

# ENTREPRENEURIAL AND FUNCTIONAL MATHEMATICS EDUCATION AS A MEANS OF ACHIEVING THE NATIONAL OBJECTIVE OF VISION 2020 IN NIGERIA

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## **Abstract**

This paper examines the concept of entrepreneurial and functional mathematics in the light of the vision 2020. It highlights some parameters of development which include: the polity, education, economic and technology, poverty and hunger alleviation and discusses how the skills and knowledge acquired in functional mathematics can help in the realization of vision 2020. Suggestions for improvements of mathematics curriculum to enable mathematics be functional to meet up with the current challenges are made. This includes the emphasis on the application of mathematics, relating every mathematics concepts to its practical use, and conclusions made.

## **Introduction**

“By 2020, Nigeria will be one of the 20 largest economies in the world, able to consolidate its leadership role in Africa and establish itself as a significant player in the global economic and political arena” (concept for Nigeria’s vision 2020, 2008). This was the pronouncement of the then president Yar’Adua during the formal inauguration of the National Council of Nigeria’s vision 2020 and the National Steering Committee. The Current Administration has also shown interest in the pursuit and attainment of vision 2020 which must be sustained by proper planning, focus and consistent efforts for its achievement. To be one of the largest economies in the world, the nation need to enhance her economic development performance through some identified parameters. How then will entrepreneurial and functional mathematics Education help in realizing this vision 2020 through the parameters?

## **Entrepreneurial as a Concept**

The Oxford Advanced Learners Dictionary defines entrepreneur as a person who makes money by starting or running businesses especially when this involves taking financial risks. The Encyclopedia Britannica also defines an entrepreneur as one who organizes, manages and assumes the risk of a business or enterprise. The Wikipedia sees an entrepreneur as a person who has possession of a new enterprise, venture or idea and assumes significant accountability for the inherent risks and the outcome.

In all these definitions, there is an outcome desirable, and a personality who is ready to accept full responsibility for the outcome. Hence, for whatever idea Nigeria (being the entrepreneur) has conceived, she must embrace accountability. This is achievable by using functional mathematics and by accepting full responsibility for the outcome. What then is this functional mathematics?

## **Functional Mathematics**

Mathematics has been defined by Odili (2006) as the science of quantity and space. He explained further that mathematics is a systematized, organized and exact branch of science, the creation of the human mind, concerned primarily with ideas, processes and reasoning. He expounded

further that it is a body of knowledge, a collection of techniques and methods, made by human activities to solve human problems. Ojerinde (1999) had earlier described mathematics as the communication system for those concepts of shapes, sizes, quantity and orders used to explain diverse phenomena both in physical and economic situations.

In this paper however, mathematics cannot be totally accepted as the creation of the human mind. This is so because human beings did not invent mathematical concepts but discovered them in the process of trying to solve human problems.

According to Adegboye and Adegboye (2003), from the beginning of the creation of the universe, there has been evidence of mathematical concepts. The earth, the heavenly bodies and waters are said to follow certain fundamental mathematics laws. They went on to say that the spiral curve and the mathematical laws of physics are found everywhere. Therefore, man's quest for solutions to everyday problems brought about the discoveries of these concepts and its consequent development for further use in all areas of life. A nation that therefore wishes to develop and be one of the largest economies in the world must not only plan her mathematics education comprehensively but also make it functional to realize its vision.

Functional mathematics has been considered by Qualifications and Curriculum Authority (2007) in the broad sense to mean providing learners with the skills and abilities they need to take active and responsible role in their communities, everyday life, the work places and educational settings. Functional mathematics they said, require learners, to use mathematics in ways that make them effective and involved as citizens, operate confidentially, and to convey their ideas and concepts clearly in a wide range of contexts. Therefore, in our present context of achieving the vision 2020, we need the functional mathematics to take us to the "promised land" with the entrepreneurial mindset.

### **Functional Mathematics for Polity**

By 2020 the country is expected to be peaceful, harmonious with a stable democracy. The present administration is determined that the vote of her citizenry counts in the forth coming election. Numeracy therefore comes to play and functional when the numbers and proper counting are done to determine the winner in an election. This brings about peaceful and acceptance of the leader declared the winner. The skills and understanding developed in the mathematics classroom is to help develop active citizens (Johansen, 2004) because the study of mathematics sharpens the mind and gives the individual the ability to react in the right direction in times of emergencies and especially in a democratic society. At a psychological level, exposure to mathematics helps in developing an analytical mind and enhances better organization of ideas and expression of thoughts, which is needed among the polity of a country.

In addition, the statistics which is an integral part of mathematics also enables the government to know the population of the country; state and local government so that planning and distribution of amenities and managing the resources can be done for the benefit of all. Moreover, the application of probability theory can also be used to predict outcome of an election that will bring peace. All these will enhance peace and harmony needed for the realization of the vision 2020. If we are not well versed in the language of numbers, we would find it difficult to reach at important decisions and perform everyday tasks required in a democratically stable nation.

### **Functional Mathematics for Economic and Technological Development**

By 2020, the nation's economic and technological development is to be sound, stable and globally competitive with adequate infrastructural services that support the full mobilization of all the economic sectors.

