Biology Teachers Methods of Teaching and Academic Performance of Secondary School Students in Abia State. Nigeria

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Abstract
This study was carried out to examine teachers’ methods of teaching and academic performance of secondary school students in Biology. It was conducted in University of Port Harcourt, Rivers State, Nigeria. The study comprised 180 Biology teachers from three Educational zones in Abia state which were randomly selected. Two research objectives and two null hypotheses were used in the study. The data was analyzed using mean and rank order statistics to answer the research questions while z-test was used to test the hypotheses at 0.05 level of significance. The reliability co-efficient obtained using pearsons product moment correlation co-efficient was 0.70. The study found that teachers’ methods of teaching has effects (+ve & - ve) on students’ performance in Biology. In addition, it was found that teachers’ attitudes in delivery of instruction have great influence on students’ performance. It was recommended amongst others that teachers’ methods of teaching should be student friendly as this will enhance Biology students’ assimilation and performance in both internal and external examinations.

Keywords: teachers’ quality, academic performance, methods of teaching, attitude

INTRODUCTION
Previously, education was conceived as a process of transmission of factual knowledge and the belief in the efficacy of education as a powerful instrument of development has led many nations to commit much of their wealth to the establishment of educational institutions at various levels. The quality and quantity of human and physical resources determine a nation’s growth and development. The core of education is teaching and learning, and teaching-learning process works better when there are effective teachers working with students (Osuala, 2001).

Teachers’ effectiveness has proven to be the most influential school-related factors in students’ performance, if a teachers’ quality is one of the pillars of success in education, it follows then that a serious teacher-evaluation system should be put in place mainly because the purpose of evaluation is to recognize, cultivate and develop good teaching process (Ibekwe, 2015).

Teachers’ quality is directly proportional to students’ performance. This implies that teachers’ role in the preparation of students to succeed in examinations cannot be undermined. Teachers’ qualifications in any educational system determine to a great extent the quality of the system itself. Teachers’ quality is widely thought of as an essential determinant of academic performance (Ibeawuchi 2012). It is probably for this reason that Ibukun (2009) asserted that no education system can rise above the quality of its teachers in any nation.

As important as knowledge of Biology is to human being, it appears students’ academic performance in this subject (Biology) at the secondary school level is becoming worse than the other science subjects. Science educators give special recognition to Biology among sciences because of its educational values, its close relation to man as a living organism, its peculiar field of experimentation and inter-relationships with the other sciences. As a result of this, Biology occupies a unique position in the school curriculum. Biology is central to many science-related courses such as Medicine, Pharmacy, Nursing, Agriculture, Biochemistry, Microbiology and so on. It is obvious that no student intending to study these disciplines can do without Biology. These factors amongst others have drawn the attention of researchers and curriculum planners towards Biology as a subject in the school curriculum (Kareen, 2003).

Academic performance is a measure of output and the main changes in knowledge, skills and attitude of individuals as a result of experiences acquired from the school. Thus, in determining academic performance, Adeyemi and Bolarinwa (2013) emphasized the use of grades in examinations and reported that grades could serve as predictive and criterion measures.

Teachers stand as transmitters of knowledge, values and skills in the learning process. If the teacher is ineffective, students under the teacher’s tutelage will achieve inadequate progress academically. Teachers cannot be dissociated from the schools where they teach and the academic results of the schools because
teaching and learning depend on teachers. No wonder, an effective teacher has been conceptualized as one who produces desired results in the course of duty as a teacher (Uchenna, 2012). It would therefore be logical to use students’ assessment result as the basis for judging the effect of teachers’ methods of teaching on students’ academic performance.

Low performance in science generally, and in Biology particularly among secondary school students is below average (40%) (W.A.E.C. Chief Examiners’ Report 2010 - 2014). This trend is disturbing in an era of globalization and urbanization where modern Biology is faced with various social, economic and environmental challenges. Considering the importance and roles played by the knowledge, the teaching of Biology should be planned in a way that Biology, would be taught to students to respond to issues and changes of life in this 21st century. The researchers are of the view that performance of students is a function of appropriate lesson delivery methods of Biology teachers’ amongst others. This study sought to investigate the effect of Biology teachers’ methods of instructional delivery and attitude as traceable to students’ poor performance in Biology.

