



Assessment Of The Implementation Of Contents For Secondary School Biology Curriculum In Three States In Southwest, Nigeria

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ABSTRACT

The study assessed the implementation of contents for secondary school biology curriculum in three states in Southwest, Nigeria. The descriptive research design of the survey type was used in this study. The population of the study comprised all Biology teachers in all the public secondary schools in Ondo, Osun and Oyo States. The samples for the study consisted of 180 biology teachers drawn from 180 public secondary schools in the three states. The sample was selected using multistage sampling procedure. An instrument tagged Inventory on Implementation of Biology Curriculum (IIBC) was used for collecting the data for the study. The validation process was exempted since an inventory was used. The responses obtained were collated and analysed using descriptive and inferential statistics. The findings of the study revealed that Biology curriculum contents were not fully covered. It was also revealed that most of the schools do not meet the recommended standard of at least 2 periods per week for practical work in Biology. It was further revealed that the implementation of the contents of Biology curriculum in secondary schools do not differ among the three states considered in this study. It was recommended among others that Biology teacher should intensify efforts to see that the biology curriculum contents are covered and implemented.

Keywords: Implementation, Contents, Biology, Curriculum.

INTRODUCTION

Biology is a very essential science subject and a requirement for advance learning of a number of science related professional courses like medicine, agriculture, pharmacy among others. Biology is also an essential science subject option for many students to meet registration requirement at the Secondary School Certificate Examination (SSCE). In contemporary Nigeria, countless emphasis is placed on science and technological growth. As a result, students moral are boosted to take up science-related subjects. Today, Biology pervades literally every field of human endeavour, and plays an important role in educational progress. This is seen in all the technologically advanced countries of the world today, as a result of scientific investigations (Olayinka, 2016).

Biology is a captivating subject that ranges from microscopic cellular molecules to the biosphere, encompassing the earth surface and its living organisms (Olayinka, 2016). Biology offers contents in the training of students who want to study medicine, nursing, pharmacy, forestry, fisheries and

so on. Requirement of a credit pass and above in Biology is needed for science related discipline. Majority of the senior secondary school students choose Biology as an option in the West African Senior School Certificate Examinations (WASSCE) or National Examination Council's Senior School Certificate Examinations (NECO SSCE). Even some students choose Biology as their first choice because they find it to be an fascinating subject being a subject that is more related to nature.

The goals of the Biology curriculum have been pronounced as laudable according to Agu (2006), Soyibo (2008) and Yabugbe (2009); and there is evidence to show that even though many students find Biology interesting, thereby registering for it in the senior secondary schools, many of them acquire poor result, in the subject year in and year out as shown by Okebukola and Akinbola (2008).

When one inspects the senior secondary school Biology results, in WASSCE and NECO SSCE in Nigeria, and especially in Southwestern states, in the last nine years (2010-2018), one discovers that the results were generally poor. For instance, a report from WAEC Chief Examiner has shown that out of 591,004 candidates that enrolled for Biology examination in 2010, only 25.62% had credit pass and above. Similarly, in 2011, 2012, 2013, 2014, 2015, 2016, 2017 and 2018 only 34.10%, 36.02%, 41.07%, 41.92%, 40.47%, 44.92%, 49.88% and 47.41% respectively, obtained credit pass and above in Biology.

The same trend of poor performance was reported in NECO SSCE Biology results for Nigeria from 2010 to 2018. For instance, out of 498,117 candidates that registered for the examination in 2010, only 53.63% had credit and above. Similarly in 2011, 2012, 2013, 2014, 2015, 2016, 2017 and 2018 only 49.04%, 48.63%, 49.63%, 47.48%, 43.01%, 59.86%, 58.17% and 54.92% obtained credit and above in Biology respectively.

One wonders whether the poor performance is because of lack of infrastructural amenities or the teaching methods in use. The researcher expressed some doubts as to whether the senior secondary school Biology curriculum is being well implemented in schools. This issue ought to be empirically examined rather than speculated upon hence, the necessity for evaluation of the implementation of national curriculum for secondary school Biology (NCSSB) in Southwest, Nigeria.

Olaitan and Ali (2007) see curriculum contents in terms of how they relate to the national and individual goals. The curriculum of biology is strategized to meet the common requirements of all schools students. Biology as a course is aimed at contributing to the broad view of science. Ajayi (2008) regarded curriculum implementation as putting the curriculum into work for the attainment of the objectives for which the curriculum is designed. Omotayo (2007) regarded curriculum implementation as the task of interpreting the curriculum document into the operating curriculum by the collective effort of the students and other concerned. Mkpa (2007) said no matter how sound the curriculum of any subject is planned, designed and documented, if it is not appropriately implemented, the curriculum may not accomplish its goal and objectives.

The problem of curriculum implementation ought to be empirically inspected rather than speculated upon, hence, the necessity for the existing evaluation of the implementation of national Biology curriculum for secondary school Biology (NCSSB). The study measured the implementation of contents for secondary school biology curriculum in three states in Southwest, Nigeria. The study specifically examined:

- i. to what extent the contents of the Biology curriculum for senior secondary schools have been implemented;
- ii. the depth of practical work done in Biology in secondary schools;
- iii. the difference in the implementation of the contents of Biology curriculum among the three states

Research Questions

The following research questions were raised to guide the study:

1. To what extent are the contents of the Biology curriculum for senior secondary schools being implemented?
2. What is the depth of practical work done in Biology in secondary schools?

