



Administration and Implementation of Mathematics Programme in Nigerian Public Secondary Schools: Problems and Prospects

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Abstract:

This article discussed the problems facing the implementation of mathematics programme in the public secondary schools in Nigeria. Secondary data were used to support the points raised in the article. The secondary data were generated from print materials and online publication. The article identified: inadequate funding, shortage of mathematics teachers, inadequate infrastructural facilities, shortage of mathematics instructional materials, inadequate data to plan mathematics programme, poor capacity of mathematic teachers, and negative attitude of students towards the study of mathematics programme as the problems facing the administration of mathematic programme in public secondary schools in Nigeria. To solve this problems, the article recommended that the government should increase the funding of the mathematic programme, employ more qualified mathematics teachers, provide adequate infrastructural facilities, adequate mathematics instructional materials, ensure effective capacity development programme for mathematics teachers in the public secondary schools and generate current data on mathematics programme for effective planning of mathematics programme in the country.

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1. Introductions

Public secondary schools are schools owned by the government and are established to provide post-primary school education for the people. Public secondary schools are not profit inclined institutions. National Policy on education (2004) defined Secondary Education as the education children receive after primary education

and before the tertiary education. Based on the 6-3-3-4 system of education, secondary education comprises six years duration, but given in two stages: a junior secondary school stage and a senior secondary school stage, each to run for three years duration. The broad goals of Secondary Education according to the National Policy on Education (2004) include the preparation of the individual for: Useful living within the society and higher education. The specific objectives are to: provide all primary school leavers with the opportunity for education of a higher level, irrespective of sex, social status, religion or ethnic background; Offer diversified curriculum to cater for the differences in talents, opportunities and future roles; Provide trained manpower in the applied science, technology and commerce at sub-professional grades; Develop and promote Nigerian languages, art and culture in the context of world cultural heritage; Inspire its students with a desire for self-improvement and achievement of excellence; Foster national unity with an emphasis on the common ties that unite us in our diversity; Raise a generation of people who can think for themselves, respect the view and feelings of others, respect the dignity of labour, appreciate those values specified under our broad national goals and live as good citizens; Provide technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development.

The Nigerian senior secondary schools have a diversified curriculum, with subjects program to wider the students' knowledge and outlook in real life. The official language for instruction in all the Nigerian senior secondary schools is English language except for special programme like local language and international language programme. The core subjects are English; Mathematics; one major Nigerian language; one elective out of Biology, Chemistry, Physics or Integrated Science; one elective out of English Literature, History, Geography or Social Studies; and Agricultural science or a vocational subject. One of the three elective subjects may be dropped in the last year of the senior secondary course. The promotion of students from one class to another is determined by a combination of continuous assessment scores and end-of-term examinations. The Senior School Certificate Examination (SSCE) is taken in the last year of senior secondary education and a certificate is awarded on successful completion and passing of an international examination, which is conducted by the West African Examinations Council (WAEC) or the National Examinations Council (NECO) as accredited examining bodies (Ogunode, 2020b, NEEDS, 2014).

Mathematics programme in Nigeria is a programme that is very important to the student academic progress. The students need mathematics programme for lifelong experience. Despite the relative importance of mathematics, it is very disappointing to note that the students' performance in the subject in both internal and external examinations has remained consistently poor according to Salau (1995), Amzigo (2000) and recently attested by Sunday, Olaoye and Audu (2021).. The Table below shows the trend of students' performance in Mathematics in the recent ten years.

Year	Total No of Candidates	No with Credit (A1-C6)	% (A1- C6)
2010	1,351,557	337,071	23.36
2011	1,540,250	471,474	30.90
2012	1,672,224	649,156	38.81
2013	1,689,188	1,085,472	64.26
2014	1,692,435	529,425	31.28
2015	1,605,248	616,370	38.68
2016	1,552,758	878,040	52.97
2017	1,682,836	729,489	43.35
2018	1,634,280	666,578	40.79
2019	1,662,785	695,071	41.80

Source:(WAEC, Chief Examiner's Annual Report, 2010-2019)

Many education stakeholders in the country have listed some possible problem facing the teaching and learning of mathematics in Nigerian public secondary school to include ineffective supervision, inadequate planning and poor implementation. Based on this submission, this article is bent to discuss the problems preventing effective implementation of mathematics programme in the Nigerian public secondary schools.

