

Problems and Prospects of Teaching and Learning of Science in Senior Secondary Schools in Vandeikya L.G.A of Benue State.

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Abstract: This was conducted to identify the problems and prospects of teaching and learning of science in Vandeikya Local Government of Benue state. Data was collected through the use of questionnaires from twenty (20) teachers and one hundreds (100) students in five (5) secondary schools in the area. The study has five (5) research questions and five (5) hypotheses, the data obtained were analyzed using simple mean as its statistical tools and Minitab statistical analysis software was used to calculate the research hypothesis, to run the paired t-test between the various variables. The findings show that there were absence of well equipped laboratories, libraries and classrooms and also there were lack of qualified science teachers. It was recommended that N.C.E. and B.s.c(ed) degree science be employed to alleviate the gross loss of teachers. The study also reveals the type of method used by most teachers in science teaching, as teacher centered. And also science teachers should be given allowance on a short term basis for the purpose of purchasing or improvising materials and equipment in order to supplement the high cost of factory made equipments among others for better teaching and learning of science in senior secondary schools.

Keywords: Performance, Equipment, Teaching Aid, Instructional Materials, Administrators.

1. Introduction

Science was introduced into the Nigeria educational system, treated as general science but was later broken down into three disciplines Biology, Chemistry and Physics. [13] This practice restricted to only higher classes with little or no room for those in the junior classes. However, the period from 1968 to 1970 witness a series of joint effort by science teachers association of Nigeria (STAN) and comparative education studies and adoption centre (CESAC), to redesign science to meet the need of less science oriented students and to be taught in

junior secondary school classes hence the introduction of integrated science (Benjah, 1983).

In Nigeria the system of education was inherited from the Britain shortly after independence, it was found to be inadequate and incapable of the caliber of youth with the higher orientation and altitude to salvage the nation from adverse economic effect of inadequate production of goods and services [8]. The effect of public opinion according to [9] caused plans to be made for series of national curriculum conferences to redirect the cause of Nigeria education in the face of new felt need and aspiration of the public in 1969.

In 1973 a national seminar drawn from experts from a wide range of interest within Nigeria was concerned. The recommendation of the seminar after further deliberations and modifications by the government because what we know today as the national policy on education first published in 1977 [10]. According to national policy on education the national education aims and objectives to which the philosophy of education is directed are;

- a. the inculcation of national consciousness and national unity
- b. the inculcation of right type of values and attributes for the survival of the individual and the Nigeria society
- c. the training of the mind in the understanding of the world round
- d. the acquisition of the appropriate skills abilities and competences both mental and physical as equipment for the individual to live in, and contribute to the development of the society. [12]. There is no doubt therefore that the nation policy on education if well implemented will enable the nation attain parity with the leading nation of the world

with regard to technological development as well as promote the spirit of self reliance in Nigeria.

1.1. RESEARCH HYPOTHESIS

This study will be guided by the followings:

1. here is no significant difference between qualification of teachers and students performance in science
2. here is no significant difference between the infrastructural facilities and students performance in science
3. here is no significant difference between the method of teaching and student performance in science
4. here is no significant difference between the materials resources used in the teaching and students performance in science
5. here is no significant difference between the teachers altitude with students performance in science.

1.1.1. REVIEW OF RELATED LITERATURE

Science teaching in Nigeria date back to 1967 [1] was introduced as nature science and hygiene, later it metamorphosed to biology, physics and chemistry .As a step towards presenting science to the child reflecting the culture and tradition of Nigeria.

Result from previous research on science revealed that teachers give notes in science lessons [3,12,15] This style of teaching has serious implication for cognition achievement in integrated science.

Findings also indicated that a laboratory base method were processes of science and could be affection in improving the achievement of students in science. [11] observe that where students engage in the process of science in their school, their level at achievement in science was higher. The process of science provides students with unique opportunity to study abstract concepts and generalization through the medium

of “Real” as students interact with teaching materials. According to Baez and Alles (1973) there is a growing awareness that the adoption of integrative approach to school science throughout secondary education could serve the realization of the goals of general education better.

In another study [3] constructed a standard test gender and technique to fostering occupation choice among students. From the above review, it is clear that some students favour the use of certain instructional techniques promoting science knowledge acquisition while others do not.

