



# Mathematics Education, a Tool for National Development

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**Abstract:** Every nation needs to put mathematics front for its influential usage to our day to day activities as well as, being it compulsory and prerequisite to enter every high institution of learning. The literature in this study shows that mathematics education is everywhere, in fact in agriculture, mathematics was also found very useful particularly in the area of food production which without people could not survived and this is invariably affect national development. Even the prescriptions we received from the medical practitioners were completely using mathematics knowledge, as indicated in the literature that mathematics knowledge could be utilized when a human being is physically fit and as such could help in the national development. Moreover, this study indicates that mathematics is useful to every aspect of our life, as the researcher itemized the points one after the other and in this study, the literature have shown that there would not be national development in any nation that neglect the teaching of mathematics education as well as science and technology. Hence, for any nation to develop to it teeming age it requires extensive knowledge of mathematics as it yield professional in science and technology.

**Key words:** Mathematics education, National Development

## Introduction

Effective teaching and learning of mathematics, at all levels of schooling in Nigeria, is one among the major keys to her development. According to UDEY (2020). Based on this, therefore science, technology, engineering and mathematics (STEM) could be a vehicle Nigeria need to develop as per head with our counterpart across all other country in the world. With regard to this assertion, Udey (2020) posits that "to develop technology, we need to understand technology itself and its philosophy. Understanding technology required extensive knowledge of science and how and what makes things happen. Researches of mathematics education indicate that to become scientist you need to understand language of science which is mathematics. In relation to this Udey (2020) states that development will

grow faster and better if Africa at large and Nigeria in particular, embrace mathematics as a culture of love.

Mathematics is as old as the world itself, it is a natural philosophy and a stone age technology which deals with radical thinking and logic, mathematics is a science of reasoning (Udey, 2020); but yet STEM researches show that, "today one can graduate from secondary school in Nigeria and Africa in general without a good knowledge in mathematics, one can equally guess that in Nigeria, only few students possess the ability to think out of the box. These could be related to how Nigeria organized events, plan programs and make political decisions. To buttress this point, data from the UNESCO institute for statistics raises alarm about the prospects for 617 million children and adolescents who are unable to read properly or handle basic mathematics. This why the mathematics improvement project (MIP) has produced a book titled basic concept on difficult area in secondary school mathematics and solution to WEAC and NECO SSCE to simply the difficult in learning mathematics.

No wonder, FGN(2010) comment that Nigeria, cannot afford to maintain her current posture of a consumer nation for a much longer time in any aspect of her national life. According to Haruna (2014) "the country must rise from the deplorable states as a willing acceptors of all sort of garbage to a proud of useful, new ideas.

### **Importance of Mathematics Education in National Development**

According to Esangbedo (2014) states that students need to see the real need for mathematics, we do need it. He said that mathematics is in our usage at every situation. Study of mathematics education showed that we need mathematic knowledge due to its importance in our daily life. According to Esangbedo (2014) we use mathematics in our daily transaction, such as buying and selling as well as planning present and future transactions and saving in the future.

Mathematics education researches shows that many entry-levels jobs required employees to some mathematics knowledge, even understanding, the basic functions could be advantageous. According to Esangbedo(2014) some importance skills obtained from mathematics course include:

1. The ability to identify and analyze patterns.
2. Logic and critical thinking skills.
3. Ability to see relationship.
4. Problems solving skills.

## **Roles of Mathematics Education in National Development**

History shows that mathematics education touches all aspect of human Endeavour, and plays significant role in the national development as well as in our day to day's activities, as captured in the following points:

**Engineers:** civil engineers use mathematical equation to study the chemistry of materials in order to use the right materials for the project. Mathematics education studies show that, industrial engineers requires mathematics to design, develop, test and evaluate integrated systems for management. Industrial production processes, including human work factors, quality control, logistics and materials flow, cost analysis, and production coordination. In civil engineering, algebra is used on a daily basis and they work exclusively on differential equation in engineering mathematics, statistics as well as calculus.

**Agriculture:** the role of mathematics skills in agriculture is to calculate the rate of application of fertilizer to avoid error. Mathematics knowledge enables the agriculturist, to calculate the nozzle size needed, the amount of pressure, the flow rate and quantity of water needed. According to Esangbedo (2014) states that farmers also use the knowledge of mathematics to measure their land and estimate particular harvest from some part of the land. The major problem facing Nigerians today is that of starvation and poverty (Esangbedo 2014). Based on this therefore, government at all levels need to find mathematics in union with science and technology, as the literature of this study shows that mathematics is the bedrock of science and technology and it is a tool for national development .

