<th>SA</th>
<th>A</th>
<th>UD</th>
<th>D</th>
<th>SD</th>
<th>X</th>
<th>REMARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Biology teachers should improvise Biology instructional materials</td>
<td>12</td>
<td>12</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>4.1</td>
<td>Accepted</td>
</tr>
<tr>
<td>2</td>
<td>The principal should help the teachers to provide some of the materials for practicals</td>
<td>13</td>
<td>12</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4.3</td>
<td>Accepted</td>
</tr>
<tr>
<td>3</td>
<td>Students could be used to provide some specimen from their locality</td>
<td>10</td>
<td>15</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>4.1</td>
<td>Accepted</td>
</tr>
<tr>
<td>4</td>
<td>P.T.A. and Non-Governmental organisations could be called upon to aid in purchasing practical materials and equipment</td>
<td>15</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4.3</td>
<td>Accepted</td>
</tr>
<tr>
<td>5</td>
<td>Enough time should be allotted for practicals</td>
<td>13</td>
<td>11</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>4.1</td>
<td>Accepted</td>
</tr>
<tr>
<td>6</td>
<td>Teachers should make teaching, activity oriented so that students should develop interest in the lesson</td>
<td>15</td>
<td>12</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>4.5</td>
<td>Accepted</td>
</tr>
<tr>
<td>7</td>
<td>Teachers should be sponsored</td>
<td>10</td>
<td>16</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>4.5</td>
<td>Accepted</td>
</tr>
</tbody>
</table>
regularly to workshops, seminars and conferences to learn innovative strategies for teaching practicals.

<table>
<thead>
<tr>
<th></th>
<th>Laboratory assistants and technologists should be employed and they should help in conducting practicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>15           13   -   -   -         4.5   Accepted</td>
</tr>
</tbody>
</table>

**Discussion and Conclusion**

This study revealed that the challenges encountered by Biology teachers when organizing and conducting Biology practicals include insufficient equipment for practicals, some of the specimens for Biology practicals are not available, lack of fund for purchase of practical equipment, some students are not interested in practicals, large class and so on. These findings support previous studies (Folaranmi, 2002; Olaleye, 2002; Ayayi, 2006) that lack of textual materials, inadequate laboratory apparatus and equipment, and large class sizes as impediments to effective science education, of which Biology practical is part of.

The findings of the study also revealed that the Biology teacher believe that improvisation of the instructional materials by the principals, Biology teacher and students, employment of laboratory assistants and technologists, and sponsoring Biology teachers regularly to workshops, seminars and conferences among others are some of the possible solutions to these challenges encountered by Biology teachers when organizing and conducting Biology practicals.

Balogun as cited in Ehikioya (2000) noted that the major reason for improvisation stem from the fact that the fund allotted to education are always insufficient, so the educational authorities are generally not in position to provide their schools with what they need. Folorunso and Nwosu (2006) said that students should be involved in improvisation of science materials pointing out that improvisation by students may explore them to specific knowledge and skills required in improvisation.
In conclusion, this study has revealed that lack of laboratory equipment and materials, insufficient specimen, lack of fund among others are some of the challenges encountered by biology teachers when organizing and conducting biology practicals. It also revealed that improvisation by the teacher, students and principals, amongst others are the possible solutions to these challenges.

**Recommendations**

1. Governments should allocate more funds to education in Nigeria.

2. All schools should have laboratories for science with adequate supplies of equipment and reagents for practical work in science.

3. All schools should be equipped with information and communication technologies including computers and internet access so that teachers and learners would be able to find information beyond the resource of the school.
References