Several educationist including [3, 1,12 ,14 and 16] have emphasize the major objectives of science education is the development of science process skilled among school aged children. Students knowledge in science in general may be to several learning factor including the shortage of scientific equipments lack of laboratories facilities, cognitive function of students, home condition, peer group, pedagogy and emotional predisposition of students. Science as we all know is an experimental subject; this being the case there is no substitute for experimental observation in the study of science guarantee among factors by adequate equipped functional science laboratories which must be made accessible to science teachers and students.

Also in related research [2] confirmed too many teachers have poor level of pedagogic and content knowledge content knowledge which may lead to a chain of consequence

2. METHODOLOGY

This study used descriptive tools and techniques in collecting its data , responses for the study whose targets is to investigate the problems and the prospects of teaching and learning science in senior secondary school in Vandeikya Local Government Area of Benue State.

2.1. SAMPLE AND SAMPLING TECHNIQUE

The random sampling was used. Five (5) secondary senior were randomly selected from the 26 senior secondary schools in Vandeikya Local Government Area. Using hat and draw in selecting the schools. The names of all the 26 senior secondary schools will be written in small piece of paper which will be squeezed and drop in a plate, the random sampling design is chosen to give equal chance in the selection of the school.

3. INSTRUMENTATION

The instruments utilized for this study were two structured questionnaires designed for teachers and the students for data collection. Each of the instrument design for all the teachers contain the bio data, names of the school they teach and qualification. While the second part deals with the problems and prospects of teaching and learning. The first part of the questionnaire design for the students contains bio data too while the second parts deals with their reaction to the problems and prospect of teaching and learning science. Names of respondents were not made mandatory therefore anonymity of persons were allowed if so wished, the respondents were ask to tick against the responses of their choice using one of the following; Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree(SD).

3.1. DATA COLLECTION

The questionnaires were administered to the respondents on the spot. A total of one hundred and twenty (120) of usable questionnaires set were filled and returned to the researcher and researcher assistant. Scores were obtained via likert scale with respect to each returned questionnaires from the sample schools.

3.1.1. DATA ANALYSIS

The likert scale was used and values assigned to the different statement as shown below; Strongly Agree (SA) 4points, Agree (A) 3points, Disagree (D) 2points, and Strongly Disagree (SD) 1point.

The mean for each analysis were obtained using the formula

$$\bar{X} = \frac{\sum X}{N}$$

N

Where X= mean of the responses

Σ = summation

N = number of scales

4. Results

4.1. Hypothesis one

There is no significant difference between qualification of teachers and students performance in science.

Table 1. Performance versus Qualification

Performance	15	34.53	9.41	2.43
Qualification	15	4.00	2.95	0.76
Difference	15	30.53	10.28	2.65

95%CI for mean difference (2.84, 36.23)

T-Test of mean difference = 0, (vs net=0): T-Value =11.50, P-Value=0.02

The null hypothesis is rejected since the P-value is greater than 0.01 level of significant.

4.1.1. Hypothesis Two

There is no significant difference between the infrastructural facilities and student performance in science

Table 2. Performance versus Infrastructural Facilities

Performance	15	34.53	9.41	2.43
Qualification	15	4.00	2.98	0.77
Difference	15	30.53	9.57	2.47

95%CI for mean difference (24.84, 36.83)

T-Test of mean difference = 0, (vs net=0): T-Value =12.36, P-Value=0.033

The null hypothesis therefore is rejected and the alternative accepted. There is significant difference between performance and infrastructural facilities.

4.1.2. Hypothesis Three

There is no significant difference between the method of teaching and students performance in science

Difference	15	31.60	9.83	2.54
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95%CI for mean difference (26.15, 37.05)

T-Test of mean difference = 0, (vs net=0): T-Value =12.45, P-Value=0.04

The null hypothesis therefore is rejected and the alternative accepted that there is significant difference between attitude of teachers and the performance of the students.

Table 3. Performance versus Method

Performance	20	25.90	17.34	3.88
Qualification	20	4.00	3.39	0.76
Difference	20	21.90	18.10	4.05

95%CI for mean difference (13.43,30.37)

T-Test of mean difference = 0, (vs net=0): T-Value =5.41, P-Value=0.067

The null hypothesis is rejected as the P-value is greater than 0.01 level of significant. We Therefore reject the null as the P-value is greater than 0.01 and accept the alternative.

4.1.3. Hypothesis Four

There is no significant difference between the teachers altitude with students performance in science

Table 4. Performance versus Availability of resources

Performance	15	34.53	9.41	2.43
Qualification	15	2.07	2.46	0.64
Difference	15	32.47	10.43	2.69

95%CI for mean difference (26.69, 38.24)

T-Test of mean difference = 0, (vs net=0): T-Value =12.05, P-Value=0.062

The null hypothesis therefore is rejected as there exist a significant difference between performance and available resource material.

