



**AN ASSESSMENT OF TEACHERS' EFFECTIVENESS IN THE TEACHING OF
BASIC SCIENCE IN SECONDARY SCHOOLS, THE STUDENTS' PERCEPTION.**

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Abstract

The study investigated the perception of students in secondary schools in Obio/Akpor on the effectiveness of basic science teachers. Three research questions and one hypothesis were raised to guide the study. The study adopted the survey design. Three hundred (300) basic science students from ten (10) secondary schools participated in the study. A questionnaire tagged students' perception of basic science teachers' effectiveness (SPBSTE) was used in the collection of data. Data collected were analysed using mean, standard deviation and t-test. Findings of the study revealed that the basic science teachers were competent and efficient in their lesson delivery, they used varied teaching methods and instructional materials, they also have positive attitude towards the students and the subject. Recommendations were made.

Keywords: Basic science, teacher effectiveness, perception, students

Introduction

The teacher is the major determinant of what would be the outcome of teaching – learning process; and the life wire of the quality that exists in any educational institution. Akinnusi, (2007) citing Onu (1995) stated that of all human resources in the educational system, the teacher is the most indispensable. This is why the teacher needs to be trained and certified so as to be able to face the task ahead wholeheartedly.

Effective teaching and learning is considered a basic means to nurture productive citizens. Effective science teaching involves competency and efficiency of the teachers. According to Robinson (2004), teacher competency involves the level of knowledge a teacher possesses, it is this competency and efficiency of the teacher that determines the impact or effect factors like teaching methods, use of classroom resources etc. will have on students' achievement.

An effective science teacher is creative, Leiken (2013) is of the view that this creativity could be assessed based on the level of the teacher's mastery of the subject matter, the originality, fluidity and flexibility. A creative science teacher promotes novelty in his teaching. An effective science teacher who has good mastery of subject matter can stand the chance of breaking topics into meaningful sections so that the students can get the competencies for themselves easily and faster. It is arguable that effective teachers are supposed to have good amount of knowledge that is capable of making them successful in their classroom delivery. To this end Adedoyin (2011) is of the opinion that among the characteristics of effective teachers is that they should have a good amount of specialized creative knowledge that nourishes pedagogical content knowledge, which is used to generate ideas for effective teaching.

Tucker and James (2015) included the following as some key qualities of effective teachers:

- They hold certification of some kind within their field.
- They have formal teacher preparation training
- They are caring, respectful and fair
- They dedicate extra time to instructional preparation and reflection
- They have high expectations for themselves and their students
- They enhance instruction by varying instructional strategies, activities and assignment

Ajiboye (1999) listed the following as qualities that effective science teachers should possess; skilfulness, caring and creative, good communication ability, effective use of instructional materials and good student – teacher relationship. The importance of the teacher as captured in the National Policy of Education NPE (2004) includes producing teachers who are expected to exhibit the following qualities among others.

1. Highly motivated, conscientious and efficient classroom teachers.
2. Further the spirit of enquiring and creativity.
3. Intellectual and professional background adequate for the assignment and be adaptable for the assignment.
4. Have enhanced commitment to the teaching profession.

Ayodele and Adegbile (2007) itemised three qualities of effective teachers which are;

1. They are real in that they are:
 - a) Honest, open and genuine
 - b) Relate to learners individually
 - c) React to students honestly and allow students to do the same
2. They accept their students unconditionally in the sense that they:

- a) Value them as persons of worth
 - b) Trust the students, viewing them as good and honest
 - c) Do not reject a student because of his bad side but care for them
3. They have empathetic understanding in the way that:
- a) They put themselves in the students' place and try to understand them;
 - b) They try to make students feel relaxed.

The objectives of teaching integrated science now basic science according to the National Curriculum for Junior Secondary Schools are aimed at enabling the students exposed to it to acquire the following skills:

- i) Observing carefully and thoroughly;
- ii) Reporting completely and accurately what is observed;
- iii) Organising information acquired;
- iv) Generalising on the basis of acquired information;
- v) Predicting as a result of the generalisation;
- vi) Designing experiments including controls where necessary to check predictions;
- vii) Using models to explain phenomena where appropriate;
- viii) Continuing the process of inquiry when new data do not conform to prediction.