Research Objectives
1. examine teachers’ methods of teaching and effects on academic performance of secondary school students in Biology.
2. investigate teachers’ attitude and effects on academic performance of secondary school students in Biology.

Research Questions
1. Do teachers’ methods of teaching affect academic performance of secondary school students in Biology?
2. What is the effect of teachers’ attitude on academic performance of secondary school students in Biology?

Hypotheses
1. There is no significant difference between the effects of teaching of Urban and rural teachers in Biology.
2. There is no significant difference between the effect of teachers’ attitude in urban and rural locations on academic performance of secondary school students in Biology.

METHODOLOGY
The study area was Abia State, a state in South Eastern part of Nigeria. The population of study included all the four hundred and fifty eight (458) Biology teachers in the two hundred and twenty nine (229) public secondary schools spread across the three (3) educational zones in Abia state namely, Umuahia, Aba and Ohafia. A sample of one hundred and eighty (180) Biology teachers was randomly selected from each educational zone which constituted a stratum and each strata included urban and rural teachers. Stratified random sampling techniques were applied in the selection process. A structured questionnaire was used as research instrument. The questionnaire was a modified likert type four point rating scale (4,3,2,1) as against (strongly Agree, Agree, Disagree, strongly disagree) respectively. An acceptable mean of 2.50 was used in the study.

RESULTS AND DISCUSSION

Table 1.1a: Teachers’ methods of teaching and academic performance of secondary school students in Biology

<table>
<thead>
<tr>
<th>S/N</th>
<th>Urban Teachers</th>
<th>Rural Teachers</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>X</td>
<td>N</td>
</tr>
<tr>
<td>1.</td>
<td>180</td>
<td>3.13</td>
<td>180</td>
</tr>
<tr>
<td>2.</td>
<td>180</td>
<td>2.80</td>
<td>180</td>
</tr>
<tr>
<td>3.</td>
<td>180</td>
<td>3.02</td>
<td>180</td>
</tr>
<tr>
<td>4.</td>
<td>180</td>
<td>2.64</td>
<td>180</td>
</tr>
<tr>
<td>5.</td>
<td>180</td>
<td>2.63</td>
<td>180</td>
</tr>
</tbody>
</table>

From the table above, the high mean scores ranging from 2.21 to 3.05 indicated that all the items identified were accepted as the teachers’ methods of teaching affect academic performance of secondary school students in Biology. Hence, the mean scores were above the criterion mean. It is evident that the items were teachers’ methods of teaching which affect students performance.
Hypothesis 1: There is no significant difference between the effects of teaching of Urban and rural teachers in Biology.

Table 1.1b: mean, standard deviation and Z-statistic on teachers’ methods of teaching and performance in Biology.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>SD</th>
<th>Z.cal</th>
<th>Z.cri</th>
<th>DF</th>
<th>Level of sign.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Teachers</td>
<td>180</td>
<td>2.84</td>
<td>0.68</td>
<td>1.64</td>
<td>1.96</td>
<td>88</td>
<td>0.05</td>
<td>Accepted</td>
</tr>
<tr>
<td>Rural Teachers</td>
<td>180</td>
<td>2.91</td>
<td>0.72</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data in table 1.1b above, shows that the Z-calculated value of 1.64 is less than Z-critical value of 1.96 at 0.05 level of significance with 88 degree of freedom. The null hypothesis (Ho) was accepted. This means that there is no significant difference between the mean scores of rural and urban teachers on teachers’ methods of teaching and performance of secondary school students in Biology.

