PERCEPTION OF BIOLOGY TEACHERS ON FACTORS AFFECTING TEACHING AND LEARNING IN SOME SELECTED SENIOR SECONDARY SCHOOLS IN EDUCATION DISTRICT I, LAGOS STATE

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Abstract

The study investigates how many factors can affect students' performance in teaching and . A modified structure 20 (twenty) items questionnaire was used to gather data. The data were analyzed using frequency count and simple percentage, while the hypotheses were tested with a Chi-square (χ^2) statistical tool at a 0.05 level of significance. Results of the study showed no significant difference in the factors affecting the teaching and learning of Biology, and there is no significant difference in the The descriptive survey research design was used for this study. This study's population comprised all Biology teachers from public senior secondary schools in learning biology. The purpose of this research work is to examine the perception of biology teachers on factors affecting teaching and learning in some selected senior secondary schools in Education District I, Lagos State., Two (2) research questions and two (2) guided the study. Education District I of Lagos State. A sample of Sixty (60) Biology teachers was selected using the purposive sampling technique solution on factors affecting the teaching and learning of Biology. Based on the study's findings, several recommendations were made among which is that qualified Biology teachers should be recruited to handle the subjects professionally. Also, the government should provide adequate facilities needed for the teaching and learning of biology in schools to encourage learning. More so, students must be enabled to develop and sustain a positive attitude toward studying Biology in secondary schools and beyond.

Keywords: Perception, biology teacher, teaching and learning

Introduction

Biology is a branch of natural sciences; the other two parts that make up natural sciences are Physics and Chemistry. Biology deals with structures, internal functioning, and the developmental process of maintaining life. The two parts of Biology are Zoology and Botany. Biology as a science subject involves a high degree of practical activities to understand better and appreciate the subject. Also, biology reveals its meaning through its functions and importance to society. (Dodds and Robert, 2015)

Stone (2018) offers a more functional definition for biology by defining it as the study of life plants and animals, including their existing environment. This definition portrays biology as an all-encompassing field of study that points toward the understanding of life in general, that is, relating to all living and non-living things to better the condition of man in societies. The study of the subject is very interesting to a large extent, but one needs much understanding of what science is all about. However, to understand what science is all about, one would need measurement, investigation, observation and making deductions through practical work. It is, therefore, not in doubt that laboratory practicals have a very significant role in understanding Biology. It has become an indispensable means of inculcating students' scientific knowledge, skills and attitude. This is due to the growing demand for Science and Technology applications in today's industry. Also, in view of the influence of the new philosophy of education which emphasizes students' activity as a natural expression of biological development, the use of practical approaches in teaching and learning Biology seems unavoidable (Nwosu, 2011). With the present-day Science Curriculum, which re-emphasized the usual teacher-centred and verbal accumulation of knowledge as a method of teaching science, laboratory activities have now dominated the scene. Through laboratory activities, students can experiment and use the scientific method in problem-solving. Practical biology, an aspect of psychomotor learning, emphasizes the use of the hands in co-ordination with the other parts of the body, particularly the brain, to acquire scientific knowledge (Akande, 2010).

Akinwoye (2015) identified many factors that affect teaching and learning biology. These include inadequate or relevant materials, lack of equipment, wrong choice of methods, non-assignment or roles, non-definition of defined objectives and so on. Akinwoye asserted that these factors hinder the teaching and learning of biology in senior secondary schools. However, the ability of individuals to teach and learn Biology requires an attitude. Kane (2013) defined attitudes as an organization of motivational, emotional perceptional and cognitive processes concerning some aspects of the individual's world. In light of this definition, Erazmus (2012) opined that attitude could be regarded as predispositions to classify sets of objects or events and react to them with some sense of evaluation and consistency. Attitude affects all the activities of man and his environment, and the learning of health education is not exempted in this regard.

Akindele (2014) asserted that one factor that improves teaching and learning of Biology as a subject is good mastery of the subject matter could motivate the learner toward ascertaining academic success. It is against this background that this study was conducted to

examine factors influencing effective teaching and learning of Biology in senior secondary schools.

Statement of the Problem

Students' performance in biology in secondary schools is increasingly becoming too poor. For instance, students' poor performance in biology in external examinations between 2014 and 2018 WEAC results, 29.2% average score out of a maximum of 60 in Biology May/June Paper 2. The problem appears to worsen now that most students try to avoid the subject completely or contract resource persons to write Biology examination for them, where it is compulsory to obtain a credit pass in the subject such as the basic requirement for University admissions. The problem of poor performance in Biology among secondary school students keeps compounding with the teacher's unpreparedness to teach the subject so that students' interest would be motivated to learn it. All of these were considered to investigate the factors affecting the teaching and learning of Biology in senior secondary schools.