2. Concept of Mathematic Programme

Mathematics programme is a science programme. It is a programme that is calculation inclined. Mathematics programme is vital to the social, economic and technological development of the country. Mathematics programme is one of the core-subjects that Nigerian secondary schools are offering. Mathematics is an important programme in Nigerian Secondary schools. The secondary school mathematics has the following objectives as identified by Comparative Education Study and Adaptation Centre (CESAC) (5): a) to develop computational skills and foster the desire and ability to be accurate in a degree relevant to the problem at hand. b) to develop precise, logical and abstract thinking. c) to develop ability to recognize problems and to solve them with related to mathematics knowledge. d) to provide necessary mathematical background for further education and e) to stimulate and encourage creativity, originality and curiosity in learner.

Mathematics is a science related programme and logical in nature. Mathematics programme cover a lots of programme. Mathematics can be defined as a group of related sciences, including geometry, calculus and algebra, which is focused on the study of number, space, shape, and quantity, and how they interrelate using a specialized notation. Mathematic is involved in the solution of a problem or study of some scientific field (Ogunode, 2020 and Info-guide Nigeria, 2018). Mathematics uses numbers and symbols in the study of measurement, relationships, and properties of quantities and sets. The branches of mathematics include Arithmetic, algebra, geometry, and calculus. Mathematics entails the study of equations, functions, geometric shapes, numbers, equations, and their relationships (Ogunode,2020, Info-guide Nigeria, 2018). Ogunode (2020a) observes that Mathematics programme is part of human being thought. It helps to understand the world and the human logic. Mental discipline and logical conclusion are built through mathematics programme. Mathematics programme helps the students to understand other mathematical related field. Mathematics programme has provided the mental discipline required for understanding other disciplines. Mathematic knowledge is an important attribute of individuals living more effective lives as constructive, concerned and reflective citizens. Mathematical literacy is taken to include basic computational skills, quantitative reasoning and spatial ability.

2.1 Concept of Mathematics Administration

Mathematics administration is the use of Mathematics resources to implement Mathematics programmes with the aims of realizing the objectives of the Mathematics programme. Mathematics administration is the application of mathematic resources for the implementation of the policies and programme of the Mathematics programme to achieve the goals of the Mathematics education. Mathematics administration is the arrangement of both human and materials resources of the Mathematics programme for the actualization of the Mathematics education' goals and objectives.

The objectives of Mathematics administration include: to achieve the objectives of mathematics programme, to ensure effective resources allocation, to ensure smooth implementation of mathematics programme, to arrange human and materials resources for the implementation of mathematics programme, to ensure effective staff and students administration and to coordinate and organize mathematics programme for smooth implementation.

3. Problems facing the Administration of Mathematics Programme in Nigerian Public Secondary Schools

There are many problems facing the administration of mathematics programme in the Nigerian public secondary schools. Some of the problems includes: inadequate funding, shortage of mathematics teachers,

inadequate infrastructural facilities, shortage of mathematics instructional materials, inadequate data to plan mathematics programme, poor capacity of mathematic teachers, and negative attitude of students towards the study of mathematics programme.

3.1 Inadequate Funding

Inadequate funding is a major problem facing the administration of mathematics programme in the Nigerian secondary schools. The budgetary allocation for the administration of mathematics programme at the school level is not adequate to effectively administer the mathematics programme. Education generally in Nigeria is underfunded by the government. The government have failed to implement the 26% UNESCO annual budgetary allocation for the administration of education in the developing countries like Nigeria. The inability of the government to implement this recommendation is among the factors responsible for poor funding of mathematics programme in the secondary school across the country. Obi, (2014) conducted a researched and concluded that the major factors responsible poor performance of students in Senior secondary schools includes: underfunding of mathematics education, inadequate professional teachers, inadequate infrastructural facilities, large classes, poor supervision of mathematics at the secondary schools, negative attitudes of students towards mathematics and poor motivation of mathematics teachers. According to Ogunode (2009) the issue of funding mathematics programme by the government and other institutions has been a major problems. The budgetary allocation to the education sector and mathematics programme in particular has been grossly inadequate as compared to funding from both developed. The education sector in Nigeria has not received much priority in budgetary allocation as it deserves over many years. Mathematics education has a lot of potentials and prospects to offer to the young Nigerian if the government will adequately fund the programme in all aspect of education. The implication of underfunding mathematics education at the public secondary schools is responsible for shortage of professional mathematics teachers, inadequate instructional materials, inadequate infrastructural facilities, poor supervision of mathematics programme, poor planning and poor implementation of mathematics education policies.

