

Functional Mathematics Skills: an Essential Tool for Functional Education and Development in Nigeria.

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Introduction

Education has been seen as an important instrument or the main engine through which any individual or nation can be developed. As a driving force for national development, no responsible government would overlook its education system. It is the citizens that bring about positive changes and contribute to the economic growth and development of the society or nation. These can only be achieved through functional education and developing in the citizens mathematics functional skills to enable them contribute meaningfully to the development of the nation. It is the citizens that translate the educational values to change the environment which he/she resides, therefore education does not take place in isolation (Efurhievwe. 2012).

Development of any nation lies on the type of education the citizens are exposure to. The role education play in the social, economic, political, and cultural development cannot be overemphasized. Functional education is an educational experience that focused on the identifying situational problems, collecting information for decision making in a world of challenges and enable the learner acquire mathematics functional skills, knowledge and attitudes for meaningful co-existence, sustainability and developments (Adewale, 2014, Agbowuro, Shuaibu and Jimwan, 2017).

What are Functional Mathematics skills?

Functional Mathematics skills are practical skills acquired in mathematics to enable the individuals work confidently, effectively and self-dependent in life. Functional skills is about knowing when and how to use the acquired knowledge and these skills in real-life situations. The learner can develop these skills through adapting and applying what they have learned to suit different situations that they will face in life (Functional Skills Support Programme (FSSP,2008).

According to Functional Skills Support Programme (FSSP, 2008) Functional mathematics requires the learners to use mathematics in ways that will make them to be effective, involved as citizens, operate confidently in life and to work in a wide range of contexts. FSSP (2008) went further to say that “for mathematics to be useful, learners must have the skills and confidence to apply, combine and adapt their mathematical knowledge to new situations in their life and work.” Functional mathematics skills are very important in

the learning of mathematics, these skills enables the students to tackle practical problems and challenges of life which he/she may encounter either at home or in his/her education (FSSP, 2008). These skills assist us when we make purchases in our daily dealings and also very important to all our everyday lives. It is a key to success, open doors to learning, to work and to life. FSSP (2008), stated that “Mathematics Functional skills are based on a problem-solving approach and which can be developed in a practical way through discussion, thinking and explanation, right across the curriculum.”

Functional mathematics skills is of great importance in the sense that it develop the students to be self-dependence, enable them to manage in a different situations, develop employable skills and give a solid or sound basis for further learning or training. Mathematics Functional skills entails identifying problems or challenges in mathematics, selecting from the knowledge that we have gained and apply that knowledge to find possible or effective solutions. Students who are functionally skilled mathematically are able to apply the mathematics they know to solve problems that arises in their life and work.

According to Webster (2019), “Functional mathematics skills are those skills that students need to live independently in the community, care for themselves, and make choices about their lives.” Everyone ability to live an independent life depends on our understanding of mathematics basic concepts. We use mathematics all the time in our everyday living. Functional mathematics skills are skills to live an independent life, it helps us to contribute or improve our society and make us to be gainfully employed. Functional mathematics skills help us with the practical mathematics skills that are useful in our education, place of work and in everyday life.

Concept of Mathematics

Mathematics has been describe as an indispensable tool for the development of any society, it is the basis for science and technology, its knowledge and skills are the bedrock of the societal transformation that can transform ideas to reality (Otunu-Ogbisi and Ukpebor,2009). Abubakar, DogogoWokoma and Afebuame(2012), stated that many branches of mathematics have useful application in all fields of human endeavour and its basic operation play an important roles in assisting the learners to make sense of the world around them. According to Omoruan (2014) “these basic operations extend the notion of numbers to create tools to model situations and solve problems in our daily lives. Without the sense of numbers and its operations solving problems would have been impossible.” No functional education can take place without the application of mathematics. Mathematics remains the basis for all sciences and every subjects that involve calculations. Training in schools cannot be applicable without the use of mathematics and it remains the tool for functional education and national development.