**Accountants:** mathematics is an essential tool for accountants. Study has shown that an accountant needs a strong understanding of mathematics as its allows him to perform financial analysis and make sound decision in their work. Accountants need to understand and use mathematical concept, such as arithmetic, algebra, geometry, and statistics. Accountants assist business by working on their taxes and planning for upcoming years. They work with tax codes and forms, use formulae for measuring interest , and spend a considerable amount of energy organizing paper work. According Idahosa and Awole(2008) in a growing economy, more managerial problem arise to make faster and better decision, managers are resorting to mathematics. Studies of mathematics education have it that it is compulsory for student who not mathematics major to be exposed to mathematics courses. According to Esangbedo (2014) mathematical analysis becomes necessary in business decision making when the chief executive and his team are faced with the problems of selecting from among several alternatives a plan for expanding capacity.

**Medical Doctors:** mathematic education studies show that there are so many ways that mathematics is vital in human and veterinary medicine. Medical profession may be calculating the risk of diseases spreading, how much medicine to give, how quickly the heart is beating, or whether the patient is improving or declining. Mathematics is incorporated in to the daily lives of the health care professionals, you may be wondering why nursing and medical students need to study mathematics as part of their course. Doctors and Nurses use mathematics when they write prescriptions or administer medications. According to Esangbedo (2014) says medical doctors must understand the dynamic system of the human

body, their concern is always to find out the illness situation of the current time so as to proper appropriate drugs to the patient according to the mathematical prescription.

**Lawyers:** Studies of mathematics education have it that lawyers does not include a mathematics section, and law schools don't teach mathematics at part of their curriculum, basic mathematical competence is useful to attorneys. Many lawyers feel that training in mathematics improve their analytic skills, personal finance concepts and accounting principles being comfortable with numbers can help attorneys practicing in these areas serve their clients more effective. Studies show that mathematics requires an understanding of formulas and proofs that can train the mind to think logically. This can be particularly important for attorneys who are dealing with emotionally charged cases as well as in the court room or during intense negotiation. Based on this therefore, strong analytic skills can enable the lawyers to perceive weakness in witness stories or in case made by a logic to craft persuasive argument to present before juries and judges.

**Politicians:** according to the studies in mathematical education, elections are all about numbers; numbers are important for winning. The election process, elective periods, and progress factor are dependent on numbers. The ability to distinguished between good and bad mathematics in political context is detrimental to effect citizens.

**Computer Programmers:** computer programmer create complicated sets of instructions called programme software to help use computers to solve problems. They must to have strong basic skills Charles babbage a Cambridge mathematician was the first to conceive the ideas of mathematical device to compute and store information. The first generation of computer come in to being during 2<sup>nd</sup> world war in 1939-1945. The emergence of computers has greatly accelerated the development of powerful algorithms for solving problems.

**Chemists:** mathematics is use widely in chemistry, and is absolutely necessary to explore, important concept in chemistry. Without some basic mathematics skills these calculation and therefore chemistry itself will be extremely difficult.

**Biologists:** mathematics education allows biologist to describe how molecules move in and out of the cells, how drug get broken down in the body, how bacteria shuttle through blood vessels and many other physiological process. Study has shown that mathematical biology is a field of research that examines mathematical representations of biological systems.

**Architect:** mathematical education researches have shown that, geometry, algebra, and trigonometry all plays a significance role in an architectural design. Architect apply this mathematics forms to plan their blueprint or initial sketch design. They also calculate the probability of issues the construction team could run in to as they bring design vision to life in three dimensions. According to Esangbedo(2014) architect designs, building for structural integrity and beauty, they must to know how to calculate loads for finding acceptable materials in design.

**Managers:** business mathematics helps in assessing the financial performance of the business. It helps in estimating the incomes and expenditures along with risk analysis. It also helps in the assessment of the rivals and their key areas along with their business strategies.

**Geologist:** according to Goldhunter (2023), the amount of mathematic used directly in geology is dependent on exactly on what field you are talking about. Traditional mapping takes a general knowledge of geology, but some field method rely on heavy use of statistics methods. According to him anything to do with geophysics will take a quite a bit of mathematics. To buttress this point, Mahoney(2023),states that geology is a really broad field that some aspect of mathematics in one way or the other.According to him, it covers all areas of science, and you need a good grounding in all areas of science, especially mathematics.

**Technicians:** researches of mathematics education show that mathematic technicians apply standardized mathematical formulas, principles and methodology to technical problems in engineering and physical sciences in relation to specific industrial and research objectives, processes, equipment and products. According to Esangbedo (2014) assert that technicians are always reading, measuring devices, referring, to manual, and diagnosing system problems which requires mathematical thinking and reasoning.

**Tradepeople:** mathematics education knowledge is very substantial for a trade people in various aspect, such as in calculating quantities and determining floor space ratios to ordering materials and converting measurement,based on this therefore, most trade people rely on an advanced knowledge of numbers,something that sticking with high school mathematic can seriously help solidify. According to Treece (2023) she states that “mathematics is like force,it is all around us and it operates at some capacity in everything from athletics to zoology. based on this, everything adds up, or divides, or gains or losses or multiply quantities.To concretive this, according to pan(2023) he states that “in welding, the basic arithmetic include, adding, subtraction, multiplication and division. most of these revolves around the tape measured and caliper. Another aspect of mathematics used in welding include: using L shaped square and a triangle shaped square. In fabrication lower, mathematics is important, and not just arithmetic, real mathematic! Calculate how much materials you need to make a cylinder or cone is an easy example.

