

EFFECTS OF MATHEMATICS EDUCATION FOR THE GLOBALIZATION OF SCHOOL CURRICULUM: IMPLICATION FOR NATIONAL GROWTH, DEVELOPMENT AND PRODUCTIVITY

By

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Abstract

Education is the key to sustainable national growth, development and productivity globally. This calls for the attention of teachers in all facets of education due to their vital role of interpreting/ implementing the curriculum in order to achieve the pre-determined goals, aims and objectives of education. This study revealed that mathematics education serves as speedy vehicle that provide students with functional skills for solving practical problems in their everyday lives. The Mathematics teacher in his/her responsibilities of modeling the students, leads them in mind training that enable them understand the world around them, acquisition of knowledge, skills, capacity building and the competencies to live as individual and to contribute to the growth and development of their immediate and larger society. The aims and objectives of education cannot be achieved by the manifesto of political parties nor through the laid down policies of the nation. It is on the basis of the speculations of educational philosophers and propounded theories of educationists. However, this study focused on the concept of Mathematics education, its goals, aims and objectives in Nigeria, in the context of government laudable programs such as the Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs), Vision 2020, among others. The study also focused on teacher education and the implementation of government programs on education, hindrances to teaching professionalization in Nigeria and suggested solutions for enhancing the capacity of teachers as important agents who implement the curriculum for national growth, development and productivity.

Keywords: *Globalization, Mathematics education, growth, development and productivity.*

INTRODUCTION

Productivity implies the growth and sustainable development of any nation on the teaching and learning of mathematics, science and technology which form the bedrock that provides the springboard for the growth, effective productivity and development of the nation. To buttress this fact, Nwabueze et al (2011) affirmed that the development of any nation is usually depended on the degree and the extent of the socio cultural, social economic and political improvement that are brought about through the entrepreneurship of science, technology and mathematics. Mathematics plays an important role as the gateway to other fields of endeavor/sectors such as, Medicine, Pharmacy, Dentistry, Nursing, Agriculture, Political, Cultural, Economic, Educational and other sectors. It has its pride of place in the global world and in nation building as regards to its contexts and applications.

Today everyone is moving with the new trend in science and technology which got its roots from mathematics in the solutions to the challenges of lives. In line with this, Lassa (2012), clearly stated that human beings can co-exist peacefully not knowing how to read or write but cannot co-exist peacefully without the knowledge of how to count and calculate. Therefore the importance of mathematics education cannot be overemphasized. It remains the available tool for the formulation of theories in sciences, for explaining observations and experiments in the field of inquiry. That is why Aguele in Asika (2017) described the neglect

of mathematics works as an injury to all knowledge, since the ignorance of it brings shortfalls in science, technology and other fields of endeavour. Mathematics as the creation of human mind that involves the study of ideas and ability to conceptualize is the totality of man's civilization from cradle death (Adeneye et al 2017). The implication of this is that mathematics is very substantial at almost every aspect of human lives. Mathematics is defined by the International Commission on Mathematics ICM (2006) as the subject that reveals hidden patterns which enable people to get the understanding of the world around them. Mathematics has gone beyond the facet of arithmetic and geometry into the realm of the new trend as a diverse discipline which deals with data processing, measurements and observations from science, having its bases on inference, deduction, proofs, and models of natural phenomena, of human behavior and of social effects.

In the contemporary world, it is imperative to speak of mathematics and science education as essential to a nation to maintain or improve its development position in a world of competition, Greer (2008). According to him, such nationalistic perspective is seen in essentially every major country, but reaches an extreme in United State, where there is currently great anxiety that advances in other parts of the world, notably India and China, threatening American global supremacy. The knowledge of mathematics education facilitates the evolution of global knowledge economy which enhances productivity and it is the driving force for genuine progress and revolution which is referred to as "sustainable growth and development" However, the virtues of national development should be incorporated into school curriculum in the process of teaching/learning due to its vital roles and importance. In other words, it is very necessary for Nigeria government to aim at establishing national minimum target investments for mathematics, including special allotments for the facilitation of numeracy, mathematics and mathematics education which should be incorporated into the curriculum development process. According to Adeneye et al (2017), the struggle for nation building and sustainable growth and development is the manhunt for superiority, security, gladness and affluence. The desire for knowledge and truth is the bedrock of Mathematics Education.

If many suffice to know that Mathematics Education goes beyond the acquisition of certificate for charting a career path or a means of livelihood into a mind which involves the enculturation of sound, analytical and logical mind. Adeneye and others opined that a country who aspired prosperity must shun violence in all areas, and then produce rational and analytical minds that can fashion out solutions and engage the heuristics of creative or productive in providing solution to the enormous challenges facing Africans. By implication, for any nation to attain profitable productivity which can be seen in its sustainable growth and development, such nation must put its priority on mathematics education as the pivot stage of the nation's desire for sustainable growth, development and productivity. In this 21st century marked with digitalization, every nation including Nigeria must acknowledged the corresponding prowess in mathematics and mathematics education as the vital tool for attaining technological advancement. Therefore this study focuses on the effects of mathematics education for globalization of school curriculum as an implication for national growth, development and productivity in Nigeria.