For an individual to acquire appropriate skills to contribute to the development of the society or nation such individual need mathematics and its skills,

Concept of Education

According to Agbowuro, Shuaibu and Jimwan (2017) “The role of education as the foundation of social, economic, political, and cultural development is undisputed.” No nation can develop beyond its educational standards or level, education is the bedrock of socioeconomic and political development of a nation (Agbowuro, et al, 2017, Joseph and Joseph, 2018). The authors went further to say that success of many nations made today in tackling major developmental problems such as poverty, unemployment and among others is as result of functional education system. Developed countries like China, Japan, Russia, and United States of America and many others made their various achievement through their commitment to ensuring a functional education system in their countries. These nations were able to overcome several developmental challenges like poverty, unemployment, ignorance etc. with the aid of good education system (Agbowuro, et al, 2017, Joseph, et al, 2018).

Education is one of the enduring legacies that any nation can bequeath to the future generation. It is a means in which the norms and values of any society can be transmitted to the younger generation. Maduegbunam and Okafor (2014) sees education as “the process by which knowledge and skills are acquired.” Okafor (1992) in Maduegbunam, et al (2014) defined education as a process of acculturation through which the individual is helped to attain the development of his potentialities and their maximum activation that will enable the society meet their developmental needs.

Nwaka (2015) sees Education as an instrument of change for any nation and main engine for the development of an individual or nation. The development of any nation depends on the kind of education the citizens are exposed to. Many nations like USA, Britain, Russia, France and Germany and many others that have advanced technologically today is as result of functional education.. For the citizens of any nation to be productive and self-reliant, there is the need for a functional education. Nigeria and many other developing countries are yet to quite achieve their set goals. These nations are impoverished and underdeveloped because they lack functional education system (Obiora, 2010), According to Nwaka (2015), “Nigeria needs education that would be practical and skills development-oriented or functionally-driven to fortify its youths with skills needed to perform contemporary tasks.” According to Agbowuro, et al (2017), “Education raises people’s productivity and creativity and promotes entrepreneurship and technological advances. The economic growth of a country largely depends on technological improvement and on its scientific and technical manpower.”

The Nigeria Policy on Education stated some of the educational goals as “the inculcation

of national consciousness, values and national unity; and development of appropriate skills, mental, physical and social abilities and competencies to empower the individual to live in and contribute positively to the society” (FRN, 2013). Nigeria has many form of educational system as stipulated in the Nigeria Education Policy namely: Basic education comprises

1. Early Childhood Care, Development and Education(ECCDE), This are the children between age 0-4 years in a crèche or nursery
2. kindergarten one year education given to children aged 5 in preparation to their entering into primary school.
3. Primary Education, the duration is 6 years. The primary education is universally free and compulsory for every citizens and is from ages 6-12. It is the foundation of every other educational levels. It is the key to the success or failure of the whole education systems.
4. Junior Secondary Education is of 3 years duration. The objectives is “to inculcate permanent literacy, numeracy and the ability to communicate effectively; lay a sound basis for scientific, critical and reflective thinking; provide opportunities for the child to develop life manipulative skills that will enable the child function effectively in the society within the limits of the child’s capacity; provide the child with diverse basic knowledge and skills for entrepreneurship and education advancement etc.”(FRN, 2013)

Senior Secondary Education is of 3 years duration. Some of the objectives are: to ” provide trained manpower in the applied sciences, technology and commerce at sub-professional grades; provide entrepreneurial, technical and vocational job specific skills for self-reliance, and for agricultural, industrial commercial and economic development” (FRN,2013). It prepares individuals for higher education,

1. Mass literacy, Adult and Non-Formal Education ii) nomadic education, comprises all forms of Functional education given to youths and adults outside the formal school system:
2. Tertiary Education comprising university education, teacher education, technology education and innovation enterprise institution.

It is unfortunate that upon all the well-structured education system with its goals and objectives as stated in the Nigeria National Policy on Education, there is still the problem of implementation and goals achievement. Most of her university graduates are unemployed. What they studied at the tertiary institution cannot be applied to the society they live in as result of the type of educational knowledge and the kind of education they

are exposed to in the schools. Most of the graduates lack the mathematics functional skills to be self-reliant and self-dependent, as result they remain unemployed. When functional education is inculcated in the students it will address the practical needs of the nation and invariably result to economic prosperity increased. Omolayole (2002) pointed out that Nigeria needs to increase her efforts to improve her educational systems at all levels and make it more functionally-oriented.

