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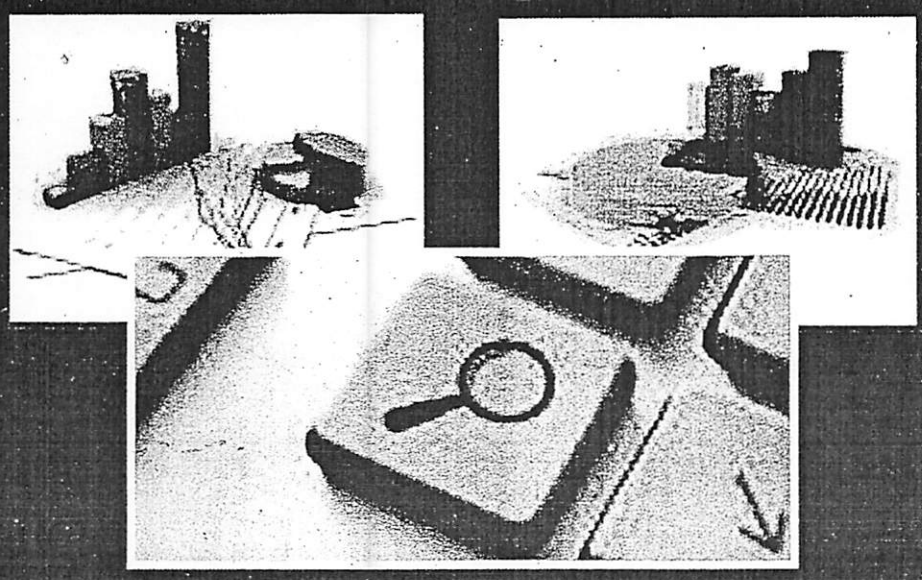

Contents

VIEWS OF BIOLOGY TEACHERS ON THE SIGNIFICANCE OF THE PRACTICAL COMPONENT OF NIGERIAN SECONDARY SCHOOL BIOLOGY CURRICULUM

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ABSTRACT

This study examined the views of biology teachers on the significance of the practical component of the Nigerian secondary school biology curriculum. It was a descriptive survey using questionnaire technique. The sample for the study comprised 250 biology teachers that were randomly selected from 86 senior

secondary schools in the three local government areas that constituted Ilorin research instrument was a researcher- designed questionnaire entitled "View Biology Teachers on the Significance of Biology Practical" (VBTSBP). T research questions were raised and two null hypotheses were formulated. research questions were answered using frequency counts and the percentage w the research hypotheses were tested using chi-square statistical analysis. The re of the study showed that there were significant differences in the views of bio teachers based on their academic qualifications in favour of the unquali teachers while experience did not have significant effect on their views. Base the results of this study, it was recommended that the qualified teachers and biology teachers in general should take the practical aspect of biology import Professional bodies like Science Teachers' Association of Nigeria (STAN) sh organize workshops, appropriate seminars and conferences where bio teachers would be taught on how to organize practical work with ease. Fede State and Local Governments in Nigeria should provide adequate pract materials that Biology teachers can use to improve their teaching and subseque improve learners' knowledge and skills in practical Biology.

KEYWORDS: Biology, Teachers, Significance, Practical Component Curriculum.

Introduction:

Science educators recognize that involvement of students in practical activi does not only develop process skills, but also leads to new discoveries. Ther disparity between the goals and objectives of biology in the curriculum and actual classroom implementation. Important evidence, at least in Nige according to Abimbola (1994) is that many science teachers are either not do practical at all or not doing enough to give their students the confidence that t would need to pass their senior secondary school certificate Examinations. Sc research works revealed that most biology teachers take biology practical to be significant in their teaching. In most cases, the practical aspect would be left u the tail end of the senior secondary classes (SS3) at such a time, the writing of final examinations in either the West Africa Senior School Examinati (WASSE) or National Examinations Council (NECO) Senior School Certifi Examinations remain only few weeks (Amuda, 2011).