Research Hypothesis

This null hypothesis was generated for this study:

1. There is no significant difference in the implementation of the contents of Biology curriculum among the three states.

METHODOLOGY

The descriptive research design of the survey type was used in this study. The population of the study comprised all Biology teachers in all the public secondary schools in Ondo, Osun and Oyo States. The samples for the study consisted of 180 biology teachers drawn from 180 public secondary schools in the three states. The sample was selected using multistage sampling procedure. The first stage involved the selection of twelve Local Government areas from each of the selected states using simple random sampling technique. In stage two, five public secondary schools were selected from each of the sampled Local Government areas using simple random sampling technique. In stage four, one Biology teachers was selected from each of the schools using purposive sampling technique.

An instrument tagged Inventory on Implementation of Biology Curriculum (IIBC) was used for collecting the data for the study. The inventory was divided into two sections. Section A and B. Section A was concerned with the demographic data of the respondents such as name of school, while section B contained items that bother on biology curriculum implementation. A modified Likert-type three-point rating scale with the options as Fully Taught (FT), Partially Taught (PT) and Not Taught (NT) was used.

The validation process was exempted since an inventory was used. The instruments used for the study were administered on the respondents by the researcher. The responses obtained were collated and analysed using descriptive and inferential statistics. The research questions were answered using frequency count and percentages. The hypothesis was tested using Analysis of Variance (ANOVA) statistics at 0.05 level of significance.

RESULTS

Question 1

To what extent are the contents of the Biology curriculum for senior secondary schools being implemented?

Table 1: Frequency and Percentage Analysis of Biology Curriculum Contents Implementation

No.	Topics	Fully Taught		Partially Taught		Not Taught	
		N	%	N	%	N	%
1.	Living Things (Animal and Plant)	164	91.11	16	8.89	0	0.00
2.	The Cell (Animal and Plant)	158	87.78	22	12.22	0	0.00
3.	Tissues and Supporting System	146	81.11	24	13.33	10	5.56
4.	Nutrition in Animals	166	92.22	14	7.78	0	0.00
5.	Basic Ecological Concepts	136	75.56	26	14.44	18	10.00
6.	Ecosystem	144	80.00	28	15.56	8	4.44
7.	Micro – Organisms	139	76.67	28	15.56	14	7.78
8.	Habitat (Aquatic and Terrestrial)	144	80.00	34	18.89	2	1.11
9.	Classification of Plants	158	87.78	20	11.11	2	1.11
10.	Reproduction of Unicellular Organisms and Invertebrate	128	71.11	26	14.44	26	14.44
11.	Digestive System	144	80.00	28	15.56	8	4.44
12.	Transport System	148	82.22	24	13.33	8	4.44
13.	Respiratory System	142	78.89	30	16.67	8	4.44
14.	Excretory System	138	76.67	26	14.44	16	8.89
15.	Ecological Management	122	67.78	22	12.22	36	20.00
16.	Pollution	156	86.67	22	12.22	2	1.11
17.	Pest and Diseases of Crops	150	83.33	16	8.89	14	7.78
18.	Conservation of Natural Resources	162	90.00	16	8.89	2	1.11
19.	Reproduction (Animal and Plant)	168	93.33	12	6.67	0	0.00
20.	Pollination	150	83.33	24	13.33	6	3.33
21.	Sense Organ and Nervous Co-ordination	142	78.89	26	14.44	12	6.67
22.	Reproduction in Humans	166	92.22	14	7.78	0	0.00
23.	Ecology of Population	140	77.78	26	14.44	14	7.78
24.	Relevance of Biology to Agriculture	138	76.67	22	12.22	20	11.11
25.	Fruits	122	67.78	38	21.11	20	11.11
26.	Genetics	118	65.56	26	14.44	36	20.00
27.	Variation and Evolution	122	67.78	32	17.78	26	14.44
Average		144	80.45	24	13.21	12	6.34

Table 1 showed the extent the contents of the Biology curriculum for senior secondary schools were implemented. It was revealed that 91.11% of respondents fully taught Living Things while 8.89% partially taught the topic. The teachers that fully taught the cell, tissues and supporting system, nutrition in animals and basic ecological concepts were 87.78%, 81.11%, 92.22% and 75.56% respectively.

It also showed that 80.00%, 76.67%, 80.00% 87.78% and 71.11% of the teachers fully taught ecosystem, micro-organisms, habitat, classification of plants and reproduction of unicellular organisms and invertebrate respectively. The teachers that also fully taught digestive system, transport system, respiratory system, excretory system, ecological management, pollution, pest and diseases of crops and conservation of natural resources were 80.00%, 82.2%, 78.89%, 76.67%, 67.78%, 86.67%, 83.33% and 90.00% respectively.

