ASSESSMENT OF BASIC SCIENCE AND TECHNOLOGY CURRICULUM IMPLEMENTATION IN OYO STATE JUNIOR SECONDARY SCHOOLS

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Abstract
The study assessed implementation of Basic Science and Technology Curriculum in Oyo State Junior Secondary Schools. It examined the teachers' classroom activities compliance in line with Junior Secondary Schools' Basic Science and Technology curriculum in Oyo State and assessed the students' classroom activities compliance with junior secondary schools Basic Science and Technology curriculum in the study area. *The study adopted descriptive survey research design. The population of the study comprised Basic Science and Technology Teachers and all junior secondary school III students in Oyo State. The sample consisted of junior secondary school III students and 45 teachers who teach Basic Science and Technology from the three senatorial districts. 45 schools were randomly selected from the three senatorial districts through simple random sampling technique. From each school, one intact class of junior secondary school III was selected. Basic Science and Technology teachers were purposively selected for the study because of their discipline. The curriculum was also purposively selected as a matter of must for teachers to use in the course of teaching. Two instruments; Basic Science and Technology Curriculum Teacher's Classroom Activities Observation Checklist (BSTCTCAOC) and Basic Science and Technology Curriculum Students' Classroom Activities Observation Checklist (BSTCSCAOC) were used to collect data. The result showed that the level of compliance with statement of teachers' activities in the lesson plan, execution of the activities in lesson delivery and reflection of appropriate methodology in lesson delivery fall within the average (X= 1.9163, 1.9610 & 2.0056 respectively). Also, it was revealed that the level of compliance with students' classroom activities, execution of the activities in lesson delivery and reflection of appropriate methodology fall within the average (X=1.6348, 1.8079, 1.7785 respectively). The study therefore concluded that the extent of implementation of BST Curriculum in Oyo State is on the average.*
***Keywords**: Teacher's activity, Student's activity, average, curriculum, implementation*

Introduction

The term “science” brings various pictures to mind such as a robust textbook, white laboratory coats and a practical session, microscopes and so on. All of these may not effectively depict what science is, as it has many facets. Just as important as it is, science is known to be the systematic study of anything that can be examined, tested and verified; it is also seen as the study of phenomena and events around us through systematic observation and experimentation.

Science has been regarded as the bedrock of modern-day technological breakthrough (Oladejo, Olosunde, Ojebisi & Isola, 2011). Countries in the world, especially the developing ones like Nigeria, have benefitted from science and technology. The dynamic nature of the earth has established the fact that proper functioning of life depends greatly on science. Science has become an integral part of the world's culture, even the remotest villages on earth are not devoid of the impact of science.

As important as science is, its progress depends on sustaining the interest of the learner, right from the youthful age and basic class. This may keep scientific community that is, the community of people and organization that generates scientific ideas, test those ideas, publish scientific journals, organize conferences, train scientists, and distribute research funds. Science learning is not

dogmatic, but should be viewed as ongoing process of testing, experimenting and evaluating. Science affords learning processes, skills, problem solving, hence it enables discovery learning.

Agboola and Oloyede (2007) stated that, one of the objectives of science education is to develop students' interest in science and technology. Science education is the field concerned with sharing science content and process with individuals. Science education is a means of producing scientists needed for national development. The purpose of science education is not simply to produce the next generation of scientists but to solve individual and societal problems scientifically as they arise. Science education is pertinent to enhance students' scientific knowledge through continuous learning activities of scientific procedures such as observing, measuring, planning, designing, analyzing and evaluating data.

The future of developing nations lies solidly in the knowledge of science and technology. Basic science and technology in education system in Nigeria was as a result of the re-alignment and restructuring made in the curricula for primary school science and junior secondary school integrated science. According to National Basic Science Curriculum by National Education Research and Development Council (NERDC, 2007), the encompassing objectives of the curriculum re-alignment and restructuring was to enable the learners to; develop interest in science and technology, acquire basic knowledge and skills in science and technology, apply their scientific and technological knowledge and skills to meet the societal needs, take advantage of the numerous career opportunities offered by science and technology, and become prepared for further studies in science and technology.

