

# CHALLENGES AND PROSPECTS OF MATHEMATICS EDUCATION IN NIGERIA

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## **Abstract**

*The pursuit of mathematics for the achievement of prosperity and advancement is very conspicuous in many national developmental plans both in developed and underdeveloped countries. In this paper, an attempt was made to examine some of the major challenges facing Mathematics Education in Nigeria of today. It was argued that the success of the teaching and learning of Mathematics could only be achieved when the subject is given its rightful place. The paper highlighted the nature and usefulness of Mathematics; the goals and objectives of Mathematics instruction was examined in relation with Mathematics Curriculum Planning and Development in Nigeria. Finally, meaningful suggestions were proffered that if adopted will induce a positive change into the teaching and learning of Mathematics.*

Education according to Awo in Enoch (1996) is a systematic course of instruction, giving intellectual and moral training to persons, bringing up of the young, helping them to develop, to lead out the best in them, and to evolve an integrated personality.

With this definition in mind, the place of Mathematics in science and technological development cannot be underestimated. Mathematics is the most potent instrument that can be used to sharpen the mind. Ukeje (1990) saw mathematics as the queen of the sciences. He noted that no nation can hope to achieve any measure of scientific and technological advancement: grows beyond its man-power; without proper foundation in school mathematics. Mathematics is the bed rock of all sciences and

should as a matter of fact, be properly taught to bring out the intellectual potentials in our young ones.

Mathematics has been identified as an indispensable subject in many fields; Badmus (2002) in Obarakpo (2009) opined that a basic Mathematics education for all children is not a luxury but absolute necessity. Mathematics is predominantly a service subject because it produces skills that should be used in other areas of endeavour like science, technology, business, medicine, humanity, e. t. c. The growing needs in these areas place a burden on the subject – “Mathematics to be properly taught and understood by the learners.” This as led us to the question – “**Who is a teacher?**”

A teacher is generally regarded as someone who has sufficient amount of training in a teaching subject area and more importantly a good background in education. Lassa in Iji and Uka (2012) said that no matter how good a course curriculum is, if we do not have well trained, qualified and motivated teachers, we may not achieve the desired results/goals. No matter how intelligent the pupils may be, their understanding levels still depend on who is teaching them.

Mathematics education understood in its simplest form and most concrete sense concerns the activity or practice of teaching Mathematics. Looking at the aims of teaching Mathematics, it is important to note that aims, goals, purposes, rationales, do not exist in vacuum. They belong to people, whether individuals or social groups.

### **Aims and Values of Mathematics Education in the Society**

There is no doubt that mathematics has extensive application in life and related fields. According to observation “mathematics is a gate-way to science”. Mathematics is a language. It is the language without which science, commerce, industry the internet and the entire global economic infrastructure is struck dump. It is the only “truly” universal language, and it is an essential part of our personal and working life. Mathematics is not only a language and a subject, it is also critical in fostering logical, rigorous thinking, as such, its influence is immense. Everyone recognizes that it is vital to be able to read and write basic language (English). In mathematics, the equivalence of basic reading and writing is numeracy; numbers are the sound, syllables and word of the language of mathematics.

Mathematics is more than just the science of numbers taught by teachers in schools and either enjoyed or feared by many students. It played a significant role in the live of individual, the world and society as a whole. Mathematics is an essential discipline recognized worldwide and it needs to be augmented in education to equip student with skills necessary for achieving higher education or career aspiration, and for attaining personal fulfillment. Since mathematics encompasses all aspects of human life

it is unquestionably important in education to help students and all people from all walks of life to perform daily their tasks efficiently and become productive, well informed, functional, independent individuals and members of a society, where mathematics is the fundamental component. Mathematicians create so-called models of the world, and study them. This applies even to the simplest mathematics, after the age of five and six we do not study addition by actually combining groups of object and counting them. Instead we use an abstract mathematics contraction or model known as the positive integers i.e (the numbers 3, 4, 5, 6, and so on). Once again, Mathematicians study model so as to idealize world of intangible things that we do not come across in everyday life. For example, talking of a perfect circle, this does not concern tangible-worldly thing like chairs, table and so on.