According to Fakuade (1977), any country aspiring for national economic growth, must use mathematics as a tool in the sciences, industries and technology. Mathematics is required in subjects like physics, chemistry, biology and in the understanding of elementary principles of all science subjects. It is also generally believed that the technological development of any nation strongly depends on manpower the nation has acquired and this manpower includes teachers, engineers, medical doctors, technologists and others. (Kolawole and Oluwatayo, 2005). The sound knowledge of functional mathematics is what used to produce future scientists and technologists in quality and quantity. Functional mathematics has also been useful in the development of electronic computers and information technology that has turned the whole world into a global village, because the binary system has been used as the symbolic mathematics language of the computers. The knowledge of mathematics is what enables the scientists to analyze the experimental specimens of their experiments and compare their result with the standard literature. The knowledge of angles of elevation and depression and bearings has been of immense help and a vital tool for pilots, sailors, astronauts to locate their position of landing and sailing. As modern technology is moving into most work places, the mathematical skills and understanding needed in a skilled and unskilled job function is becoming more and more visible (Noss, 1998) and Nigeria if serious about realizing her objective of vision 2020, must use functional mathematics. Functional mathematics has helped and will continue to help produce bankers, engineers, accountants, architects, technologists, doctors and many other professionals.

### **Functional Mathematics and Education**

The vision 2020 stipulates modern and vibrant education systems which provides for every Nigerian the opportunity and facility to achieve his maximum potential and provides the country with adequate and competent manpower. The primary education is the foundation upon which the rest of the education system is built, and is the key to the success or failure of the whole educational system (FGN, 2004). The major goals of primary education are the inculcation of permanent literacy and numeracy; the ability to communicate effectively and as well as lay a sound basis for scientific and reflective thinking. Not only has primary education been made compulsory to all Nigerian child for every child to acquire, the concept of numeracy is emphasized and this is the foundation of mathematics which will enable the pupils be useful in either trading, vocational training or further schooling and to the society at large. If the proper and functional foundation is laid, the subsequent building blocks of education (secondary and tertiary) become very sound and vibrant. Also, the teaching and learning of functional mathematics at the secondary school level as stated in the National Policy of Educational also will prepare the individuals for useful living within the society, higher education, provision of trained manpower in the applied science, technology and commerce in higher levels of education.

These cannot be realized without the adequate knowledge of functional mathematics. It is this importance of mathematics that has led the federal government to make the subject compulsory from primary to secondary schools. This will be a good preparation ground for vision 2020.

### **Functional Mathematics as a Means of Alleviating Hunger and Poverty**

Mathematics is not just for science people or mathematics majors, it is for all. It is not about imaginary numbers or calculating difficult equations, but it is about making better daily decisions, being focus and leading richer fuller lives.

Mathematics can help us buy things wisely, live within our budget, plan for retirement and understand simple and compound interest to help us manage the way our money grows and keep it from shrinking, thereby alleviating poverty and removing hunger. The nation cannot be said to be one of the 20 largest economies in the world if her citizenry are poor and hungry.

The importance of mathematics for a common man is underpinned whenever they visit the bank, buy things in the market, and visit the post offices, deal with transport, business transactions, trade, farming and harvesting and the likes. Adding the cost of what we buy in the market involves the same mathematics process, not minding the unit of exchange. We can also make our meals with the knowledge of functional mathematics and save money. At this time when even the common man is being increasingly dependent upon the application of mathematics in the day-to-day activities of life, the role of mathematics has been undoubtedly been redefined (QCA).

Right from getting up early in the morning to carrying out the daily chores, traveling out to work etc, almost every next moment, simple calculations are done at the back of the mind. These are done unconsciously without a thought being spared for the use of mathematics. Therefore, the functional mathematics can be used as a means to help in proper thinking, planning and executing of ones daily activities to reduce poverty and enhance quality living.

It is evident in the world today that in the absence of mathematics there will be no science, and if there is no science, there will be no technology; and if no technology, there will be no development and consequently, modern society. No mathematics, therefore means no modern society. Mathematics has always been seen as a factor in the development of a nation. The prosperity of any country depends on the volume and quality of mathematics offered in its school system, hence, if the objectives of the vision 2020 as stated must be achieved, the mathematics curriculum of the country must be made functional to be able to deliver the goods of vision 2020.

### **Conclusion**

The move to achieve the objective of vision 2020 in Nigeria is being paralleled by the development of the millennium goals. Apart from the number of factors motivating the development and achievement of vision 2020, perhaps the most important is the recognition that to be well prepared to realized this objective of being one of the 20 world most developed economies, we need the entrepreneurial mindset or spirit ready to take whatever risks is embedded and being responsible for the positive outcome.

### **Recommendation**

The following recommendations are therefore considered useful to improve the learning and understanding of functional mathematics.

- i. The mathematics curricular of the nation should emphasize quantitative mathematical literacy that is functional, mathematics that ensures that people are better equipped to use the knowledge and skills in a way that empowers them to solve problems and be able to make critical and informed choices, based on quantitative information.
- ii. Specific modules should be developed that will focus on functional and practical application of mathematics. Pure mathematics is being taught presently without reference to where and

- how they could be used. So that a mathematically learned person is still “useless” when it comes to the world of practical work.
- iii. The methods of assessment and evaluation in our school system should not only be based on solving pure mathematics, but life situations should be created for such knowledge to be used for solving the problems and appropriate certification given.
  - iv. Also to develop a functional mathematics curriculum that involves the learner and positive outcome will require a shift in the way mathematics is conceived, practiced and experienced in classroom. Therefore thought must be given to how learning can develop out of classroom experiences and supported by high quality resources.
  - v. The success and failure of any educational venture or the implementation of the curriculum depends on the teacher. The country should therefore not under estimate the level of support it should give to support teachers in terms of carefully structured continuing professional development.

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*Qualifications and curriculum Authority (QCA) (2007)*. Functional skills standards introduction to mathematics'. Retrieved 3<sup>rd</sup> September 2010.

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