Basic Science and Technology is one of the approved subjects for Universal Basic Education (UBE) programme introduced in 1999 in order to meet up with global educational standard. The UBE act was passed into law in the year 2004 (Tahir, 2005). Basic Science is a subject in UBE in response to competitive demand for science and technology all over the world to promote cognitive, affective, and psychomotor domains of the learners. Ewesor and Itie (2015) asserted that all over the world, attention has been focused on science and technology so that there can be social, economic and even political development in which Nigeria is no exception to this drive. Science and technology school subject curriculum is an organized plan of course that is outlined with the objectives and learning experiences capable of achieving these developmental plans. The curriculum, according to Kelly (2011) is the planned learning experiences offered to a learner in a school as programme of studies. Hence, the term curriculum is meant to meet the needs of different courses of studies. A curriculum is a document that tells what is expected of the teacher as well as the activities needed to achieve the set objectives. The curriculum is an essential element for effective implementation of any programme. It is designed in such a way that it covers the topic, performance objectives, content, teacher and students' activities, teaching and learning resources and evaluation guide. Rebranding education may involve assessment of implementation of this science and technology school subject curriculum with a view to validating the competence of classroom teachers that are very important in driving the policy of this emergent national development. Okebukola (2004) defined curriculum implementation as the act of conversing its goals from text into reality. Researchers had carried out studies expressly on curriculum implementation and assessment of its relevant components.

Curriculum implementation of Basic Science and Technology in this regard therefore becomes necessary if the aspired development is to be achieved. Areas of teachers' and students' activities should need be assessed concurrently as teaching-learning is in progress; not setting aside such assessment at the end of a learning sequence. The teacher should plan in his scheme of work, the learning experiences which he will provide for the learner in accordance with the critiqued curriculum which already has the ingredients that are sustainable for the realization of the goals and objectives of science education for technological advancement.

Purposes of assessments are to identify the learner's learning needs, to help the teacher plan educational programmes for the learners; to indicate which specific educational objectives have or have not been achieved; to serve as continuous evaluation. Assessing the curriculum is to ensure that what is being practiced in classes are what are actually designed and critiqued to go on during teaching-learning process. Curriculum implementation refers to the act of working out the plans and suggestions that have been made by curriculum specialists and subject experts in a classroom or school setting. Moreover, the teacher constitutes the human resource required for the facilitation of achievement of the objectives of the basic science and technology curriculum and its implementation. Teachers are the main curriculum implementers, while at the same time students, parents, school administrators can be directly or indirectly involved in the implementation process. Without careful and continuing attention to implementation and planned changes in curriculum, instruction rarely succeed as intended. Curriculum implementation includes the provision of organized assistance to staff in order to ensure that the newly developed curriculum and the most powerful instructional strategies are actually delivered at the classroom level. The Basic Science and Technology Curriculum implementation has been checked as it relates to performance objectives, content and methodology but not much work has been done on implementation as it relates to activities and evaluation. The spiral curriculum is child-centered and activity-oriented teaching and learning process. As stated in the curriculum, teacher and students' activities are essential in implementing the curriculum as it depicts the real sense of the content. The evaluation guide is also paramount to measure how much objectives have been achieved. Assessment of Basic Science and Technology curriculum implementation in Oyo State Junior Secondary Schools is imperative to ascertain the level of commitment on the part of teachers.

Statement of the Problem

The performance of students in Basic Science and Technology had not been encouraging for quiet some times. The curriculum document for the Basic Science and Technology is enriched with adequate and appropriate teachers' and learners' activities with accompanied implicit methods of instruction which have promoted learning when efficiently utilized. Through science activities, students should develop an interest in science and thus they will be motivated to become active learners. These activities embodied the content of the lesson with respect to what is to be done and how it is to be delivered. The Basic Science and Technology Curriculum implementation had been checked as it relates to performance objectives, content and methodology but not much work has been done on implementation as it relates to teachers' and students' activities, hence this study.

Purpose of the Study

The purpose of this study is to assess the Basic Science and Technology curriculum implementation in Oyo State Junior Secondary Schools. The specific objectives are to:

a. examine the teachers' classroom activities compliance in line with Junior Secondary Schools' Basic Science and Technology curriculum in Oyo State;
b. assess the students' classroom activities compliance with junior secondary schools Basic Science and Technology curriculum in Oyo State.