Table 1.2a: Teachers’ attitude and academic performance of secondary school students in Biology.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Items</th>
<th>Urban Teachers</th>
<th>Rural Teachers</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td>Teachers behave in a friendly or considerate manner when teaching in classroom</td>
<td>180 3.08</td>
<td>180 3.19</td>
<td>1*</td>
</tr>
<tr>
<td>12.</td>
<td>Teacher give s opportunity for independent work, gives freedom and responsibility to students</td>
<td>180 3.01</td>
<td>180 3.13</td>
<td>3rd</td>
</tr>
<tr>
<td>13.</td>
<td>Teacher expresses dissatisfaction, looks unhappy and waits in scheme when students perform badly</td>
<td>180 3.01</td>
<td>180 2.27</td>
<td>4th</td>
</tr>
<tr>
<td>14.</td>
<td>Teachers checks, maintains silence and strictly enforces the rules</td>
<td>180 3.08</td>
<td>180 3.08</td>
<td>2nd</td>
</tr>
<tr>
<td>15.</td>
<td>Teachers behaves in an uncertain manner and keeps a low profile</td>
<td>180 2.35</td>
<td>180 3.19</td>
<td>5th</td>
</tr>
</tbody>
</table>

From the table above, the high mean scores ranging from 2.37 to 3.14 indicated that some items identified were accepted as teachers’ attitude and academic performance of secondary school students in Biology. Hence, the mean scores were above the criterion mean, score was less than the criterion mean. It is evident that teachers’ attitude have great influence on students’ performance.

Hypotheses 2: There is no significant difference between the effect of teachers’ attitude in urban and rural locations on academic performance of secondary school students in Biology.

Table 1.2b: Mean, standard deviation and Z-statistics on teachers’ attitude and performance in Biology.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>SD</th>
<th>Z.cal</th>
<th>Z.cri</th>
<th>DF</th>
<th>Level of sign.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Teachers</td>
<td>180</td>
<td>2.93</td>
<td>0.61</td>
<td>1.03</td>
<td>1.96</td>
<td>88</td>
<td>0.05</td>
<td>Accepted</td>
</tr>
<tr>
<td>Rural Teachers</td>
<td>180</td>
<td>2.89</td>
<td>0.72</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data in table 1.2b above, shows that the Z-calculated value of 1.03 is less than Z-critical value of 1.96 at 0.05 level of significance with 88 degree of freedom. The null hypothesis (Ho) was accepted. This means that there is no significant difference between the mean scores of rural and urban teachers on teachers’ methods of teaching and performance of secondary school students in Biology. This finding agrees with Akinfe, Olofinniyi & Fashiku (2012) who carried out a study on the effect of instructional methodology and students’ performance. These instructional methods are referred to as technical skills of teaching. At the end of the study, Akinfe, Olofinniyi & Fashiku (2012) found that only effective method(s) of teaching can bring about effective learning; hence teachers should be creative and dynamic in this regard to ensure that there is a positive change in average students’ performance in the specific subject areas.
Also the finding of this study revealed that teachers’ attitudes have great influence on students’ performance being that teachers’ personality and attitude towards their teaching are factors contributing to performance of students in Biology. Kratz (2009) has shown that teachers’ attitudes are important factors in the learning process as well as in academic performance Kratz (2009) found a significant difference between teachers’ attitudes and students' academic performance, similarly Adesoji (2002) ascertained that attitude is an important factor that determines achievement of students in sciences.

CONCLUSION
The following conclusions were made by the researchers.
- It was found that the methods employed by teachers’ in an attempt to impact knowledge to the student’ should be appropriate for every topic to each lesson.
- The teacher has to be aware of the current innovations in teaching so as to determine the most suitable method(s) for a particular topic.
- Teachers’ attitude towards Biology should be friendly and explicit as this has a strong influence towards students’ Biology achievement as well as the students, attitude towards Biology.

RECOMMENDATIONS
➢ Teachers’ methods of teaching should be student-friendly (ensures the participation of both the teachers and the students). This will enhance their learning leading to better assimilation and performance in both internal and external examinations.
➢ Teachers should combine more than one suitable teaching method while teaching a particular topic of lesson or concept. This will help the students’ understanding of the concept being taught.
➢ Attitudinal training workshops and seminars should be organized for teachers of Biology to properly, inculcate into them, the right attitudes to be exhibited during Biology lessons. This will enable Biology teachers eliminate some negative attitudes that hinder good achievement in Biology by the students.

REFERENCES