CONCEPT OF MATHEMATICS EDUCATION

Mathematics education is referred to as the practice of teaching and learning of mathematics in a way of solving problems involving learning the algorithms and formulae

necessary for computations. It is a platform to teach and learn mathematics with better ways. Odo and Ugwuda (2014) see mathematics as a branch of science which deals with quantities, sizes and shapes as determined by numbers and signs, and is a tool whose knowledge and skills are the bedrock of all societal transformation and transfer of ideas into reality. The ability to tackle general problems that are abstract and the application of the general methods for the solution of numerous problems lays the strength of mathematics. Studying mathematics, develops skills such as arguing logically and rigorously, thinking abstractly, formulating and solving problems, analyzing mathematical models, communication, conceptual ability, interpretation, and research skills, etc which are transferable skills useful in any job and all these can be gotten from the study of mathematics (Umaru , 2017).

Mathematics education is an instrument for scientific, economic, political and human development of all nations. It is regarded as a fundamental part of human thought and logic and integral part of human existence. The knowledge of mathematics enables an individual maximizes cost and profit, save time and adjust his expenditure to his income (Nwigboji et al, 2017). This is to say that the knowledge of mathematics enables us to spend wisely and adjust our economic to suit our purposes. Madu & Hogan (2010) define mathematics education as the communication system of those concepts of shape, size, quantity and order used to describe diverse phenomena. It is made up of a set of concepts, facts, principles and operations that are fundamental to the existence of every individual (Nwigboji et al 2016). They describe it as the branch of science which deals with numbers and their operations, thereby building mental discipline and encourage logical way of critical thinking and mental rigor in the individual because it involves computation, calculation and solving of the enormous challenges faced by human beings. It will be recalled that the importance of mathematics education in national growth, development and productivity cannot be over-emphasized, it remains the available tool for scientific, political, economical and in all facets of nation development.

MATHEMATICS AND GLOBALIZATION

Globally, mathematics education according to Anigala in Nwigboji et al (2017) had gained an indisputable importance due to its frequency in all the researches in science. Globalization is the process of interaction among people, companies and government of different nations, a process by interactional trade and investment and is aided by information technology. It is a process of making something generally accepted all over the world. Globalization has unified the entire world into a small village with common socio-economic, political, cultural and educational systems (Worocho, 2011). The world can now operate as one with the educational system and this enable individual face and tackle the challenges of globalization.

Globalization process has linked education to technological and economic development. According to Atweh & Clarkson, (2005), that Global collaboration is essential for moving mathematics education forward in this global world and at the same time avoid the colonialism of the past and giving room for discipline to take its place in the role of bridging the ever increasing gap between countries. It may suffice to know that the culture of globalization has equally engendered the Millennium Development Goals (MDGS) strategies which seeks to address issues of poverty, education, equality, wealth and environment and the Education For All Goals which was supposed to have been achieved by 2015 (Obamanu & Adaramola, 2011). Although goals could not be actualized at the speculated time in

Nigeria, her hope was built on the programme of Sustainable Development Goals which was meant to improve on the successes of the MDGs and other additional goals.

MATHEMATICS EDUCATION AND IMPLICATION FOR NATIONAL GROWTH AND PRODUCTIVITY

The sole objectives of the educational system was to radically bring about a development which is relatively in line with the Millennium Development Goals (MDGs) which was adopted by all the government of the countries of the world as a blue print for development globally in the 21st century. The United Nations Organization stipulated an eight (8) point Agenda for Millennium Development Goals (MDGs). These Agenda which was supposed to have materialized in 2015 in Nigeria was as follows:-

- Eradication of extreme poverty and hunger
- Achievement of universal primary education
- Improvement in material health
- Promotion of gender quality and women empowerment
- Reduction of child mortality
- Combating HIV/AIDS, malaria and other diseases
- Ensuring environment sustainability
- Developing a global partnership for development

These could not be achieved in Nigeria at the speculated period of 2015. So many factors could be attributed to the failure such as lack of implementation of government laudable programmes/policies, corruption, insurgency, insufficient investment in the infrastructures in relevant sectors of the economy, conflicts---religious and political, unstable economy among others. In other to ensure development, the United Nations Development Programme (UNDP) introduced a Sustainable Development Goals (SDGs) otherwise known as the Global Goals. It is a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. These 17 goals agenda builds on the success of the Millennium Development Goals, while including new areas of such as the Climate change, economic, inequality, innovations, sustainable consumption, peace, justice among others priorities . The goals are interconnected, that is the key to the success on one will involve tackling issues more commonly associated with another. The SDGs which was introduced in January 2016 is to guide UNDP policy and funding until 2030. The SDGs work in the spirit of partnership and pragmatism to make the right choices on improving life in a sustainable way for future generations www.google.com