Purpose of the Study

This study's main purpose is to examine teachers' perception of factors affecting teaching and learning in some selected senior secondary schools in Education District 1, Lagos State. Specifically, the study is set to determine the following:

- To determine the factors affecting the teaching and learning of Biology.
- To ascertain the solutions to the factors affecting the teaching and learning of Biology

Research Questions

The following research questions guided the study:

- What are the factors affecting the teaching and learning of Biology?
- Are there solutions to factors affecting the teaching and learning of Biology?

Research Hypotheses

In testing hypotheses, we need to compare two variables. So, it is stated thus:

- There is no significant difference between the perceptions of male and female teachers on the factors affecting the teaching and learning of biology
- There is no significant difference between the perceptions of male and female teachers on the solutions to factors affecting the teaching and learning of biology.
- **Research Methodology**
- The descriptive survey research design was adopted for the study. The population comprised all Biology teachers from public senior secondary schools in Education District I of Lagos State. While the sample was made up of Sixty (60) Biology teachers from Thirty (30) senior secondary schools in the area using the purposive sampling technique to select all the Biology teachers from each school. This study's instrument consists of a questionnaire administered to the selected secondary school teacher. The instrument was designed by the researcher and validated by an expert who ensured the content validity and reliability of the instrument. To determine the reliability, copies of the questionnaire were administered to teachers by the test-retest method, which was done by administering the same item of questions to teachers who were not in the study's sample. A correlation coefficient value of 0.72 was obtained to

show the instrument's reliability. The data analysis method used for this study is Frequency and percentage count, while the hypotheses were tested using Chi-square (χ^2) statistical tools. The questionnaire was structured in line with the research questions. It has a four (4) point modified scale questionnaire. The options were strongly agreed (SA), Agreed(A), Disagreed(D) and Strongly disagreed (SD).

Presentation of Results

Research Question 1: What factors affect biology teaching and learning?

Table 2: Factors affecting teaching and learning of Biology

S/N	Statements	SA	A	D	SD	Total
1.	The poor foundation of students in basic science poses a problem in learning biology.	19 (31.7%)	28 (46.7%)	9 (15%)	4 (6.6%)	60
2.	There are no incentives to motivate the teachers to put in their best.	8 (13.3%)	18 (30%)	15 (25%)	19 (31.7%)	60
3.	Students' psychological fear of science poses a problem in learning biology.	23 (28.3%)	31 (51.7%)	4 (6.7%)	2 (3.3%)	60
4.	Most biology teachers do not teach biology well because of their poor foundation in science.	2 (3.3%)	7 (11.7%)	33 (55%)	18 (30%)	60
5.	The lack of instructional aids makes the teaching of biology difficult.	25 (41.7%)	31 (51.7%)	2 (6.6%)	2 (6.6%)	60
6.	There are inadequate science teachers in terms of number and quality.	26 (43.3%)	34 (56.7%)	-	-	60
7.	Students are no longer interested in hard work.	22 (36.7%)	34 (56.7%)	2 (3.3%)	2 (3.3%)	60
8.	Large class sizes do not allow students to concentrate during practical biology lessons.	24 (40%)	33 (55%)	3 (5%)	-	60
9.	Biology teachers' workload does not allow them to give students their best in class.	11 (18.3%)	15 (25%)	24 (40%)	10 (16.7 %)	60
10.	Students cannot perform well in the teaching and learning of biology due to the lack of facilities in the laboratories.	17 (28.3%)	35 (58.3%)	5 (8.3%)	3 (5%)	60

