
THE PROBLEMS OF POOR MATHEMATICAL BACKGROUND IN NIGERIAN POST SECONDARY EDUCATION: A WAY OUT

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Abstract

This paper tries to review certain issues that led to poor background in Mathematics and the inherent problems that subsequently emerge as students leave secondary school for higher education. Generally speaking we know that once the foundation of anything is wrong, automatically all other things that will come after that will manifest a lot of problems. It is in view of this, that these problems were examined and of course a way out was reviewed. Suggestions and recommendations for general solutions were stated, for this is an issue that indeed needs an urgent attention, if Education in Nigerian will actually have a proper shape.

The backbone of the 21st century technological development is Mathematics. It has been the bedrock of any technological development. According to Ogunimoyela (1986), Mathematics is the bedrock of all scientific and technological breakthrough and advancement. The author stated further that Mathematics is primarily concerned with the methods of discovering certain truths and the nature of the truths so discovered. This implies that the society is much more comfortable and relaxed when emphasis is placed on application on Mathematical concepts. Also Obodo (2000) defines Mathematics as a language that uses carefully defined terms and concise symbolic representation which add precision to communication. The author notes that the language of Mathematics are systems of sounds, words and patterns which are frequently used in communicating mathematical ideas by mathematicians and other related professionals.

In everyday life, people talk, practice and participate in mathematics-related activities without consciously knowing them; they use numbers symbols, sizes, shapes, space, patterns, generalizations, measurements, models, quantities, relationships and functions. Mathematics is useful, essential and necessary for the most needed scientific, technological, social, political and economic development of this country, yet the attitude and response of students of tertiary institutions manifest vividly a poor background to the subject.

It is generally believed that the technological development of any nation strongly depends on manpower the nation acquired. The essence of tertiary education is

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to produce relevant manpower for the economy. In National Policy on Education, Federal Government of Nigeria (1998) stated that tertiary education aimed at contributing to national development through high level manpower training; to develop and inculcate proper values for the survival of the individual and society, also to acquire both physical and intellectual skills which will enable individuals to be self-reliant and useful member of the society. This manpower includes the teachers, engineers, medical doctors, technologists and others which are all the output of our post secondary education. In order to produce future scientists and technologists in quality and quantity, the sound knowledge of Mathematics at the secondary level is inevitable.

More specifically, the Polytechnic education is aimed at provision of the technical knowledge and skills necessary for agricultural, industrial, commercial and economic development of Nigeria, and to train people who can apply scientific knowledge to solve environmental problems for the convenience of man. Considering the aims of education and the primary goal of learning mathematics, the National Board for Technical Education (NBTE) considered it that, having a credit pass at O'level is pre-requisite for admission into all managerial courses of the Polytechnic. Also, the NBTE made at least one course each of mathematics and statistics as a core course for all managerial studies of the Polytechnic Education. By this, deficiency in Mathematics is a big problem in post secondary education. Virtually all the courses offered in tertiary institutions have one thing or the other to do with Mathematics. This paper therefore, looks at the problems encountered in the teaching and learning of Mathematics with students having poor mathematical background.

The Root of Poor Mathematical Background

What we know about students in respect to Mathematics is that most of our students do not have interest in the subject. The major reason for this is because of their poor background knowledge of the subject.

According to Onyewadume (2008), in 1988-1999 when he taught in Love nursery/primary school Ibadan, he observed that most of the students of the classes that he taught in the school performed better in other subjects other than in Mathematics. Some of them lacked the method of counting and the school did not ever have instructional media that could be used to teach them. Thus, every effort to impart knowledge to the pupils was only through textbooks and through no other means. This is a basic problem, where you lay foundation of Mathematics only through the use of textbooks, and with no instructional materials.

For instructional materials to be available we can also talk of mathematics laboratory being feasible, a situation where certain concepts of Mathematics are made to be physically seen by these young ones at that level. Any pupil that starts at that rudimental level to appreciate certain mathematical concepts will never develop phobia for mathematics.

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As rightly observed by Onyewadume, he said when he finished as a graduate in mathematics and statistics in 1993, he happened to teach as a graduate in Mathematics and Statistics in 1993, he happened to teach as a Parent teachers Association (P.T.A) teacher at Renascent High School Koloko area of Ibadan. He observed that students filled the classes but there was no seat then. In a situation like this, what do we expect from such students? You will discover that many of them will not even be paying attention. When such situation persists you will discover that children will not have interest or love for the subject. As a result of that many of such students will roam about during the period of Mathematics. It will then be that lack of conducive classroom environment is a problem that will make some students not develop properly in Mathematics. Lack of chairs and lack of desks in classes and too many students in a class will affect the students. One the whole, all made in order to impact knowledge of Mathematics to students will seem abortive because of lack of those necessary amenities. Actually, to get good background needed in Mathematics, children need a one to one attention. But with too many in a class it becomes difficult.

Location of school also constitutes its own problem. For instance, schools located in urban areas are easily accessible unlike the ones in the rural areas where students and teachers alike have to trek long distances to get to school. On arrival at school, they will be worn out and will not be able to give enough attention to subject like Mathematics that has several abstract concepts. Again schools in the rural areas become hide outs for WAEC, NECO or GCE examinations due to lack of strict supervision. Students go to such schools and take their examinations anyhow, thereby getting credit in Mathematics without actually knowing the subject matter. This, in fact becomes a problem when such students eventually get admission into a tertiary institution.

