



Assessment of Implementation of Physics Curriculum in Public Secondary Schools in Ekiti State

Olatunbosun Segun Mobolaji, Daramola Olayemi Motunrayo, Babarinde Funmilayo Justina

Science Education Department, Ekiti State University, Nigeria

Abstract This study sought to investigate the implementation process of physics curriculum in Ekiti State Secondary Schools. The major areas under study included teaching methods and techniques, instructional materials made available to schools, teachers' disposition to accepting new changes, relevance of the curriculum to daily living, school factors that influence the process of curriculum implementation. The study adopted descriptive research of survey design. Data collected via the validated questionnaire instrument from the randomly selected samples of 50 Physics teachers and 250 students offering Physics as a subject from senior secondary 1 to 3 (SSS I–III) across the three senatorial districts of the state was analyzed using frequency counts, percentage and inferential statistics of t-test. All hypotheses formulated were tested at 0.05 level of significance.

The result revealed that the implementation process of Physics in Ekiti State Public Schools showed differences between qualified, experienced and less experienced and less-qualified teachers. Other factors that influence implementation process are the physical structure and facilities of schools, efficiency of Physics teachers and also the government. Based on the findings it is recommended that teachers should be involved in curriculum planning and government agencies responsible for monitoring curriculum implementation should carryout spontaneous checks on teachers lesson note and observe classroom teaching and learning interaction.

Keywords Science, Physics Curriculum, Curriculum Implementation, Public School, Teaching and Learning Process

Introduction

The development of a nation depends solely on its level of skills in science and technology. The knowledge of science and technology with its application has made some countries like China to stand out economically among its equals. Therefore, the need for Nigeria to advance scientifically and technologically cannot be over-emphasized. To get this realized, emphasis should be laid on the implementation of the concepts of science curriculum generally and physics in particular. In Nigeria, Physics is taught as one of the science subjects at the senior secondary school level. It is the natural science that involves the study of matter and its motion and behaviour through space and time, along with related concepts such as energy and force. The main goal of Physics is to explain how the universe behaves, thus, the need to intimate learners with the trend of modern developments which can be achieved through the effective implementation of Physics curriculum.

Curriculum can be defined as an organization of subject matter to be presented as pieces of information. The term curriculum has been defined in many different ways by many researchers. Daramola (2004) [1] defined curriculum as the part of the school academic programme specifically designed to provide planned and guided teaching experiences. From the definition, the concept has been divided into four related components;

- What is the end product of instruction – the objectives



- What is studied – the content
- How are the study and teaching done – methodology
- How are the result of teaching assessed – evaluation

The functionality of the above stated component of the curriculum depends on how each of the components implemented is interrelated. Teachers have been found to be the key factor in curriculum implementation. In National Policy on Education, it was stated, “no educational system can rise above the quality of its teachers” [2]. No matter how good a curriculum is, the success or failure depends largely on the ability or inability of the teacher to execute as originally stated by the planner. Omosewo (1994) [3] investigated the relevance of Physics education programme in Nigeria higher institution to the teaching of secondary school Physics. She found out that some concepts in secondary school physics are not relevant to the training received by practicing Physics teachers. It was suggested that Physics education programme in higher institution should be improved such that it will meet the demands at senior secondary school.

It was also observed that the effectiveness of the stated objectives and content of Physics curriculum is a function of level of competence of the Physics teachers. One of the major factors responsible for the level of competence of teachers could be traced to their academic qualifications. Teacher’s qualification means teacher’s level of education and professional attainment. The higher the teachers’ exposure to learning, the more experienced he or she is expected to be able to manipulate the teaching activities. A curriculum well implemented could conversely bring about a desired change (intended learning outcome) among students.

Related Literature

Concept of Curriculum Implementation

Curriculum refers to how the planned or officially designed course of study is translated by the teacher into syllabuses, schemes of work and lessons to be delivered to students. Ereh (2005) [4] view curriculum implementation as the process of putting all that has been planned as curriculum document into practice in the classroom through the combine effort of the teacher, school administrators, learner, parent as well as interaction with physical facilities, instructional materials, learning environment.