Thus the essence of a basic science course is to begin to teach students what science is and how scientists work. The basic science teacher should therefore carry out the central task of teaching which is to develop skills, competence and intellectual capacities, for this to be actualised, learning should be organised for authentic results which will shape the students' mental development, affect their thinking and influence their actions, (Mogbo and Gana, 2014).

The need for effective basic science teaching is very important. According to Aba (2006) basic science education may be the highest form of scientific knowledge some Nigerian students may be exposed to in the formal education setting, because some of the students may not go beyond the junior secondary school level, for many who go above this level, may venture into other non-science related courses. This is the reason why effective basic science teaching is important for the success and sustenance of basic science education in the universal basic education (UBE) programme.

From the above it could be seen that a lot is involved in what constitutes science teacher effectiveness. For the purpose of this study, science teachers' effectiveness will focus on how teachers carry out their responsibility of teaching to bring about quality basic science

education, hence this will include teacher knowledge of subject matter, use of varying methods/instructional materials and teachers' attitude towards teaching and the students.

Teachers who become dissatisfied with their teaching conditions and environment are likely to show negative attitude towards teaching and learning of their students. It is necessary that the attitude towards the subject must be examined because they play vital role in teaching and learning processes (Sprinthal, 2007). Mucella, Melis and Ahu (2011) found that teachers who have positive attitude influence students personality positively as well as their life and performance, based on this, they are of the opinion that teachers' role in education should go beyond simple knowledge transformation.

Teacher effectiveness is linked with the teacher's ability to apply the instructional strategies and cover the appropriate material outlined in the scope and sequence of the selected curriculum. Consistent, high-quality instruction is directly affected by the teachers' level of mastery in using the instructional materials, (Ajetumobi and Bashorun, 1999).

Statement of Problem

The problem of low performance of students has continued to be a matter of concern to many. A number of factors have been pointed out by researchers as been contributory to the problem of low performance. Various studies have also been carried out in a bid to find out how effective teachers are in their lesson delivery, since effective teaching aids effective learning and performance. Mogbo and Gana (2014) emphasised that the central task of effective teaching is to develop skills, competence and intellectual capacities in students. It is for the purpose of readdressing the issue of teacher effectiveness that the study was carried out. The study sought to assess how effective the basic science teachers are in their lesson delivery in some selected secondary schools in Obio Akpor Local Government Area of Rivers State.

Research Questions

1. Are the teachers teaching basic science competent and efficient?
2. Do the basic science teachers use varying teaching methods and instructional materials while teaching?
3. What attitude do the basic science teachers have toward the subject and their students?

Hypothesis

There is no significant difference in the mean ratings of basic science teachers' level of effectiveness by the students in secondary schools.

Method

The descriptive survey design was adopted for the study. The study was carried out in Obio/Akpor local government. The target population for the study included all the students in the public secondary schools in the local government area. A sample of three hundred (300) students was randomly selected from ten (10) secondary schools in the Local Government Area, thirty (30) students were sampled from each school.

Instrument for Data Collection

The questionnaire tagged Students' Perception of Basic Science Teachers Effectiveness Questionnaire (SPBSTEQ) was used for collection of data for the study. The instrument was a four (4) point Likert scale of (SA) Strongly Agreed, (A) Agreed, (D) Disagreed, and (SD) Strongly Disagreed.

The instrument was validated by two experts, their corrections were effected, the final copy was pilot tested on thirty(30) basic science students from a school which did not take part in the study and a cronbach alpha reliability coefficient value of 0.87 was obtained. A mean score value of 2.5 was used as the mark for analysing the statements. For all the positive items, a mean value of 2.5 and above was accepted as significant, while for the negative items,(items 4 and 5) a mean value of below 2.5 was accepted as significant.

Mean and standard deviation was used to answer the research questions while t-test was used to test the null hypothesis at 0.05 levels of significance.

Results

Research Question 1: Are the teachers teaching basic science in secondary schools competent and efficient?