Concept of Functional Education

Functional education is that education that is relevant, prepares the individual to face his social goals, economic realities and future life challenges positively. It is an education where emphasizes is on the ability to perform productive tasks. Abdu (2005) stated that functional education is the wholesome training of an individual that makes him/her to be productive and contribute to his/her community and the nation as a whole. Functional education attempts to train learners towards the practical mastery of any studied subjects in order to get them into the habit to adapt to any situation (Omoruan, 2014). With the increase of specialized universities, polytechnics, colleges of education (technical) and Schools' curriculum innovation, most of the graduates are still roaming the street as result of lack of functional mathematics skills.

Idowu (1999) in Joseph, et al (2018) define functional education “as the total process of bringing up individuals to develop their potentials (cognitive, affective and psychomotor) to the fullest and consequently be able to contribute maximally to the development of the society.” Arogundade (2011) stated that functional education seeks to prepare people to be responsible and enterprising individuals especially the youth to become entrepreneurs that will contribute to the development of the economy. Many of the developed countries' universities and technical colleges trained their students and they are well-grounded in mathematics functional skills that enable them contribute and build or develop their nation. But Nigeria is the reverse, most of the graduates are not well grounded in this aspect, it may be due to memorization to pass examination and so they turned out from the tertiary institution without mathematics function skills that will enable them contribute to the development of their society or nation and so they come out unemployed. Maduegbunam, et al (2014) define Functional education as that type of education that equips the individuals with the knowledge and skills needed for the performance of productive tasks.

Cookey as cited in Joseph, et al (2018) defined functional education as the education where emphasis is lay more on the ability to perform productive tasks than theory, here emphasizes is on practical skills. According to Maduegbunam, et al (2014) “Nigeria education has not been functional because too much emphasis has been placed on theoretical and academic knowledge. There is also undue emphasis on the possession

of certificates instead of on what one can do.” School programmes need to be relevant, practical and comprehensive for the acquisition of functional skills and development of mental, physical, social abilities for the individual to live in and contribute to the society development(Udoh & Akpan, 2014, Agbowuro, et al 2017)).

Functional education produces graduates who are entrepreneurs and self-dependent and ready to put into practice what they have been taught or learned in the university which eventually make them to be self-employed and employers of labour. Through functional education the welfare of the citizens are improved, there is economic growth, science and technology advancement, and more employment for the citizens to generate income towards the development of the nation. For education to be functional according to Minzer (1992), the education should be relevant to the needs of the society or nation and high level man power should be trained to contribute meaningfully towards the overall progress of the nation. The outcome of this type of education where graduates are produced with theoretical knowledge and no practical or mathematics functional skills is unemployment and backwardness in national development.

Characteristics of Functional Education

The purpose of functional education is for the individual to apply his/ her mathematics functional skills to be productive and contribute to the national development. Fuandai, Shiaki & Gbari (2007) listed some characteristics of functional education as follows:

Relevance: Education is relevance if it is relevant to the immediate and future needs of the individual and the society in which he/she resides, able to solve the individual’s everyday problems, meet the needs of the learners and improves the quality of life of the individual and the society. The mathematics functional skills the individual has acquired must be relevant and solve his/her everyday problems and meet his/her needs.

Acquisition of Practical Skills and Knowledge: Functional education entails the application of mathematical functional skills and knowledge to complex situation rather than just ordinary use of facts, memorization and procedures, it is practical oriented. This implies that the mathematical skills acquired through training could easily be put into use whenever the need arises. The implication of mathematics functional skills and functional education is that the learner can be self-employed, self-reliant and also contribute effectively to the national development after completion of his or her education

Self-reliance: Functional education and Functional mathematics skills prepares and equips learner to be self-dependent, self-reliance, applying and using their mathematical knowledge and skills acquired to contribute to the economic and national development. It create wealth and employment opportunities for the learner. With Functional mathematics skills and functional education poverty and crimes can be reduced among the youths.