Biology practical is a part of Biology involving students in real situations, us genuine materials and properly working with equipment, like other practica other science subjects. Biology practical takes place in the laboratory and thus, known as laboratory work. (Hegarty,1979). Also, Iloeje (1999) defined biol practical as part of biological study that involves the following aspects.

a. Field study
b. Collection of specimens
c. Laboratory study of specimens
d. Drawing diagrams
e. Experimentation (p.5)

The influence of teachers' qualification on the students achievement and performance has been examined in the past studies by Nkpa (1999), Akale and Isa (1993), the Chief Examiners' Report of the WAEC (2004 - 2006) and Ahmed (2014). Their findings revealed that many biology candidates' learning problem in biology practical can be traced to the qualification of biology teachers that taught such students, and that the only overriding key to success of students is qualified teachers (Akale and Isa, 1993). Shuell (1990) observed that as experience is gained in teaching and other areas, individuals get better at what they do. Nageri's (1992) research showed that teachers' experience had a great influence on the teaching of science subjects while Omosewo's (1994) research showed that experience did not have influence on the teaching of physics practical in secondary schools. Ahmed (2003) research showed that experience had influence on teachers teaching and subsequently their students' academic performance.

Also, looking at the enrolment and performance of Biology students in the Senior School Certificate Examinations (SSCE) in Nigeria from 2008-2012 as shown in Table 1, one discovers poor performance all through.

Table 1 shows the performance of students in Biology from 2007-2012. In all these years, less than 50% of the students passed with credit. In the year 2007, 33.37% of the students passed with credit, in the year 2008, 33.94% passed with credit, 2009, 33.87% passed with credit, in 2010, 33.90% passed with credit, there was an improvement in the performance in the year 2011 and 2012 , when 38.50% and 38.82% passed with credit. The implication of this is that there was relatively low performance in SSCE all through. Any factors may have contributed to such low performance. The non-implementation of practical may equally be inclusive.

Table 1

Enrolment and Performance of Biology Students in the Senior Schools Certificate Examinations (SSCE) in Nigeria from 2007-2012.

Year	No of students that sat for the exam	No of students that passed with credit (A1-C6)	% passed (A1-C6)
2007	1,238,163	413,211	33.37
2008	1,259,163	427,644	33.94

2009	1,903,552	644,733	33.87
2010	1,300,418	427,664	33.90
2011	1,505,199	579,432	38.50
2012	1,672,224	649,156	38.82

SOURCE: WEST AFRICAN EXAMINATIONS COUNCIL OFFICE, ILORIN, KWARA STATE, NIGERIA.

Purpose of the study:

The main purpose of this study was to look at Biology teachers' views on the significance of practical components of Nigeria Senior Secondary School Biology Curriculum. Specifically, the study examined;

i. The numbers and percentages of Biology teachers' view on the significance of practical component of Biology curriculum

ii. The significant difference in the views of Biology teachers' on the significance of the practical components of Biology curriculum based on their qualification

iii. The significant difference in the views of Biology teachers on the significance of the practical components of Biology curriculum based on their experience

Research Questions:

i. What are the views of Biology teachers on the significance of the practical component of the senior secondary school Biology curriculum?

ii. Is there any significant difference in the views of Biology teachers on the significance of the practical components of Biology curriculum based on their qualification?

iii. Does teachers' experience has significantly influence the views of Biology teachers on the significance of the practical components of Biology curriculum?

Research Hypotheses:

i. There is no significant difference in the views of Biology teachers on the significance of the practical components of Biology curriculum based on their qualification

ii. Teachers' experience has no significant influence on the views of Biology teachers on the significance of the practical components of Biology curriculum.

Research Methodology

The population for this study was biology teachers in all the senior secondary schools in Ilorin. Two hundred and fifty biology teachers that were teaching biology in 86 secondary schools were purposively sampled for the study.

The instrument used was a teacher questionnaire designed by the researcher entitles "Significance of the Practical Component of Biology (SPCB)." The free format response was utilized where the teachers were asked to state reasons why the practical aspect was ignored or delayed and to suggest other methods of teaching the practical component.