Problems of Mathematics Education

The problems of Mathematics education in Nigeria are multidimensional. They range from insufficient trained teachers at all levels, to insufficient fund and facilities for research, the attitude of the government and the negative attitude of the society to Mathematics education. The young ones these days are after money instead of the search for knowledge. There are also problems posed by special centres where one who does not understand anything at all in Mathematics will get a credit pass in Mathematics or even an A, and with such result, he will be qualified for one course or the other in a post secondary education. Apart from special centre syndrome, many failures in Mathematics emerge.

According to Ale (1989) the causes of failures are translated thus;

Table 1: Causes of Failure in Mathematics:

Teaching problem	67%
Negative attitude	12%
Examination difficulties	21%

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Awodeyi (2003) undertook a study of the performance of 100 level B.Sc. (Education) students of Mathematics of the University of Uyo. The result of their performance is tabulated below:

Table 2: Frequency Table of Students' Score Showing class Boundaries Grades and Frequency:

Boundaries	Grades	Frequency	Cumulative frequency
0-39.5	F	348	348
39.5-44.5	E	143	491
44.5-49.5	D	73	564
49.5-59.5	C	81	645
59.5-69.5	B	27	672

It is seen from the table that it is only 114 students that have grades between A and C, 216 students had E and D while 348 students failed the examination. In fact, 51.33% of the students failed the examination. In other words the percentage of the students that failed the examination is more than the total percentage of the students that passed examination.

Many attempts over the years have been made to correct this problem; however, the situation is getting worse instead of getting better. Many students at O'level examinations resort to special centres where they will get a credit pass in Mathematics for easy admission into a tertiary institution. Olayi and Etang (2003) observed that Mathematics and Mathematics educators in our tertiary institution are now faced with the problem of over populated lecture rooms and that of inadequate or total absence of modern instructional materials. Mathematics courses cut across almost all the departments in a tertiary institution especially sciences and applied science based course. It is this that generates the kind of population we see in Mathematics lecture halls. According to Aminu (1995) as quoted by Onyewadume (2008), Mathematics is not only the language of science; it is essential nutrient for thought, logic, reasoning and progress. It is a systematized original and external branch of science. It is a creation of human mind concerned primarily with ideas, processes and reasoning.

Despite the importance of Mathematics in the educational system, the yearly performance of students seems deteriorating. The fact still remains, that once the foundation has problem the entire system will have problems.

Notably, students are given admission despite the fact that they have not passed Mathematics as one of the compulsory subjects. They are allowed to run their course but are instructed to make sure that they pass the subject before they graduate or else they will not be issued their certificates. Of course, in such circumstance they will by any means get it as they are now exposed the more, being in a tertiary institution.

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Once this poor Mathematical background has been there, it becomes difficult for the students to understand the subsequent teaching of different Mathematics courses in the tertiary institution. It is not only in Mathematics, but also in all Mathematical related subjects that will be affected. As a general observation according to Adeniyi (1988), the cause of widespread low-level performance in mathematics in schools could be largely ascribed to the mechanical and uninteresting method of teaching which is devoid of understanding of the real meaning of Mathematics concepts. Mechanical and uninteresting method of teaching which makes the atmosphere seems as if the students were being forced to learn the subjects.

Conclusion

The problems of Mathematics education in post secondary education need an urgent attention. Therefore, the government is being called to rise to their feet and do something now. If the prevailing problem is not rightly visited then in a few years to come, several graduates being produced will be of great deficiency. There is need that the way out of this problem be implemented and not to be ignored.

A Way Out

When you get into the universities you will see several students reading pure Mathematics but with no intention of teaching Mathematics after graduation. The Federal Government as well as state governments should review the salaries of teachers so as to encourage more Mathematics graduates into the teaching profession. In fact, special incentives should be provided for those that will go to the primary section where the foundations for Mathematics are laid.

Since there are so many students to cope with at a time, government should equally look into the matter of sending Mathematics specialists into primary schools for the sole purpose of teaching Mathematics. When this is done, the matter of teachers who do not know anything about Mathematics or who are rather not interested in the subject will be avoided. By so doing proper foundation will be laid for Mathematics so as to have a better future for the nation technologically.

Possible solutions can be provided if Mathematics conferences are organized from time to time. These conference meetings will be of great help to the participating teachers. They will develop and improve their teaching techniques and they learn to use whatever curriculum that is approved by the Ministry of Education.

It should be noted that there is problem already, so we must seek for solution for the prevailing problem. In our tertiary institutions, several teachers do not go for conferences like this in order to up-date their knowledge because of fund. Government therefore, should see a way of enforcing the institutions of higher learning techniques and stop adopting the old traditional lecture method.

Government should employ enough mathematics graduates to teach mathematics. In doing this, they should enhance their salary package by giving them mathematics allowance. They should also make sure that instructional materials for teaching mathematics are available in our schools together with mathematics laboratory. Mathematics laboratory is so much needed at all levels of education. This will enable the students to practice the abstract concepts in Mathematics and by so doing they will develop likeness for Mathematics.

Our rural areas should be developed. Government should provide infrastructural facilities to rural areas. All amenities needed for students to learn should be adequately provided in rural schools to facilitate learning. Some of these students in rural areas have great potentials that should be harnessed; they must not be dumped there in the rural areas.

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