According to Adeneye et al (2017), sustainable development has to do with eradication of all forms of poverty and hunger; achieving food security and improving nutrition, promoting agriculture; ensuring good health and promoting well-being for all at all ages; ensuring inclusive and equitable education and promoting life-long learning opportunities for all; achieving gender equality and empowering all the female folks; ensuring access to affordable, reliable and modern energy for all; promoting sustained, inclusive and sustainable economic growth; full and productive employment and decent jobs for all; building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation; reducing inequality within and among countries; making cities and human settlement inclusive, safe, resilient and sustainable; ensuring sustainable consumption and production patterns; taking urgent action to combating climate change and its impacts;

conserving and sustainably use the oceans, seas and marine resources for human benefits; protecting, restoring and promoting sustainable use of terrestrial ecosystems; sustainably manage forests, combating desertification and halting and reversing land degradation and halting biodiversity loss; and promoting peaceful and inclusive societies for human habitant; providing access to justice for all and providing effective accountable and inclusive institution at all levels. All these and the realization of vision 2020 can be actualized if the government can invest on quality mathematics education which will enable nations of the world to eliminate poverty and instill in the people the ability to think critically and actualize these dreams or aspirations.

To ensure proper orientation on globalization of school curriculum as implications for national growth, development and productivity, education must be brought into play. This is so because no instrument can be more effective than education. It covers larger portion of the society and the society continually is being affected by the products of educations. In appreciating education as its affects all facets of human lives and national development, its success to a large extents, depends on those who implement it. That is, the teachers. Teacher education is basically related to every phase of development in Nigeria and so they are needed in all categories of learning such as the pre and primary schools, secondary schools, vocational and technical schools, the colleges of education, universities, adult and non formal education with programmes such as literacy campaign, continuous education, extension and distance learning, extra mural education, in-service, pre-service and training on the job among others. All these responsibilities lie in the onus of the teachers. Teacher education is therefore needed to acts as a speedy vehicle to convey and deliver these responsibilities (Tedjere, 2007). Development and education, including teacher education, are products of certain social system especially the economics and political system (Ogbiagbephan, 2008). He further buttressed this point by saying that teacher education can only contribute to global development, when appropriate economics political, scientific, technology and management structures are put in place. In others words, teachers are the implementers of curriculum and should be given the conclusive atmosphere to carry out their responsibilities.

Learners absorb more than the official curriculum while in school and they acquire cultural norms, values and behaviors from teachers, non-teaching staff, colleagues and their physical surroundings (Adeneye et al 2017). In school, knowledge, skills, perspectives and values which have relationship with productivity, growth, real-life issues, attitudes to enhance students' motivation and learning, are being addressed. Eurydice (2002) opined that school curriculum should achieve the three board education aims which include; acquisition of knowledge, skills abilities or capacities development of competence. By implication, these developed potentials should be impacted through education to real-life activities and the achievement of key competencies which will enable individual to participate fully within and outside the society.

Mathematics plays a vital role in education and in growth and productivity which brings sustainable development in all its scope be it economic, social or environment. It is a subject that has far reaching implications for the three aspect of development in geography (map), production of models, construction, architecture and engineering (Sunzuma et al in Adeneye et al 2017). It may suffice to know that no nation can grow, produce or develop without the effective teaching and learning of mathematics whose effects act as catalyst in positive human development that brings about the qualitative and quantitative changes that occur to the individuals and the nation.

CONCLUSION

Education is the key to sustainable growth, development and productivity globally. This calls for the attention of teachers in all facets of education due to their vital roles in interpreting/implementing the curriculum in order to achieve the pre-determined goals, aims and objectives of education. The study revealed that mathematics education as speedy vehicle that provides students with functional skills for solving practical problems in their everyday lives. The mathematics teacher in his/her responsibilities for modeling the students, leads them in mind training that enables them understand the world around them, acquisition of knowledge, skills, capacity building and the competencies to live as individuals to contribute to the growth and development of their immediate and larger society. The aims and objectives of education cannot be achieved by the manifesto of political parties nor through the laid down policies of the nation. It is on the basis of the speculations of educational philosophers and propounded theories of educationalists. However, this study focused on the concept of mathematics education, its goals, aims and objectives in Nigeria in the context of government laudable programmes, such as the Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs) 2030, Vision 2020, among others. This study also focused on teacher education and the implementation of government programmes on education in Nigeria and made suggestion for enhancing the capacity of teachers as the important agents for implementing the curriculum for national growth, development and productivity.

Therefore, Nigerian government should acknowledge the importance of Mathematics education for eradicating poverty and for sustainable growth, development and productivity as part of the curriculum renewal for building the nation. Also a National target for investment for Mathematics and special allotment for Mathematics and Mathematics education should be incorporated into curriculum development process. Teachers should be encouraged in all ways to be good implementers of the curriculum for sustainable growth and development in Nigeria.

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