Obstacles to Functional Education in Nigeria

The standard of education has deteriorated instead of improving, which adversely affect the development of Nigeria as a nation. There are some factors that are responsible to this falling standard. Fanon (2005) emphasized that the current system of education in Nigeria lacks emphasis on productive functional skills at both the junior secondary, senior Secondary and tertiary levels of education. The system of education in Nigeria concentrate more on theory than practical. Although in the curriculum there is provision for practical skills but this aspect is being neglected.

Failure to Implement Education Policy, Suggestions and Recommendations for Improving Education in Nigeria

Most suggestions and recommendations that are made by the educationists and prominent scholars for improving education were usually neglected due to ignorance, politics and corruption. There are good education policy and planning to attain functional mathematics as stipulated in the national policy on education. Our policy maker are good in planning but the problem is implementation. The government is not ready to spend money on education for this reason, most of the suggestions and recommendation are not implemented. Nwaka (2012) suggested that there is need for the overhauling of the educational programmes and the implementation process so as to ensure that the curriculum is relevant and functional

Teacher Factor

Nwaka (2015), stated that “Many teachers do not adapt their teaching-learning programmes and processes to meet the challenges of changing technological advances and current needs. Most often they neglect the use of variety of teaching methods and repeated practice of tasks by which learners grow in skills acquisition.” Teachers are regarded as reservoirs of knowledge and so when the teacher lack the knowledge of the subject matter or inefficient it will be difficult for him/her to function effectively in the society. You can only give what you have, for this reason no teacher can give what he/she does not have. Onyeachu (2009) observed that there is urgent need of teacher in Nigeria, teacher with determination and dedicated that can transform her citizens and become employable, set up their own entrepreneurship business and also contribute towards the progress of the nation.

Inadequate funding of Education

According to Nwaka (2015), it is no more news that funding of education programmes in Nigeria is inadequate and this calls for pity because the problem of education has continued to worsen day after day. Funding is a central factor to an effective functional

education. He went further to say that every level of education in Nigeria complain about poor infrastructures, dilapidated classrooms, poorly equipped libraries and laboratories that will aid effective functional education. The education is not properly funded, lack of educational equipment/facilities, teaching materials and also the teachers and students are not effectively motivated in the school.

Too much emphasis on paper qualification

Since emphasis is on paper qualification, many Nigerians attends school for the purpose of obtaining certificates but not the knowledge and mathematics functional skills needed for the improvement or development of the nation. Maduegbunam, et al (2014) stated that “Very few Nigerian graduates from Nigerian schools, but cannot defend the certificates which they claim to have obtained.” Ezeh (1997) cited in Maduegbunam, et al (2014), stated that the country still lacks qualified or skilled Manpower because what the institutions are producing are merely graduates who possess certificates but lack the knowledge and mathematics functional skills. He laments that many Nigerian students are not hard working enough to struggle for the acquisition of practical knowledge that will enable them contribute to the progress or national development.

The Educational Curriculum

The curriculum of Nigeria education need to be re structured and re organized to meet the present needs of the nation so that people who are exposed to it can acquire knowledge and mathematics functional skills to enable them contribute meaningfully to its development. Emphasis should be laid on the development of the indigenous language. Most of the scientific terms that are taught in schools are too complex or difficult for the students to understand, since it is not their indigenous language. These scientific terms need to be explained in their indigenous languages to make it clearer for easy understanding. Although English is important but the indigenous languages being the first language spoken by the students should be encouraged to facilitate effective teaching and learning process. Using English language as the first and only means of communication at both lower and higher level of education hinders teaching and learning, therefore affect ability to communicate in the classroom or lecture halls.