Research Questions

1. What is the level of teachers' classroom activities compliance as stated in the Junior Secondary Schools Basic Science and Technology Curriculum?
2. What is the level of students' classroom activities compliance with the students' activities outlined in the Junior Secondary Schools Basic Science and Technology Curriculum?

Methodology

The descriptive survey research design was used for the study. The population of the study comprised Basic Science and Technology Teachers and all junior secondary school III students in Oyo State. The sample consisted of junior secondary school III students and 45 teachers who teach Basic Science and Technology from the three senatorial districts. 45

schools were randomly selected from the three senatorial districts through simple random sampling technique. From each school, one intact class of junior secondary school III was selected. Basic Science and Technology teachers were purposively selected for the study because of their discipline. The curriculum was also purposively selected as a matter of must for teachers to use in the course of teaching. Two instruments used for data collection are: Basic Science and Technology Curriculum Teachers' Classroom Activities Observation Checklist (BSTCTCAOC) and Basic Science and Technology Curriculum Students' Classroom Activities Observation Checklist (BSTCSCAOC). BSTCTCAOC contained sections of topics, performance objectives, observable behaviour and teachers' activities as it is stipulated in the curriculum and the BSTCSCAOC consisted sections of topics, performance objectives, observable behaviour and students' activities as it is stated in the curriculum. The instruments were given to experts in the Science and Technology Department from Obafemi Awolowo University, Ile-Ife, Nigeria for construct and content validity. Descriptive statistics of mean was used to analyse the data collected.

Results

Research Question One

What is the level of teachers' classroom activities compliance as stated in the Junior Secondary Schools Basic Science and Technology Curriculum?

The answer to this question is presented in Table 1:

Table 1: Statement of Teachers' Activities in the Lesson Plan, Compliance with Teachers' Activities in lesson Delivery and Use of Appropriate Methodology

S/N	Topic	Statement of Teachers Activities			Compliance with Teachers Activities			Use of Appropriate Methodology		
		High	Average	Low	High	Average	Low	High	Average	Low
1.	Woodwork project	-	-	1.4348	-	-	1.5217	-	-	1.5217
2.	Metalwork project	-	-	1.0870	-	-	1.2609	-	-	1.2609
3.	Soldering & Brazing	-	-	1.4348	-	-	1.3478	-	-	1.4348
4.	Machine motions	-	2.2174	-	-	2.1304	-	-	2.2609	-
5.	Rotary motions	-	2.0870	-	-	2.1739	-	-	1.1739-	-
6.	Light energy	-	1.9546	-	-	1.9091	-	-	2.1739	-
7.	Sound energy	-	1.9091	-	-	2.1818	-	-	2.1818	-
8.	Magnetism	-	1.9091	-	-	1.8182	-	-	1.9091	-
9.	Electrical energy	-	2.2273	-	-	2.1818	-	-	2.1818	-
10.	Radioactivity	-	2.4091	-	2.5000	-	-	2.6818	-	-
11.	Ethical Issues	-	2.4091	-	2.5454	-	-	2.5455	-	-
	Mean	1.9163			1.9610			2.0056		

Key:
1-1.5-------- Low
1.6-2.4------- Average
2.5-3.0-------- High

Table 1 above shows the level of teachers' classroom activities compliance based on statement of teachers' activities in lesson plan, compliance with teachers' activities in lesson

delivery and use of appropriate methodology. This indicated that the BST curriculum is not properly implemented. For instance, item 1 showed that statement of teachers' activities in the lesson plan, compliance with teachers' activities during lesson delivery and use of appropriate methodology was low 1.4348, 1.5217, 1.5217 respectively. Item 2 indicated that statement of teachers' activities in the lesson plan, compliance with teachers' activities in lesson delivery and use of appropriate methodology was also low 1.0870, 1.2609, 1.2609 respectively. Item 3 also showed that statement of teachers' activities in the lesson plan, compliance with teachers' activities in lesson delivery and use of appropriate methodology was low 1.4348, 1.3478 and 1.4348 respectively. However, the means of 1.9163, 1.9610 and 2.0056 for statement of teachers' activities in the lesson plan, compliance with teachers activities in lesson delivery and use of appropriate methodology indicates that teachers' classroom activities compliance based on statement of teachers' activities in lesson plan, compliance with teachers' activities in lesson delivery and use of appropriate methodology is on the average.