4.1.4. Hypothesis Five

There is no significant difference between the available resources and students performance in science

Table 5. Performance versus Attitude

Performance	15	34.53	9.41	2.43
Qualification	15	2.93	2.60	0.67

5. DISCUSSION

The problem and prospect of teaching and learning of science in senior secondary schools in vandeikya local government Area of Benue state are; the finding which reveals that the qualification of teachers has a lot to do with the students performance in most school. Table 1 result shows that there are no enough qualify teachers in teaching science.

Therefore the available ones are not specialized teachers or well trained ones

Findings confirms the work of [6] who reflected that teaching is more than impacting knowledge to students in order to prepare them for their future rather in involves more than pumping a mixture of knowledge into the brain of our students without bearing in mind the level of readiness and maturity.

[4] also state that large numbers of teachers in our secondary schools are not qualify therefore are not skilled in their technique of assessment for the student to be able to perform excellently in science, there is need for more graduates of B.sc (Ed) and N.C.E holders which are specialized in science subjects to be employed to teach the course.

From table two the result also reveals the problem confronting the performance of students in science which is lack of infrastructural facilities such as; classrooms library and laboratories. Results shown that school in Vandeikya Local Government Area lack these basic amenities were you find students roaming round the school compound or even sit down under an orange tree for lesson In line with[5] who opined that non availability of science laboratory means that most science

teachers and students rarely have a chance to even work into science laboratory where they can use the basic apparatus as this is the exclusive right of senior science students. So the school administrator and the government should endeavour and build conducive classroom and also a well equipped science laboratories and libraries

Table 3: Research also showed that the wrong application of teaching method used by most teachers [6] holds his view that a good teaching is characterized by the use of the method for attainment of specific goals in mind. For example guided strategy methods of teaching and field – trips methods of teaching.

Table 4: Result also reveal that adequate resources materials for the effective teaching and learning of science are not available in most school in Vandeikya Local Government Area and are also one of the problems confronting the teaching and learning of science.

Stan [14] believed that home made visual implements or equipment are cheap yet effective and help to dispel the notion that science is exotic form of magic learning importing from overseas and also in line with [16] who recommended that teachers should equipped themselves with aid and instructional materials and also use laboratory facilities during teaching process and also students be encourage to do research in the laboratory.

Finally; table 5 findings shows that there was significant difference between teachers attitude and students performance in science. Teachers attitude can affect the child both positively and negatively because there is a saying that says train up a child in the way he should grow so that when he grows he will not depart from it.

6. CONCLUSION

Base on the data collected and its analysis science students lacks qualified teachers to teach them science subjects which need professional to handle it, graduates of B.s.c(ed) in science and N.C.E holders which are specialized in the area. Another factor is the inability of the science teachers to use teaching aids and instructional materials in the classroom this

amount to placing the students in a state of dilemma and confusion such that their interest in the subject continue to duplicate as they move deep in the subject contents. So teachers should endeavour to use instructional materials when teaching and when there is lack, the teachers should be able to improvised to enhance effective teaching and learning of science

7. Furthermore there is a significant difference between the method of teaching and performance of students. It was also observed that well equipped science library and laboratories where textbook and other resource materials are found also affecting the performance of students because the lack and shortage of these aids. So government and school administrators should endeavour to provide some of these basic amenities such as libraries, classrooms, laboratories and instructional materials e.t.c to enhance the effective teaching and learning of science subjects in Vandeikya Local Government Area of Benue State.

7.1. Recommendations

From the findings of the study the researcher therefore recommends the following;

- i. Qualified science teachers should be massively produced at N.C.E and B.sc (Ed) degree level to alleviate the gross shortage of teachers.
- ii. Science teachers should be given impress allowances on a term basis for purchasing or improvising materials equipment and chemicals to supplement the high cost of factory made equipments. This may lead to creativity and other part of teachers to make science easily for students at that level of intellectual development through improvisation at local produce instructional materials.
- iii. Government and school administrators should intensify efforts to assist in provision of Infrastructures such as laboratories, libraries and classrooms facilities in all senior secondary schools in the country to enhance the effective teaching and learning of science.



iv. The parent and guardian should endeavour to encourage their students/wards to study while at home.

V. Field trips should be carried out or organized by the teachers and also the school administrators as often as possible to acquaint students with physical concept in science concept taught in the classroom.

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