It further showed that 93.33%, 83.33%, 78.89%, 92.22%, 77.78%, 76.67%, 67.78%, 65.56% and 67.78% of teachers fully taught reproduction, pollination, sense organs and nervous coordination, ecology of population, relevance of biology to agriculture, fruits, genetics and variation and evolution respectively.

There was no section with 100% coverage. Moreover, most of the topics had 75% coverage except five topics namely Reproduction of Unicellular Organisms and Invertebrate, Ecological Management, Fruits, Genetics, and Variation and Evolution. The table further revealed that highest covered topic was Reproduction (Animal and Plant) while the least covered topic was Genetics.

The table showed that the Biology curriculum contents were not fully covered and it falls below the recommendation standard by Federal Ministry of Education (2014).

Question 2:

What is the depth of practical work done in Biology in secondary schools?

Table 2: Frequency and Percentage Analysis of Practical Work in Biology Per Week

Period	None	1	2	3	Total
No of School	56	102	22	-	180
Percentage	31.1	56.7	12.2	0	100

Table 2 showed that 56 (31.1%) of the schools sampled had no period for teaching of practical work in Biology while 102 (56.7%) of the schools sampled do practical only once per week and 22 (12.2%) of the schools sampled do practical work twice per week. Hence, most of the schools do not meet the recommended standard of at least 2 periods per week for practical work in Biology given by Federal Ministry of Education (2013). It follows that the period for practical work in Biology was low

Testing of Hypothesis

Hypothesis 1

There is no significant difference in the implementation of the contents of Biology curriculum among the three states.

Table 3: Analysis of Variance for implementation of the contents of Biology curriculum among the three states

Groups	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.633	2	2.317	1.221	.297
Within Groups	335.917	177	1.898		
Total	340.550	179			

$P > 0.05$

The result presented in table 3 showed that F-cal value of 1.221 is not significant because the P value (0.297) > 0.05 at 0.05 level of significance. Hence, the null hypothesis is not rejected. This implies that there is no significant difference in the implementation of the contents of Biology curriculum among the three states.

DISCUSSION

The findings of the study showed that all the topics in the curriculum were implemented by the Biology teachers; however, there was no section with 100% coverage. Moreover, most of the topics had 75% coverage except five topics. The study revealed that the Biology curriculum contents were

not fully covered and it falls below the recommendation standard by Federal Ministry of Education (2014). The implementation of Biology curriculum by teachers was not in full accordance with the recommendation clearly stated in the curriculum.

It could also be due to some teachers not having a copy of the national Biology curriculum. A copy of the national Biology curriculum is one of the needed materials to guide the Biology teacher for a successful implementation of the curriculum. Idika (2008) found out that some Biology teachers (30% of his sample) were teaching the subject without the core curriculum. The implication of this finding is that students might not be able to acquire all the knowledge of the contents of Biology curriculum.

Other impediments could be due to shortage of qualified teachers, inadequate facilities, low motivation on the part of the teacher and inadequate periods on the time – table. Failure to strictly implement the Biology curriculum jeopardizes the high extent of implementation of the national Biology curriculum. This finding is in agreement with the findings of Iwunwah (2004) and Idika (2008) who concluded that the national curriculum has not made appreciable impact on our secondary school system as the implementation is always at average level. The implication of this finding is that the higher the contents of Biology curriculum are implemented, the higher the objectives of the Biology curriculum will be achieved.

This study showed that most of the schools do not meet the recommended standard of at least 2 periods per week for practical work in Biology, so the depth of practical work in Biology was low. This implies that there were no enough periods in the school time-table to cater for practical aspect of Biology. The only available periods cater for the theoretical aspect and this could justifies the reason why most Biology teachers use the periods for Biology theories alone. Nwagbo (2008) concluded that one of the major challenges militating against the implementation of the Biology curriculum is lack of practical teaching of Biology. The above findings about not giving Biology enough time are true because almost all the topics in Biology subject requires practical. After teaching the theory part of it; then there is need to take the students to the laboratory to do the practical. But you find out that in most times, there is no time to teach the students the practical aspect of Biology.

The study showed that there was no significant difference in the implementation of the contents of Biology curriculum among the three states. This implies that the implementation of the contents of Biology curriculum in Ondo, Osun and Oyo States are not different. This could be as a result of the similar school calendar, number of periods, learning environment, instructional materials and categories of Biology teachers common among the three states. Ajayi (2008) stressed that the physical environment, instructional materials and number of periods affect the implementation of the curriculum. Since the states have similar factors that could affect the implementation of the curriculum, then there cannot be difference in the implementation of the contents of Biology curriculum among the three states.

CONCLUSION

Sequel to the findings of this study, it was concluded that Biology curriculum contents were not fully covered. It was also concluded that most of the schools do not meet the recommended standard of at least 2 periods per week for practical work in Biology. It was further concluded that the

implementation of the contents of Biology curriculum in secondary schools do not differ among the three states considered in this study.

Recommendations

Based on the findings of this study, the following recommendations were made;

1. Biology teacher should intensify efforts to see that the biology curriculum contents are covered and implemented.
2. Periods for practical aspect should be clearly indicated on the school time-table and the school management should ensure that such periods are not diverted to other things but strictly Biology practicals in the laboratory.

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