Table 1: Mean and standard deviation showing teachers' competence and efficiency

S/No	Items	Mean	Std dev	Decision
1.	We understand the lesson almost every time our basic science teacher teaches us	3.40	0.80	Accepted
2.	Our basic science teacher solves problems in the classroom and arrives at the correct answer	3.00	0.63	Accepted
3.	Our basic science teacher is an authority when he is teaching	3.20	0.40	Accepted
4.	Our basic science teacher copies solved problems from textbooks	2.32	1.28	Accepted
5.	We often correct our teacher when he is teaching	2.40	0.98	Accepted
6.	Our basic science teacher encourages us to make research and study on our own	3.42	0.78	Accepted

In table 1 of the six (6) items listed, positive items 1,2,3 and 6 achieved mean score of 2.5 and above and negative items 4 and 5 got mean values of below 2.5 which are accepted as

significant. It was therefore agreed that the teachers that teach basic science are competent and efficient.

Research Question 2: Do the basic science teachers use different teaching methods and instructional materials while teaching?

Table 2: Mean and standard deviation showing the usage of varying teaching methods and instructional materials

S/No	Items	Mean	Std dev	Decision
7	Our basic science teacher uses different instructional materials like charts to help us understand	3.09	0.86	Accepted
8.	Our basic science teacher teaches us with different methods	3.17	1.00	Accepted

From table 2 above, the two items were above the criterion mean and were therefore accepted that the teachers use different teaching methods and instructional materials.

Research question 3: What attitude do basic science teachers have toward the subject and their students?

Table 3: Mean and standard deviation showing attitude of teachers toward the subject and their students.

S/No	Items	Mean	Std dev	Decision
9.	Our basic science teacher is always smart, active and cheerful	2.80	0.98	Accepted
10.	Our basic science teacher has good rapport with us	3.40	0.80	Accepted
11.	Our basic science teacher gives each of us individual attention	3.20	0.40	Accepted
12.	Our basic science teacher helps us to develop interest in the lesson	3.00	1.09	Accepted
13.	Our basic science teacher sees us as good students and encourages us	3.20	1.16	Accepted
14.	Our basic science teacher loves and enjoys teaching the subject	3.40	0.80	Accepted

From table 3 above, the result revealed that the teachers have a positive attitude towards the subject and their students.

Ho1: There is no significant difference in the mean ratings of basic science teachers' level of effectiveness in the secondary schools.

Table 4: Summary of independent sample t-test on the difference in the mean ratings of Basic science teachers' level of teaching effectiveness.

Variable	N	Mean	Std. dev	T	df	Sig. (2-tailed)	Decision
Level of teachers' effectiveness	300	43.70	6.63	114.151	299	0.00	Sig

Table 4 showed that the calculated t-value is 114.15 while its corresponding table value (t-critical) is 1.96 at 0.05 alpha levels. The calculated value is greater than the table value. This means that there is a significant difference in the mean ratings of basic science teachers' level of effectiveness in secondary schools. Therefore, the null hypothesis was rejected.

Discussion

It has been established from the findings that the basic science teachers are competent and efficient. This is contrary to the findings of Ogunkunle (2009) who found out that the teachers teaching mathematics in the lower UBE session do not have the competence required in teaching the subject. The findings also showed that the basic science teachers use different teaching methods and varied instructional materials while teaching. This conforms to the view of Afe (2003) that teacher effectiveness includes method of teaching by the teacher. It has also been established that the teachers teaching basic science in the secondary schools have a positive attitude towards the subject and the students. This is in agreement with the work of Mucella, Melis and Ahu (2011) who found that teachers who have positive attitude influence students personality positively as well as their life and performance.

Conclusion

The study revealed that the basic science teachers were competent and efficient in their teaching. It was also found that the teachers made use of various teaching methods and instructional materials while delivering their lesson and that they have positive attitude toward the students and the subject. This implies that there is cooperation between the teachers and the students.

Recommendations

The following were recommended to ensure and enhance better teaching effectiveness:

- Regular training and re-training of basic science teachers to keep them up to date with the latest methodologies and knowledge in the subject area, this could be in the form of workshops, seminars, in service and sandwich programs
- The government and the school management should endeavour to provide conducive environment for teaching and learning.
- The teachers should always be motivated; this could be in the form of regular and prompt payment of salaries and commendations when appropriate.

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