Implementation Issues

The implementation of curriculum is facing some challenges, one of which is the lack of teachers participation in decision making and curriculum planning. Teachers are not involved in curriculum planning, whereas, Ereh (2005) [4] asserted that teacher efficiency can make or mar curriculum implementation since the responsibility of interpreting and putting the curriculum into use solely rests with the teacher. Another issue is that the Nigeria curriculum covers too much information and suggests redesigning its content to remove unnecessary and irrelevant facts [5]. What exacerbates the situation is that teachers are unprepared to cope with growing curricula, which means that instruction becomes ineffective, inappropriate and often inaccurate.

Over the years, the issue of policy changes in the educational system which started with the 6-3-3-4 system, 6-5-4 system also came and how the 9-3-4 system among others which has led to confusion in learners as to which subjects are to be offered in certificate examinations because subjects offered at certificate exams changes alongside the changes in educational system. Moreso, provision of facilities as remarked by Buckley, Schneider and Shang (2004) [6] that the public sectors of education at primary and secondary levels has witnessed stagnation and decay because facilities found in most public schools in Nigeria as dilapidated buildings, leaking roofs, lack of chairs and tables for students and teachers use.

Statement of the Problem

There has been an upsurge in the rate at which students fail Physics examinations, therefore, this study planned to assess the implementation of Physics curriculum in public secondary schools in Ekiti State in order to correct if there are lapses in implementing the curriculum to aid students’ academic performance. If Physics education is going to achieve its aims and objectives, then there is need to ensure proper implementation of its aims, objectives and content of the designed senior school Physics curriculum. In view of this, one research question was raised and two hypotheses were generated.



Research Question

What are the teachers' and learners' perception of Physics curriculum content?

Research Hypotheses

Ho1: There is no significant difference between qualified and unqualified teachers' mode of implementation of Physics curriculum.

Ho2: There is no significant difference between experienced and less experienced teachers' mode of implementation of Physics curriculum.

Methodology

The descriptive survey design was adopted to carry out this study on the assessment of implementation of Physics curriculum in public secondary schools in Ekiti State. Simple random sampling technique was adopted in selection of 50 Physics teachers and 250 students offering Physics across the three senatorial district in the State giving a total of 300 respondents. The instrument designed to obtain information used for the study was questionnaire to know teachers and learners view on how the curriculum implementation has influenced academic performance. The instrument was validated by experts in Test and Measurement in Ekiti State University, Ado-Ekiti for face and content validates before administration. The reliability of the instrument was adopted using a test-retest method. The data collected were analyzed using frequency count, percentage and inferential statistics of t-test tested at 0.05 level of significance.

Results and Discussions

The findings of the study are shown below:

Question: What are the teachers' and learners' perception of the curriculum content?

S/N	Teachers	Agreed		Disagreed	
		Frequency	%	Frequency	%
1.	The curriculum contains extra topics not taught while I was in school	40	80	10	20
2.	I cannot teach all Physics topics very well	32	64	18	36
3.	All the topics can be applied to everyday living	42	84	8	16
4.	There are facilities to put into practice all Physics topics taught in class	2	4	48	96
5.	I can improvise all materials for the Physics practical's	3	6	47	94
6.	The number of periods assigned for Physics in a week is enough to teach the syllabus	4	8	46	92
7.	I have obtained a certificate in Physics teaching profession	32	64	18	36
8.	I have taught Physics for more than six years	28	56	22	44
9.	I am enthusiastic about teaching Physics	12	24	38	76
10.	Government frequently involve teachers to revise curriculum contents	5	10	45	90
11.	All my students understand the topics taught before proceeding to another topic	7	14	43	86
12.	There should be textbooks that will be more explanatory to the average students	49	98	1	2
13.	Physics topics are easy to understand	20	8	230	92
14.	We always go to the Physics laboratory for practical's	10	4	240	96
15.	My school is conducive enough to learning	30	12	220	88
16.	I admire how my Physics teacher teaches us	170	68	80	32
17.	My school has a lot of Physics laboratory equipment	52	20.8	198	79.2
18.	There are enough Physics textbooks in my school's library that can serve all Physics students	15	6	235	94
19.	I oftentimes run away from Physics class because of its complexity	180	72	70	28