Table 1 shows that 19 (31.7%) of the respondents strongly agreed, and 28 (46.7%) agreed that the poor foundation of students in basic science poses a problem in learning biology. In comparison, 9 (15%) disagreed, and 9 (6.6%) strongly disagreed with the statement. It was also noted that 8 (13.3%) of the respondents strongly agreed and 18 (30%) agreed that there are no incentives to motivate the teachers to put in their best, while 15 (25%) disagreed and 19 (31.7%) strongly disagreed with the statement. Also, 23 (28.3%) of the respondents strongly agreed, and 31 (51.7%) agreed that students' psychological fear of science poses a problem in learning biology, while 4 (6.7%) respondents disagreed and 2 (3.3%) strongly disagreed with the view. Furthermore, 2 (3.3%) of the respondents strongly agreed, and 7 (11.7%) of them agreed that most biology teachers do not teach biology well because of their poor foundation in science. In comparison, 33 (55%) respondents disagreed, and 18 (30%) strongly disagreed with the statement. Table 1 further shows that 25 (41.78%) of the respondents strongly agreed, and 31 (51.7%) agreed that the lack of instructional aids makes teaching biology difficult. In comparison, 2 (6.6%) respondents disagreed, and 2 (6.6%) strongly disagreed with the statement. Also, it shows that 26 (43.3%) of the respondents strongly agreed, and 34 (56.7%) agreed that there are inadequate science teachers in terms of number and quality. While 22 (36.7%) of the respondents strongly agreed and 34 (56.7%) agreed that students are no longer interested in hard work while 2 (6.6%) disagreed and 2 (6.6%) strongly disagreed with the statement. And 24 (40%) of the respondents strongly agreed, and 33 (55%) agreed that large class sizes do not allow students to concentrate during practical biology lessons, while 3 (5%) respondents disagreed with the

view. Furthermore, 11 (18.3%) of the respondents strongly agreed, and 15 (25%) of them agreed that Biology teacher's workload does not allow them to give students their best in class, while 24 (40%) respondents disagreed and 10 (16.7%) strongly disagreed with the statement. Table 1 further shows that 17 (28.3%) of the respondents strongly agreed, and 35 (58.3%) agreed that students could not perform well in the teaching and learning of biology due to the lack of facilities in the laboratories. In comparison, 5 (8.3%) respondents disagreed, and 3 (5%) strongly disagreed with the statement. The data in Table 1 showed that factors affecting the teaching and learning of Biology include but are not limited to the poor foundation in basic science, psychological fear of science, lack of instructional aids, inadequate science teachers and large class size.

Research Question 2: Are there solutions to factors affecting the teaching and learning of Biology?

Table 2: Solutions to factors affecting teaching and learning of Biology

S/N	Statements	SA	A	D	SD	Total
11.	The teacher should arouse the interest of the students while introducing the topic.	26 (43.3%)	34 (56.7%)	-	-	60
12.	The lesson should be related to a real-life situation.	24 (40%)	36 (60%)	-	-	60
13.	The class size should be such that the teacher can manage.	29 (48.3%)	31 (51.7%)	-	-	60
14.	The teacher should use instructional materials to make the teaching real.	34 (56.7%)	26 (43.3%)	-	-	60
15.	Teachers should use the appropriate method to drive home their lesson.	25 (41.7%)	35 (58.3%)	-	-	60
16.	The teacher should make the students do more practical work than theoretical.	23 (28.3%)	37 (61.7%)	-	-	60
17.	The learning environment should be made conducive for effective teaching/learning to take place.	35 (58.3%)	25 (41.7%)	-	-	60
18.	The necessary facilities needed in a school to facilitate teaching/learning should be made available.	37 (61.7%)	23 (28.3%)	-	-	60
19.	The teacher should endeavour to carry all along concerning individual differences.	31 (51.7%)	29 (48.3%)	-	-	60
20.	The teachers should monitor the activities of their students.	26 (43.3%)	34 (56.7%)	-	-	60

Table 2 shows that 43.3%, 40%(51.7%) of the respondents strongly agreed, and 56.7% agreed that the teacher should arouse the students' interest while introducing the topic. It was also noted that 24 (40%) of the respondents strongly agreed, and 36 (60%) agreed that the lesson should be related to a real-life situation. Also, 29 (48.3%) of the respondents strongly agreed, and 31 (51.7%) agreed that the class size should be such that the teacher can manage, while 4 (6.7%) respondents disagreed and 2 (3.3%) strongly disagreed with the view. Furthermore, 34 (56.7%) of the respondents strongly agreed, and 26 (43.3%) agreed that teachers should use instructional materials to make the teaching real. Table 2 further shows that 25 (41.78%) of the respondents strongly agreed, and 35 (58.3%) agreed that teachers should use the appropriate method to drive home their lesson., Also, 23 (28.3%) of the respondents strongly agreed, and 37 (61.7%) agreed that the teacher should make the students do more practical work than theoretical. While 35 (58.3%) of the respondents strongly agreed and 25 (41.7%) agreed that the learning environment should be conducive to effective teaching/learning. Also, 37 (61.7%) of the respondents strongly agreed, and 23 (28.3%) agreed that the necessary facilities needed in a school to facilitate teaching/learning should be made available.