Data Analysis and Results

The Data analysis was based on Research questions and the Null hypotheses.

Research question One states that: **What are the views of biology teachers on the significance of the practical component of the biology curriculum?**

The analysis of the data obtained was presented in Table 2 which was used to answer the research question one.

Table 2

Numbers and Percentages of Biology Teachers' Views on the significance of the Practical Component of the Biology Curriculum

S/no	Teacher views	No. of teachers	% responses
1.	It helps student to have clear understanding of subject matter and makes learning to be real	215	86.0
2.	It carries highest mark (80) of total marks	190	76.0
3.	It makes the teacher to teach well	189	75.6
4.	It gives first hand information and knowledge of the topic of study	186	70.0
5.	It creates interest and awareness of the students	175	59.2
6.	It exposes the learner to the new development in science	148	
7.	It helps the students to comprehend and acquire sound knowledge of the subjects	145	58.0
8.	it encourage individualize method of handling practical work	139	55.6

9.	It allows the teacher to identify the problems of the students	139	55.6
10.	It makes biology to be meaningful and well explanatory to the students	130	52.0
11.	It enhances effective teaching	129	51.6
12.	Both the teacher and student will learn from it.	128	51.2
13.	It is through practical that laboratories can be made functional and useful	122	48.8
14.	It encourages and enhances the development of both cognitive and psychomotor domain of the students	120	48.0
15.	It helps students to understand and assimilate the subject easily as what is seen may not be forgotten	119	47.6
16.	It enhances better understanding of biology as a subject	114	45.6
17.	It remain in memory for life	113	45.2
18.	It enables student express themselves and determines their level of intelligent	104	41.6
19.	It is very relevant to students' success in the subject	102	40.8
20.	It assists in finding out the reality of fact about biology	96	38.4

From Table 2, it was observed that, two hundred and fifteen (215) biology teachers, which constituted 86% of the total, agreed that the practical component is significant because it helps students to have clear understanding of subject matter and makes learning to be real. While one hundred and nineteen (119), which was 76% of the total biology teachers viewed that practical is significant because it carried highest mark (80) of the total mark in WAEC SSCE Exams. One hundred and eighty nine (189) which constituted 75.6%% viewed that practical is significant because it makes teacher to teach well. Over 70% of the sampled teachers expressed that practical gives first hand information and knowledge of the topic of the study and that it creates interest and awareness of the student. 50-60% expressed that it expose that learner to the new development in science, and encourage individualize method of handling practical work, it allows teachers to

identify problems of students and it makes biology to be meaningful and well explanatory to the students.

In addition, 40-49% hand the view that it is through practical that laboratories can be made functional and useful and that practical enhances the development of both cognitive and psychomotor domain of the students. They also viewed that it helps students to understand and assimilate the subject easily as what is seen may not be forgotten. While ninety six (96) of the total teachers, which constituted 38.4%, viewed that, it assists in findings out the reality or fact about biology.

Research Question 2 translated to **Hypothesis One (H01) which states that: There is no significant difference in the views of Biology teachers on the significant of the practical components of Biology curriculum based on their.**

This hypothesis was tested using the Chi-square analysis and the result obtained was summarized in the table 3:

Table 3:

Chi-square (X^2) Analysis Showing Summary of the Views of Biology Teachers on the Significance of the Practical Component of Biology Curriculum Based on Qualification.

	Variable	Responses				Total	X^2 Cal	X^2 table	Remarks
S/No									
		SA	A	D	SD				
1.	Qualified	33.23	46.80	24.0	7.77	115	7.76	6.13	(S) HO Rejected
		(35.81)	(23.40)	(24.40)	(9.49)				
2.	Unqualified	26.27	69.0	26.87	12.86	135			
		(23.86)	(62.53)	(27.47)	(11.14)				
	Total	62.70	115.8	50.87	20.63	250			

From Table 3, the chi-square calculated (X^2 cal) was 7.76, while the Table chi-square (Table X^2) was 6.13 at 0.05 alpha level, with degree of freedom of 3. Since (X^2 cal) is greater than X^2 table. It shows there was a significant difference in the views of Qualified and unqualified Biology teachers. Hence, the HO_1 was rejected which means qualified biology the practical component of biology curriculum.