20.	I enjoy reading and working calculations on Physics topics taught	44	17.6	206	82.4
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The result revealed 80% of the teachers were faced with the challenge of trying to cope with the introduction of new topics in the curriculum while 20% were used to the new topics. Furthermore, it is only 32% of the teachers that are qualified to teach Physics and 18% obtained certificates from other science fields and some do not know the pedagogic aspect of imparting knowledge. However, 44% of the teachers are not experienced teachers since they are not professional because they have not taught Physics for six years and above [7] this showed their inability to carry along all categories of their learners (brilliant and average ones) while teaching. Only 14% does the extra task of making all their students understand better. Government factor also affect the curriculum implementation negatively as 90% of the teachers attest that teachers are not involved in Physics curriculum planning.

The findings also showed that 92% of the learners find Physics topics difficult which is due to the fact that it is only theory aspects that are taught and practical aspects are being ignored, also, the learning environment is not conducive as confirmed by 88% and unavailability of textbooks in the library. Meanwhile, 68% appreciates the way their teacher teaches with the best of their ability.

Hypothesis 1

There is no significant difference between qualified and unqualified teachers' mode of implementing Physics curriculum

Table 2: t-test Analysis on Implementation of Physics Curriculum by Qualified and Unqualified Teachers

Variables	N	Mean	SD	Df	t-cal	t-tab
Qualified	32	26.78	3.14	48	2.88	2.02
Unqualified	18	29.35	4.52			

Table 2 indicated t-cal (2.88), t-tab (2.02), therefore, t-cal was greater than t-tab at $p < 0.05$, the null hypothesis was rejected which implies that there was significant difference between qualified and unqualified teachers' implementation of Physics curriculum.

There is a standing fact that no one can give what he or she does not possess. Quality teachers constantly strive to possess all the requisite training and knowledge required to discharge their duties effectively and efficiently and this agrees with the findings of Harris and Sass (2011) [8] that promoting teacher quality is a key element in improving primary and secondary education.

Hypothesis 2

There is no significant difference between experienced and less experienced teachers' mode of implementing Physics curriculum

Table 3: t-test Analysis on Implementation of Physics Curriculum by Experienced and Less Experienced Teachers

Variables	N	Mean	SD	Df	t-cal	t-tab
Experienced	28	27.04	3.18	48	2.34	2.02
Less Experienced	22	26.77	2.78			

Table 3 indicated t-cal (2.34) and t-tab (2.02), therefore, t-cal was greater than t-tab at $p < 0.05$, the null hypothesis was rejected which indicates that significant difference existed between experienced and less experienced teachers' implementation of Physics curriculum.

The best way to assess teachers' effectiveness is to look at their on the job performance including what they do in the classroom and how much progress their students make on achievement tests, Vander Bergh and Roos (2014) [9], which contributes to the general saying that "experience is the best teacher".

Conclusion

The study has shown that attempts to effectively implement secondary school Physics curriculum have been frustrated by continuous challenges of acute shortage of trained personnels, inadequacy of



laboratory/instructional materials and a serious limitation of time. Consequently, assessment of students' learning is lopsided by emphasizing the cognitive domain, while other domains of affective and psychomotor are not well attended to.

Recommendations

Based on the findings of this study, the following recommendations are made:

- Government agencies responsible for monitoring curricula implementation should make sure the Physics curriculum is implemented in secondary schools by teachers by carrying out spontaneous checks on teachers' lesson notes, syllabus and observing them as they teach in the classroom.
- Teachers' remuneration should not be delayed so as to encourage them in delivering efficiently.
- Teachers should be involved in curriculum planning because they have direct contact with students which put them in the best position to know learners' ability and how useful or important some topics will be to them.

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