The Education Management and Administrative Factor

Administration, according to Maduegbunam, et al (2014) “concerns with the act of controlling or directing affairs for the purpose of achieving a stated goal. The quality of administration in education affects the quality of education as well as the products of schools.” According to the authors the way these aspects of education is being handle has great influence on the quality of education that nation will have. For quality education and national development there must be sound educational policies that must be properly

implemented. Also before educational programmes or policies are introduced good and result-oriented educational plans should be made.

The present Universal Basic Education is not well implemented, the educational objectives as stated in the education policy are yet to be achieved. According to the policy, at the completion of the junior secondary school (JSS) level the students were supposed to learn a particular skills that will enable them to be self-employed, that is why introductory technology and vocational subjects were introduced. These subjects were being taught theoretically due to lacks of equipment/laboratories and mathematics functional skills. Functional education requires very good educational planning, management and administration. Regular and effective supervision of what goes on in the school system be it lower or tertiary institution is a must for the achievement of functional education. There is insufficient supervision of all that affect the education system, those important offices that are responsible for handling education matters in Nigeria carried out little or no supervision (Maduegbunam, et al, 2014)

Politics in Appointment

When appointments of heads of these commissions and boards overseeing education are made, in most cases, ‘Nigerian factor’ comes into play, this sometimes influences the choice of who becomes the heads, and they are not appointed based on merit. The interest of the nation are not put into consideration. Some of those appointed as heads or supervisors are not qualified or non-professional, the people they are supposed to be supervised are even more knowledgeable than them because they were appointed based on ” Nigerian factor” or through god-fathers, as result no much work is done by them. When these heads or supervisors are found wanting nobody touch them because they have god-fathers who will defend them. In this situation. Functional education cannot be achieved, it can only be achieved when there is proper supervision. For Nigeria education to function the managers, supervisors and administrators of education must be professionally qualified, well experienced, dedicated and morally sound, otherwise reverse will be the case.

The Quality of Teachers

Teachers are those implementing the functional curriculum, without dedicated teachers the curriculum will be meaningless invariably Functional education cannot be achieved anywhere in Nigeria. There are various educational institutions that are responsible for the training or production of teachers. We have the Colleges of Education, National Teachers Institutes (NTI) and faculty of education in the universities. According to Maduegbunam, et al (2014), “however, there is little or no emphasis on the quality of what are eventually produced as teachers in these institutions. Also, there is little or no emphasis on the welfare of these teachers as professionals on whom the quality of

Nigerian education is hinged”.

Some of these graduates that are produced, applied to study education not that they really have the interest in teaching, but because they were not admitted in the right course they wanted to study and so after their graduation they have little or no interest in the teaching field. How can these type of teachers function well? More so some of the graduates are not actually taught with the needed education materials due to government inability to equip and provide funds for the institutions and so they graduate without mathematics functional skills to practice when they are employ in their various schools.

Some of these teachers that are employed are not professionally qualified to teach in the school, they may be educated but by merit, they are not supposed to be employed. But these teachers are employed based on tribalism, nepotism and god- fathers leaving the qualified ones behind. In this situation there is no way they can function well in the teaching profession and the resultant effect is education that is not functional.

Lack of Teaching Professionalism

Apart from production of quality teachers, another problem affecting functional education in Nigeria is lack of teaching profession. Many developed and developing countries recognized teaching as a profession, but in Nigeria teaching is only recognized as profession in theory. Although there is a professional body called Teachers Registration Council of Nigeria (TRCN), this body has not be able to really control the intake of teachers into teaching profession. The federal and state government are still employing non-professional into the teaching field leaving the trained ones.

Apart from the government factors, most of the private schools in Nigeria are the worst, they employ anybody, and they don't care whether you study education or not. Worse still they even recruit teachers to subjects that are not their area of specialization. How can there be functional education? How can these teachers be efficient or effective without knowing the rules, ethics and regulation guiding teaching? To achieve functional education in Nigeria, teaching profession needs to be controlled by TRCN and restricted to only professional in the field. It is only those that have been trained in the field that can make the education to be functional, teaching is beyond talking and writing on the board. There cannot be functional education anywhere where there is lack of well-trained professionally qualified and dedicated teachers.