3.2 Shortage of Mathematics Teachers

Shortage of mathematics teachers is another problem facing the administration of mathematics programme in the public secondary schools. Professional mathematics teachers are in short supply in many public secondary schools in the country and this is affecting the administration of mathematic programme at the secondary school level. The administration of mathematics programme depends on the quality and quantities of professional mathematics teachers available in the schools. Info-guide Nigeria (2018) established this submission when he observed that one of the fundamental problems facing mathematics education is the lack of competent teachers in the field of mathematics. This to a great extent impedes on the ability of the students to understand and appreciate the subject even from the basis. This invariably means that a teacher who have only a shallow understanding of mathematics cannot deliver effective teaching that would impart the necessary knowledge to the students as a result there exist a gap between the contents and its application which invariably will affect student's knowledge of applicability. Also gross inadequacy of mathematics teachers in the primary, secondary and Tertiary level constitutes a greater challenge to mathematic education in Nigeria. Also, Sa'ad, Adamu & Sadiq (2014) did study that investigated the causes of poor performance in mathematics among public senior secondary schools students in Azare metropolis of Bauchi state, Nigeria. The findings of the study led to the conclusion that inadequate qualified teachers and other problems like students' negative attitude toward mathematics, anxiety and fear of mathematics, poor teaching methods, inadequate teaching materials, overcrowded classes were some of the causes of poor performance in mathematics in the study area. The factors responsible for shortage of mathematics teachers in the Nigerian public secondary schools include poor motivation, poor funding of mathematics programme, limited higher institutions offering mathematics programme, lack of manpower planning on mathematic programme, negative attitude of people towards the study of mathematics programme and brain-drain.

3.3 Inadequate Infrastructural Facilities

Inadequate infrastructural facilities is a very big problem facing the administration of mathematics programme in the Nigerian secondary schools. The infrastructural facilities required for the implementation of mathematics programme in the public secondary schools are not adequate. There is no mathematics laboratories in many public secondary schools, no adequate classrooms, chairs and tables for students. The mathematics teachers lack conducive office to sit and prepare for the lesson. Many public secondary schools in the country do not have adequate infrastructural facilities for the administration of mathematics programme. The absence of adequate infrastructural facilities in many public secondary schools in Nigeria is affecting the implementation of mathematics programme in public secondary schools in Nigeria. Tshabalala & Ncube, (2013) confirmed that lack of laboratories and libraries, shortage of well trained teachers, inadequate teaching facilities, lack of fund to purchase necessary equipment, poor quality of textbooks, large classes, poorly motivated teachers, poorly coordinated supervisory activities, interference of the school system by the civil service, incessant transfers of teachers and principals, automatic promotions of pupils, the negative role of public examinations on the teaching learning process and inequality in education opportunities all hamper the smooth acquisition of mathematics knowledge in educational institutions.

3.4 Shortage of Mathematics Instructional Resources

Shortage of mathematics instructional materials is another problem facing the administration of mathematics programme in the public secondary schools across the country. Instructional materials are very important in the administration of mathematics programme because instructional materials help the teachers to deliver lessons in a simple way. Students understand more when they are taught with instructional materials. In view of this National challenge, study sought to find out what could have influenced the problem, since mathematics was introduced into the syllabus with proper study, so many problems have been confronting effective teaching and learning of mathematics like lack of learning facilities e.g. mathematics laboratories in school, the attitude of students towards the learning of mathematics, Unqualified teachers or using non-mathematics specialists to teach the subject in some Nigeria schools, lack of appropriate method of teaching mathematics and Overcrowding of mathematics syllabus. Ogunode (2020a) submits that there are many challenges facing the teaching and learning of mathematics in Nigeria and other developing countries. Some of the problems include; inadequate mathematics instructional aids, lack of professional mathematics teachers, negative attitude of students towards mathematics programme, poor teaching method, poor motivation of mathematics teachers and underfunding of mathematics education. The absence of adequate instructional materials for mathematics teachers' application for teaching is affecting the administration of mathematics programme in Nigerian secondary schools.