Based on the uses of mathematics in trading, also brow (2023)states that mathematics is a tool you can use to improve trading, but it is not required for trading, he states again that most traders use at least some simple mathematics, such as selecting stocks in part by price learning ratio, or managing risk by volatility targeting and stop losses.

### **National Problems**

In view of the roles and uses of mathematics itemize in various point above, and looking at the significant position of primary education and as the foundation levels in the education system, it has become clear to all concerned that there should be increasing need for the pupils of primary school age to learn more mathematical term, principles, operations, and scientific thoughts Haruna (2014). The literature of this study indicates that mathematics uses touché every part of human being and at the same time also, studies of

mathematics education, particularly those from examinations bodies such as WEAC, NECO, GCE among other have shown that students' performance in mathematics after primary education is ugly, this is supported by Isah (2021). This requires expert to provide different means of improving student performance in the subject Isah(2021).

According to Haruna (2014) "topics such as simple geometry, areas and the volumes of solid figure, everyday arithmetic, simple proportions, ratios, statistics etc, will assist them a lot in carrying out their daily activities. This assertion needs government at all levels to do everything possible to improve, the welfare of mathematics teachers so as to work diligently for the success of primary school pupils in mathematics as well as other levels of education. For road side's welders to effectively appreciate the areas and volumes of the rectangular or cylindrical object being constructed for kerosene surface tank and underground petrol tank respectively, students need to have the knowledge of how to find areas and the volumes of the rectangular or cylindrical object and the number of liters. According to Haruna (2014) states that the low levels of literacy in mathematics in particular and technology in general are now recognized as a single most exhibiting factor in our efforts toward development in science and technology, he also stressed that the environment in which students learn is not conducive. School infrastructure is largely poor, teachers quality and quantity are deficient, curriculum are over loaded. The stories at the tertiary and university levels remained the same (Haruwa 2014).

### **National Development**

When national development is mentioned, there is a tendency for one to equate it with economic development (Anumudu 2023). National development is seen according to (Achimugu 2000) as the extent to which a nation is able to overcome her complex socio-economic, political and cultural issues to ensure progressive changes in the quality of life of all her citizen. To corroborate this Anumudu(2023) stated that national development can not improve in the living standard of each citizen. There are so many problems that could not allowed national development in Nigeria among them include, low gross national product, low levels of technological development, low standard of living, height level of unemployment and under employment, dependence of agriculture that is not even mechanized. According to Anumudu (2023) "other obstacle to national development are low quality of education, lack of capital for investment as well as skilled man power, near absence social amenities, political instability, high motility rate, as a result of poor nutrition and poor medical services, leadership incompetence, corruption, inequality and general poverty are also present in Nigeria.

This is true particularly here in Nigeria, where the equipment, facility and materials needed for practical and meaningful education are either lacking or grossly inadequate. According to Anumudu (2023) this is particularly in the field of science, where lecturers could not find a single microscope in a good working condition or the commonest chemical to undertake routine experiment even for their students. Studies of mathematics education have shown that where some of these apparatus, equipment exist, they have either become obsolete or are in a very bad state of repairs.

The society is disillusion with mathematics because of its perceived difficult and abstractness. It is now commonly viewed as a difficult and dull subject, which consist largely of memorization of formulas and devoid of understanding(Anumudu 2023). Studies of mathematics education have it that in school mathematic was taught well either due to short teaching aids, method of teaching, lack of quality teachers among others. In relation to this,(Adesida 1990) asserts that in mathematics” as a result of this, performance of student in mathematics has degenerated so badly. According to Anumudu(2023) a nation that keeps issues of scientific and technological development foremost in its mind must pay attention to how its citizens are brought up. The aforementioned are some of the obstacle to national development.

### **Conclusion**

Every nation needs to put mathematics front for its influential usage to our day to day activities as well as, being it compulsory and prerequisite to enter every high institution of learning. The literature in this study shows that mathematics helps us in almost all aspect of our lives ranges from education, technicians, trade people, managers, geologists, chemists, biologists, architects, computer programmer, lawyers, accountants, medicine doctors, among others, in fact in agriculture, mathematics was also found very useful particularly in the area of food production which without people could not survived. Even the prescriptions we received from the medical practitioners were completely using mathematics knowledge. In facts this study indicates that mathematics is useful to every aspect of our life, as the researcher itemized the points one after the other and in this study, the literature have shown that there would not be national development in any nation that neglect the teaching of mathematics as well as science and technology.

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