Research Question 2 translated to **Hypothesis Two (HO2) which states that: there is no significant difference in the views of the Biology Teachers on the significance of the practical component of the biology curriculum based on their experience.**

This hypothesis was tested using (X^2) for the difference between the variable and the analysis of the results obtained was summarized in the Table 4.

Table 4:

Chi-square (X^2) Analysis Showing Summary of the Views of Biology Teachers o the Significance of the Practical Component of the Biology Curriculum Base on Experience

S/No	Variable Responses					Total	X^2 Cal	X^2 table	Remar
		SA	A	D	SD				
1.	Experienced	63.7	34.8	22.7	17.8	126			(NS)
		(70.5)	(35.7)	(20.6)	(14.2)				HO
2.	Less-Experienced	59.5	36.1	18.1	10.3	124	4.48	6.13	Rejec
		(54.7)	(35.2)	(20.2)	(13.9)				
	Total	110.2	70.9	40.8	28.1	250			

From Table 4, the chi-square calculated (X^2 cal) was 4.48; while the table square was (Table X^2) was 6.13 at 0.05 alpha level, with degree of freedom o This shows that there is no significant difference in the views of experienced less experienced biology teachers on the significance of the practical compone of biology. With this, the null hypothesis (HO_2) was not rejected.

Summary of Major findings

1. Biology teachers agreed that the practical component is significant bec it helps students to have clear understanding of subject matter and m learning to be real.
2. Qualifications of the teachers have influence on the view of Bi teachers on the significance of the practical component of Biology.
3. Experience of biology teachers did not have effect on the views teachers on the significance of the practical component of Biology.
4. Various factors made practical work to be delayed or not done at al factors, according to the sample teachers included:
   - Teachers' laziness
   - Lack of laboratories

- Large class size
- Students not willing to bring materials for improvising
- No provision for practical in the school timetable
- Lack of incentive from both government and school authority
- No qualified laboratory assistant for practical management

Discussion, conclusion and recommendation

Research findings of the study are discussed in relation to the research questions and research hypotheses.

The findings show that: Biology teachers agreed that practical component is very significant. These findings support the research conducted by Agbogun in 1992. More so, when teachers were asked to express their own views on why practical is avoided or delayed. The reasons given were the same with the result obtained by Nkpa (1994) but in addition, other reasons mentioned were that ; the syllabus is voluminous, the school authorities are not ready to fund expensive practical and greater percentage of the teachers mentioned that there was no provision for practical, even in the school timetable.

Also, this finding contradicts Oyebanji (2000) and Ahmed (2008) who came out with the results that there was no significant difference in the ratings of male and female biology teachers based on their level of difficulty of ecological and genetics concepts which form aspects of biology practical.

The findings on the views of the biology teachers on the significance of practical work based on qualification is not in agreement with Adeshina's (2007) research on the influence of teacher's qualification towards the use of improvised instructional materials, the findings revealed that there was no significant difference in the attitude of qualified and unqualified biology teachers towards the use of instructional materials, while in this study, qualification influences the view of Biology teachers on the significance of the practical component. Many of the qualified biology teachers expressed their views that Biology practical components is important in a greater number than the unqualified biology teachers.

Moreover, the findings based on teachers' experience is in agreement with Adeshina (2002) on chemistry teachers perception of the characteristics of an effective teaching who stressed that the experienced has no influence on chemistry teacher's perception. This finding also contradicts the findings of Oyebanji (2002 and Ahmed (2008), which revealed that there was a significant difference in the ratings of inexperienced and experienced biology teachers on the teaching of ecological and genetics concepts, which are aspects of biology practical work

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