The study of mathematics can satisfy a wide range of interests and abilities, it developed the imagination; it trains in clear and logical thought. It helps in handling varieties of difficult ideas and unsolved problems, because it deals with the question arising from complicated structure, and with a continuous drive to simplification: they are able to finding the right concept and method to make difficult thing easy to explain and understood. In so doing, languages, formulas and insight are developed which may then be applied to make a crucial contribution to our understanding and appreciation of the world around us, and thereby chart our way in it.

### **Challenges facing Mathematics Education**

Some of the major challenges are outlined below:

- **The Challenge of Teachers**

Ukeje in Enoh (1996) opined that the low quality of the teaching personnel constitutes a serious problem in the quest for social reconstruction. Students cannot acquire the necessary skills that are needed in transforming Nigeria in terms of technology without sound and educated teachers.

Going by the common saying that “you don’t give what you don’t have”; unqualified teachers lack ability to deliver the contents to those they are teaching beyond what they have already known. If the teacher knows little more than the learners, he may not be able to give concrete interpretation to a concept of which greater understanding can be derived. A teacher who possesses a limited understanding of the subject matter cannot deliver effective teaching as he leaves the gap between the contents and its application which invariably will affect student’s knowledge of applicability.

Another challenge posed by the teachers is the fact that Mathematics teachers in Nigeria are grossly inadequate. Alagbe (2012) said that many primary and secondary schools have no choice but to employ teachers who have no special training in mathematics because of shortage of mathematics staff.

- **The Challenge of Students**

The vast majority of Nigerian students fear and dread mathematics, because of the seemingly abstractness of its concepts. Okafor and Anaduaka (2013) observed that many students do not immediately see the use or applicability of the subject to their lives and to the world of work around them; so they wonder why they should be troubled with the study of the subject. To these young minds, mathematics still remains a mystery that has no place in reality.

Students in secondary schools view mathematics as requirement in gaining admission into higher institutions of learning. Okafor and Anaduaka (2013) said that it is particularly disappointing to find that mathematics has remained one of the least successful subjects in Nigerian schools despite its importance, and time it receives in an average school system.

- **The Challenge of Curriculum**

Curriculum is an important instrument in educational system. As education is central to the society, so is curriculum which is the heart and life-wire of education Alade (2005) in Azuka, B. F: Jekayinfa, O; Durojaiye, D & Okwuoza, S. O (2013). Curriculum is the propeller of educational programmes and practice. The non functional or non implementation of it is injurious to any educational system.

Moreso, the mathematics curriculum right from the time of introduction of modern mathematics in Nigeria has remained the subject of controversy for teachers and all other practitioners of mathematics. They perceived the curriculum as foreign in nature having little or no ability in addressing the adequate needs of Nigerians and the Nigeria system. With this raging war in curriculum contents, there is no doubt that ineffective delivery of mathematics concepts to students will be a standing order in the system. The perceived external curriculum contents coupled with the nature of mathematics and its concepts makes mathematics more dreadful and scarring in the mind of the learners.

- **The Challenge of Society**

It is common to have Nigerian adults declare their lack of competence in mathematics publicly without any feeling of shame whatsoever. This kind of demoralizing and derogatory statement and attitude towards mathematics displayed by

the adult members of the society embolden students to continue in a downward trend in their hatred for the subject and lack of mathematical knowledge; this has been made evident with their show of poor performance in the subject during national examinations.

Equally important is the societal emphasis on acquiring certificate, not minding the mastery of the content or the subject matter. This scenario had led many students who are not so good in the subject to be involved in examination malpractices – which pose a great challenge to the education of Nigerian citizens.

- **The Challenge of Funding**

The issue of funding by the government and other relevant authorities has been a major challenge to mathematics education. The budgetary allocation to the education sector has been grossly inadequate as compared to funding from both developed and some developing countries. In Nigeria, education sector has not received top-most priority in budgetary allocation as it deserves over the years.

All these challenges notwithstanding, mathematics education has a lot of potentials and prospects to offer to our teeming youths.