3.5 Inadequate Data Gathering to Plan Mathematics Programme

Inadequate data on mathematics programme is a major challenge facing the administration of mathematics programme. Administrator needs data to plan and take decisions concerning development of mathematics programme. Data on mathematics programme on students' enrolment, teachers' need gap, data on instructional materials, infrastructural facilities and data on manpower production are not available to plan and to make decisions. Ogunode (2020a) did a study that investigated the challenges facing the planning of mathematics programme in Federal Capital Territory, Nigeria. The result revealed that there are challenges facing the planning of mathematics programme of senior secondary education and the challenges include; inadequate data/information to plan, inadequate funding of planning of mathematics programme, poor capacity development of few mathematics planners, inadequate professional mathematics planners, political instability, corruption and lack of political will to support planning of mathematics education. The study concluded that the implication of the challenges on the implementation of mathematics education is poor implementation of the mathematics programme in the senior secondary schools.

3.6 Poor Capacity Building for Mathematic Teachers

Poor capacity development programme of mathematics teachers is another problem facing the administration of mathematics programme in the public secondary schools in Nigeria. Mathematics teachers in the majorities of public secondary schools in Nigeria do not go for constant training and retraining programme and this is affecting their productivities and performance at work. Adeniyi (2015) established the fact that lack of training and retraining programme for mathematics teachers, ineffective teaching methods, large class and lack of instructional materials as the challenges facing the teaching and learning of mathematics in Nigeria secondary schools. Femi (2013) did a study that investigated the challenges facing teaching and learning of mathematics programme in some selected secondary schools. The result revealed that the challenges facing the teaching and learning of mathematics programme includes; poor capacity development of mathematics teachers, inadequate professional mathematics teachers, inadequate funding of mathematics programme, inadequate mathematics instructional materials, inadequate infrastructural facilities and planning of mathematics programme. The inability of the mathematics teachers to access constant training and training programme is affecting the performance and productivity of mathematics teachers.

3.7 Negative Attitudes of Students

The negative attitude of students towards the study of mathematics programme at the secondary schools is affecting the learning of mathematics which is directly hampering the administration of the programme. Many students do not like to study mathematics due to many factors. Iproject.com (2018) observed that the problems associated with teaching and learning of mathematics is seen from the lukewarm attitudes of some mathematics teachers and their ineffectiveness in mathematics education. Lack of student-teacher relationship has also been seen in the environment in which teaching and learning is conducted. Teaching and learning of mathematics in secondary schools is very essential, no doubt because, it is regarded as a yardstick in the development of any nation. Shield and Kelly (1999) did a study that sourced information from Principals on reasons for poor performance in mathematics. The principals gave the following reasons: learners' attitude towards learning mathematics in schools; ineffective support for mathematics students; poor capacity development of mathematics teachers; inadequate or shortage of instructional materials for teaching mathematics; poor coverage of the scheme of work for mathematics programme and inadequate time allocated for mathematics programme.

4. Ways Forward

Based on the problems identified in this paper, the researchers hereby recommended that:

- 1) The government should increase the funding of public secondary schools in the country and direct all school administrators to increase the allocation for the administration of mathematics programme in the public secondary schools.
- 2) The government should provide more infrastructural facilities like (mathematics laboratories, classrooms, examination halls, tables, chairs and offices). This will help to reduce the problem of class overcrowding.
- 3) More professional mathematics teachers should be employed and deploy to all the public secondary schools in the country.
- 4) Training and retraining programme should be constantly organize for the mathematics teachers in public secondary schools.
- 5) The government and school management should encourage the students to develop positive attitude towards the studying of mathematics. Students should also be motivated and proper guidance toward mathematics education should be done.
- 6) The government and school administrators should provide adequate instructional materials for mathematics teachers for the teaching and learning of mathematics programme.

- 7) Adequate data on mathematics programme should be generated to allow for effective planning of mathematics programme in the country.
- 8) Mathematics teachers in rural and urban areas should be encouraged through special motivation packages to make them committed and effective.

Conclusion

Administration is key to the realization of the objectives of mathematics programme in the educational institutions. There are many problems facing the administration of mathematics programme in the Nigerian secondary school education. This paper identified: inadequate funding, shortage of mathematics teachers, inadequate infrastructural facilities, shortage of mathematics instructional materials, inadequate data to plan mathematics programme, poor capacity of mathematic teachers, and negative attitude of students towards the study of mathematics programme as the problems facing the administration of mathematic programme in public secondary schools in Nigeria. To address this problems identified in the paper, the following were recommended: that the government should increase the funding of the mathematic programme, employ more qualified mathematics teachers, provide adequate infrastructural facilities, adequate mathematics instructional materials, ensure effective capacity development programme for mathematics teachers in the public secondary schools and generate current data on mathematics programme for effective planning of mathematics programme in the country.

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