Furthermore, 31 (51.73%) of the respondents strongly agreed, and 29 (48.3%) agreed that the teacher should endeavor to carry all along concerning individual differences. Table 2 further shows that 26 (43.3%) of the respondents strongly agreed, and 34 (56.7%) agreed that the teachers should monitor the activities of their students. The data in Table 2 showed that solutions to factors affecting the teaching and learning of Biology include but are not limited to arousing students' interest. In contrast, education, relating the lesson to a real-life situation, small class size, use of instructional materials, use of appropriate teaching method, more practical work and monitoring of the activities of their students.

Test of Hypotheses

Hypothesis One: There will be no significant difference in the factors affecting biology teaching and learning.

Table 3:Summary of Chi-square (χ^2) analysis showing the **difference in the factors affecting the teaching and learning of Biology**

	N	χ^2 cal	χ^2 tab	Df	Remark	Decision
The difference in the factors affecting the teaching and learning z Biology	60	21.15	43.77	36	Not Significant	H_{01} Accepted

As shown in Table 3, χ^2 calculated value is 21.15 while the table value is 43.77 at a 0.05 level of significance given 36 degrees of freedom. Since the χ^2 calculated is lesser than χ^2 tabulated, this led to the acceptance of the hypothesis. Consequently, this shows that there is no significant difference in the factors affecting biology teaching and learning.

Hypothesis Two: There will be no significant difference in the solution on factors affecting the teaching and learning of Biology.

Table 4: Summary of Chi-square (χ^2) analysis showing the difference in the solution on factors affecting teaching and learning of Biology

	N	χ^2 cal	χ^2 tab	Df	Remark	Decision
The difference in the solution on factors affecting teaching and learning of Biology.	60	26.43	43.77	36	Not Significant	H_{02} Accepted

As shown in Table 4, χ^2 calculated value is 26.43 while the table value is 43.77 at a 0.05 level of significance given 36 degrees of freedom. Since the χ^2 calculated is lesser than χ^2 tabulated, the hypothesis was rejected. This shows no significant difference in the solution on factors affecting the teaching and learning of Biology.

Discussion of Findings

This finding supports that one major reason contributing to the poor performance in Biology and the subsequent loss of interest in the subject is the shortage of qualified biology teachers. Also,

the students adduced some reasons for their perception of difficult Biology topics. They attributed their sources of difficulty with the perceived difficult topics to abstractness, complexity, the misconception of topics, unavailable instructional materials, poor attitude of teachers to teaching, lack of practical classes and poor student study habits. Also identified the nature of science itself and its teaching methods as well as the biological level of organization and the abstract level of the concepts as reasons for encountering difficulty in learning biology. Other sources included overloaded biology curricula, the abstract and interdisciplinary nature of biological concepts, and difficulties with the textbooks. (Akande, 2010).

Also, some ways the difficulties could be remedied include: using varied strategies that would involve appropriate instructional materials, use of hands-on and minds-on approach, integrating biological concepts into daily life and provision of adequate and functional resources. Nwosu(2011) asserted that in remedying the problem of teaching biology, the students suggested using varied strategies that would involve appropriate instructional materials, use of hands-on and minds-on approaches, integration of biological concepts into daily life and provision of adequate and functional resources. Kane (2013) also noted that the incorporation of computer applications and educational technologies, the use of modelling, simulations and interactive learning strategies shifted the emphasis towards cooperative, inquiry and problem-based learning which greatly contributes to understanding complex biological processes.

Conclusion

In conclusion, the results from the study showed that many factors could affect the performance of Biology students. Therefore, there is a need to find solutions to the problems such as motivating students, teaching from simple to complex, using instructional materials, and appropriate use of different teaching methods for effective subject delivery.

Recommendations

The following recommendations were made based on the findings of the study:

- Teachers should be well motivated to make them approach the teaching of Biology and other subjects with positive minds instead of demonstrating negative attitudes that are inconsistent with their profession.
- Qualified Biology teachers should be recruited to handle the subjects with a professional touch. The use of non-professional teachers in any class should be discouraged completely from secondary schools.
- The government should provide adequate facilities needed for the teaching and learning of biology in schools to encourage learning. Laboratory equipment should equally be available for all secondary schools to facilitate effective and efficient teaching and learning activities in Biology practical and all other science subjects.
- Students must also be encouraged to develop and sustain a positive attitude toward studying Biology in secondary schools and beyond. Motivation skills such as prize awarding and scholarships may spur them into becoming more committed to science-related subjects, especially Biology

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