### **Prospect of Mathematics Education in Nigeria**

Mathematics is an exciting and challenging subject which continues to develop at a rapid rate across many research areas. It has a natural elegance and beauty. Taking a real world problem and creating and applying mathematical models to aid understanding is often hugely satisfying and rewarding. Therefore, for our students to enjoy mathematics at school, we must make sure that there are some elements of “good teaching” of mathematics — listening closely to students’ ideas, for example, or being sensitively careful at the interface between mathematical and everyday language — are especially important. They are important in order to recruit students into mathematics, as well as to help them succeed there.

Mathematics today is having an enormous impact on science and society. The influence may be silent and appear hidden but has shaped our world in many ways. Mathematical ideas have helped make possible the revolution in electronics, which has transformed the way we think and live today. The information technology (IT) of today has transformed the world into a global village. These advances in science and technology are made possible by the numerous developments in pure mathematics.

Mathematics is a universal part of human culture. It is the tool and language of commerce, engineering and other sciences – physics, computing, biology etc. It helps us

recognise patterns and to understand the world around us. Mathematics plays a vital, often unseen, role in many aspects of modern life, for example: (1) Space travel, (2) Safeguarding credit card details on the internet, (3) Steming the spread of epidemics, (4) Predicting stock market prices, (5) Business decision making. E. t. c.

As society becomes more technically dependent, there will be an increasing requirement for people with a high level of mathematical training. Analytical and quantitative skills are sought by a wide range of employers. A degree in mathematics provides you with a broad range of skills in problem solving, logical reasoning and flexible thinking. This leads to careers that are exciting, challenging and diverse in nature. Whatever the career plans of our students may be, or if they have no plans at present, a degree in mathematics provides them with particularly good job prospects. To this end, students need to be encouraged to see and know the importance of mathematics in our national development.

In view of this fact, quality teaching personnel should be employed to teach the subject. The government policy on recruitment that has been widely criticised and described as abysmal and politically motivated should be dropped while qualified and competent hands should be engaged to salvage the situation.

The prospect of mathematics education will be brighter when the subject teachers' mastery of the subject matter is looked upon. Mathematics teachers should be aware of the fact that "memorization method of teaching mathematics" has no place any longer in the 21<sup>st</sup> century, this should be replaced with a better method which must be students' centred and friendly; this will unveil the reality of mathematical concepts to the learners.

The above will also be a reality when the curriculum planners and developers, in all stages of planning, involve mathematics teachers adequately since they are the ones to implement the contents of the curriculum. This calls for the administrators to regularly organize capacity building workshops and professional development seminars to expose them to techniques of teaching difficult topics/concepts in mathematics.

The general maxim is "if education is expensive, try ignorance" – truly, education is expensive, this is the more reason why budgetary allocation to educational sector should be improved upon by the government, while private sector participation in mathematics education programmes should be encouraged.

Notwithstanding, government alone cannot achieve this lofty ideal of effective mathematics education without the full cooperation of the society; the society should

lay emphasis on hard work and dignity of labour. "Paper qualification" at all cost, which promotes examination malpractices, should be de-emphasized. Parents will also brighten the prospect of success in mathematics in their wards and society at large, by using positive words to encourage them in the study of the subject, and also by providing them with computers, games, toys that aid mathematics activities.

### **Conclusion**

This paper reviewed the challenges and prospects of mathematics education in the Nigerian educational system. It looked at the aims and values of mathematics education in the society and argued that mathematics has great prospect and could play important role in technological development, and prosperity of our country, if the teaching of Mathematics is harnessed positively. Efforts must also be made by stake holders to put mathematics on a sound footing in Nigeria in order to propel the nation to the acquisition of a dynamic economy in the committee of nations.

### **Recommendations**

This paper recommends the following to achieve the best result in mathematics education.

- \* Highly qualified and competent mathematics teachers should be employed and current euphemism of "man knows man" should be discouraged as regard recruitment and appointment.
- \* Teacher training institutions should put up programmes and incentives to encourage many students to read and study mathematics.
- \* Regular capacity-building workshops and professional development programmes for mathematics teachers should be organized.
- \* Wages and salaries of mathematics teachers should be improved upon; this becomes necessary because of the tasking and demanding nature of teaching of mathematics.
- \* The UNESCO declaration of twenty-six percent (26%) budgetary allocation to the education sector and invariably to mathematics education, should be given accelerated implementation by the government.

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