Lack of Infrastructures/ Inadequate Educational Facilities

According to Maduegbunam, et al (2014) “Educational facilities are important for functional education. Teaching and learning facilities must be available and must be of good quality for the achievement of good quality education.” Many schools in Nigeria

today, from the lower level (primary) to tertiary institution lack most of the essential education materials needed for teaching and learning to take place. Most of the Primary, secondary school and tertiary institution lack good infrastructural facilities. At the primary and secondary level, no enough classroom, chairs and laboratories. The tertiary institution are even worse, they lack good lecture theatre or lecture halls, no good hostel accommodation, lack well-equipped Science and technology laboratories, libraries and other education learning materials that will facilitates teaching and learning. Most of the courses are taught in theory and so students find it difficult to match theoretical knowledge with practical skills. In most cases, the available equipment are obsolete as result of technological advancement. This is the reason why Academic Staff Union of Universities (ASUU) have been calling on the federal and state government to fund and equip the Nigeria universities to be measurable to universities in other countries, so that proper teaching and learning can take place and make Nigeria education to be more productive and functional, but still the government pay deaf ears to the plight of ASUU accusing them of always going on strike. Why will the government not pay deaf ears to the plight of ASUU? They send their children to study abroad. Functional education emphasizes on practical activities, this can only be achieved through proper funding of education, very good accommodation for the staff and students, good teachers or lecturers 'well package, well-equipped laboratories, libraries, and provision of other instructional materials that will facilitate teaching and learning.

Admission Irregularity

The problem of Nigeria education is that of preferential treatment given to one section of the country. Students will be exposed to the same standardized examination but at the end, student A, who scored a lower mark will be given admission leaving student B who scored higher mark in the same examination because he/she is not from a particular geo-political zone in the name of "educationally disadvantage". How can there be a functional education when the rightful candidates are not admitted and less intelligent ones is given admission at the expense of the most intelligent ones. What do we expect from such student? Since that student is admitted based on geo-political zone, such student will also be managed to graduate and eventually he/she will also be less productive without mathematics functional skills. The Nigeria National Policy on Education did not stipulates that preference should be given to one part of the country, all the students are exposed to the same curriculum and external examination why these disparity. A functional education is based on quality but not inequality during admission.

Conclusion

No nation can develop without functional education system. There is need for proper planning and supervision to ensure that the stated objectives are achieved. More emphasis

should laid on mathematics functional skills or practical skills. All these stated objectives in the national policy on education can only be achieved through effective and functional education. For any nation, be it developed or developing nation need high quality or functional education for her to develop and maintain the standard they have attained it in terms of economic growth, and science and technology advancement.

Functional education remains the key to development of any nation. Nigeria must therefore use all the resources at their disposal to ensure that the current education problems in the country are properly address so that there can be functional education which will eventually develop the nation.

Recommendations

Functional education, being the key to national development can be achieved in Nigeria if the following recommendations are taken into consideration

All the important suggestions and recommendations that are made as per improving the educational programmes in Nigeria should be properly looked into and implemented by those in charge of implementation.

The federal and state Government should improve on the conditions of service of the teachers/lecturers. They should be involved or consulted in decision making on education policy, planning/formulation so as to attain functional education for functional skill and national development since they are the one implementing the policy.

The Government should take the issue of funding education as a priority, this should not be swept under the carpet. The government should provide educational infrastructures, facilities and education learning materials in order to achieve functional education and national development.

Government should organized workshop for the teachers on functional skills and send them out for in-service training to enable them adapt to the current trend in teaching-learning to meet up with the current societal needs and technological advancement.

The citizens should be encouraged to study mathematics, science subjects, science and technology and other courses that will help them to be self-reliant so as to contribute to the economic growth and national development. This can be done through scholarship

Government should ensure that only dedicated and professionally qualified teachers are recruited into the teaching field to ensure that functional education is attained.

Mathematics functional skills should be inculcated on the students to enable them contribute to the society or to be self-dependent. This can be done through encouragement

or proper training of the students to study mathematics. The mathematics teachers or lecturers should ensure the students are taught with practical or good mathematics instructional materials.

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