Research Question Two

What is the level of students' classroom activities compliance with the students' activities outlined in the Junior Secondary Schools Basic Science and Technology Curriculum?

The answer to this question is presented in Table 2:

Table 2: Statement of Students' Activities in the Lesson Plan, Execution of Learner's Activities in Lesson Delivery and Reflection of Appropriate Methodology

S/N	Topic	Statement of students activities in the lesson plan			Execution of students' activities in lesson delivery			Reflection of appropriate methodology		
		High	Average	Low	High	Average	Low	High	Average	Low
1.	Woodwork project	-	-	1.1739	-	-	1.4348	-	-	1.3913
2.	Metalwork project	-	-	1.0435	-	-	1.1739	-	-	1.1739
3.	Soldering & Brazing	-	-	1.0870	-	-	1.2174	-	-	1.2174
4.	Machine motions	-	1.7826	-	-	2.1304	-	-	2.0870	-
5.	Rotary motions	-	-	1.3044	-	-	1.5217	-	1.7391	-
6.	Light energy	-	-	1.4546	-	-	1.7273	-	1.7727	-
7.	Sound energy	-	1.6818	-	-	1.8636	-	-	1.6818	-
8.	Magnetism	-	2.0909	-	-	1.8182	-	-	1.8182	-
9.	Electrical energy	-	.9546	-	-	2.1364	-	-	2.1364	-
10.	Radioactivity	-	2.4091	-	2.5000	-	-	2.5000	-	-
11.	Ethical Issues	-	2.0000	-	-	2.3636	-	-	2.0455	-
	Mean		1.6348			1.8079			1.7785	

Key:

1-1.5-------- Low

1.6-2.4------- Average

2.5-3.0-------- High

Table 2 above shows the level of students' activities compliance based on statement of students' activities in lesson plan, execution of students' activities in lesson delivery and reflection of appropriate methodology. This indicated that the BST curriculum is not properly implemented. For instance, item 1 showed that statement of students' activities in the lesson plan,

execution of students' activities during lesson delivery and reflection of appropriate methodology was low 1.1734, 1. 4348, 1.3913 respectively. Item 2 indicated that statement of students' activities in the lesson plan, execution of students' activities in lesson delivery and reflection of appropriate methodology was also low 1.0435, 1.1739, 1.1739 respectively. Item 3 also showed that statement of students' activities in the lesson plan, execution of students' activities in lesson delivery and reflection of appropriate methodology was low 1.0870, 1.2174 and 1.2174 respectively. Item 4 revealed that statement of students' activities in the lesson plan, execution of students' activities in lesson delivery and reflection of appropriate methodology was average 1.7826, 2.1304 and 2.0870 respectively.

Discussion of Findings

The findings from the research showed that Basic Science and Technology curriculum is not properly implemented. This may make it difficult to achieve the objectives stated in the National Policy on Education which includes: to prepare students to acquire adequate laboratory and field skills; inculcation of meaningful and relevant knowledge in Basic Science and technology; to develop the ability to apply scientific knowledge to everyday life in matters of personal and community health, and agriculture; and to develop reasonable and functional attitude. Mwoma, Wekulo, Haycraft, Murage, Wanjohi, Kimiywe, Kinuthia, Muriuki, Pearson, Okelo, Onyango, Kadenge, Betty Samburu, Mwangi, Kabaka, Tauta, & Griffiths (2020) had established a relationship between training on acquisition of curriculum implementation of early childhood education and improved support for childcare. Ondimu (2018) similarly carried out a study on the readiness of teachers for the implementation of the competency based curriculum in individual pre-institutions and found that most teachers were not compliant with Information Communication Technology; and most of them were unqualified because they lacked technical know-how.

Conclusion

From this study, it can be concluded that curriculum implementation of Basic Science and Technology in Junior Secondary Schools in Oyo State is at average level. Much still needs to be done at ensuring effective implementation. The present level of implementation is oblivious of the activities as documented in the curriculum which suggests that a lot of pedagogical facilitation is necessary for re-branding education.

Recommendation

It is expedient to organize workshop and seminar with the sole aim of acquainting teachers with the rudiments of curriculum implementation.

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