

Mathematics Education for National Development Values and Attitudes in the Socio Cultural Context of the Nigerian Society

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Abstract: Throughout history, people have concerned themselves with the transmission of shared values, attitudes and skills, from one generation to the next. Even today it is evident that family, religion, peers, books, news, entertainment media and general life experience are the chief influences in shaping people's views of knowledge learning and other aspect of life; Mathematics in the context of schooling can also play a key role in the process, for they are build upon a distinctive set of values, they reflect and respond to the values of society generally and they are increasingly influential in shaping shared cultural values to the degree that schooling concerns itself with values and attitude a matter of great sensitivity in a society that prizes cultural diversity and individuality. It must take mathematical and scientific values and attitudes into account when preparing young people for life beyond school. The paper focuses on four specific aspects of values and attitudes; the values inherent in mathematics and technology; the social value of mathematics and technology; the reinforcement of general social values and people attitudes toward their own ability to understand mathematics. The recommendation are aim at making mathematics more relevant to the need of the society, making the students to appreciate the value of mathematics and develop a positive attitude to the study of mathematics with the hope that mathematics graduate would be more expose to the real mathematics application and contribute mare meaningfully to the economics development of the nation.

Keywords: Mathematics, National development, values and attitudes, Nigerian society.

I. INTRODUCTION

Both national and human development, depend largely on the development of science and technology for which mathematics is the bedrock. The report of the commission on the review of education in Nigeria(2004) suggests that the focus of education in this country should be accustom Nigeria to a production rather than a consumption culture, and this can only be done by effectively overhauling the educational system with a bias toward mathematics science and technology. 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; The country must rise from the deplorable state as a willing acceptor of all sort of garbage to a proud donor of useful, new ideas.

It is very important to note that mathematics, science and technology enhances the prosperity of any society without them the resources of our nation cannot be structured for industrial growth and development Oyedun (2005).

Haruna(2011) Science and technology are conjoint twines sharing common heart called mathematics , destroying the heart you destroyed the twines and partly injured one of the heart you partly injured the other as well as the heart. One factor that is responsible for the nonfunctional nature of the system is the existence of a" very big gap" between the

knowledge provided by the system at the primary and secondary level s which is the bedrock of any educational system and the actual need of the society. Therefore science and technology has to be learned effectively for the socio political and economic aspiration of Nigeria Abdullahi (2009) the harmonious relationship of mathematics science and technology and society is the launch pad for sustainable development. Such relationship equally facilitates and enhances industrial and technological progress among the people and within a nation.

Ali (1995) The technological development of any nation depend on who knows what not who owns what. Mathematics, science and technology education, worldwide is rich and diverse. The students range in age, from those who are at school fulltime, those emerging into the world of work and those studying for a trade, a profession or to be entrepreneurs to those seeking to update or change careers and those preparing for retirement. The 2010 report of the united nation development program (UNDP) on human development rated Nigeria as the 158 country in the world in term of human development. One implication of the low human development rating given to Nigeria by UNDP is that her focus is on the theoretical aspects of the western curricular for must science base subjects taught at the lower level especially mathematics, rather than making the subject related to the socio-cultural background of the students, has resulted in a minimal level of human development.

Science and technology must be included in primary and secondary schools because they would help in overcoming poverty, ignorance and superstition in the society.

It is imperative to discuss that Mathematics Education is the key to the success in our efforts to meet up with modern world of science and technology. As it rightly put by Adetula (2009) that mathematics is pervasive in today's world, competence is vital to every individuals meaningful and productive life and outstanding ability is a precious societal resources solely needed to maintain leadership in a scientific and technological world. In essence, Mathematic is integral to everything about life. Every occupation which the pupils may choose to pursue in life are full of the opportunity and the need to apply Mathematical studies provides example of the power of free and rational thought, since it reflects societal thought, feelings, beliefs and action. Therefore, its study is very important for self and national development.

II. VALUES AND ATTITUDE

Mathematics should contribute to peoples knowledge of the shared values of mathematicians, scientists and engineers; reinforcement of general societal values; the inculcation in people of informed, balanced beliefs about the social value of mathematics, science and technology; the development in young people of positive attitudes toward learning mathematics

Knowledge of the Values Inherent in Mathematics, Science and Technology

Mathematics, science and technology incorporate particular values, some of which are different in kind and intensity from those in other human enterprises, such as business, law, and the arts. To understand mathematics, science and technology, it is essential to be aware of some of the values that underlie them and give them character that are shared by the people who work in the three fields. These values are evident in the rigorous proof and elegance in mathematics, testable hypotheses, and predictability in science; and of optimum design in technology.

Reinforcement of General Societal Values

Culturally mathematics, Science and technology can be viewed as both revolutionary and conservative. according to the Nigerian association for the advancement of science (2005). The knowledge it generates some time make us change or event discard belief we have long held about ourselves and our significance in the grand scheme of things. It is also important for people to be aware that mathematics, science and technology are based upon everyday values even as it questions our understanding of the world and ourselves. Indeed mathematics is in many respect the systematic application of some highly regarded human values such as integrity, diligence, fairness, curiosity, openness to new ideas, skepticism and imagination. Mathematician did not invent any of these values and they are not the only people who hold them. However, the broad field of science does incorporate and emphasize such values and dramatically demonstrates just how important they are for advancing human knowledge and welfare. Therefore, if mathematics is taught effectively, the result will be to reinforce such generally desirable human attitudes and values.

Mathematics education is in a particularly strong position to foster three of these attitudes and values namely curiosity, openness to new ideas and informed skepticism.

Curiosity

Mathematicians thrive on curiosity and so do children. Children enter school alive with questions about everything in sight, and they differ from mathematicians only in not yet having learned how to go about finding answers and checking to see how good those answers are. Science education that fosters curiosity and teaches children how to channel that curiosity in productive ways serves both students and society well.

Openness to New Ideas

New ideas are essential for the growth of mathematics and for human activities in general. People with closed minds miss the joy of discovery and the satisfaction of intellectual growth throughout life. Because the competition among ideas is a major source of tensions within mathematics, between science and society, and within society, mathematics should help students see the value to themselves and society of participating in the push and pull of conflicting ideas.

Informed Skepticism

Mathematics is characterized as much by skepticism as by openness. Because most mathematicians are skeptical about all new theories, mathematics help students to the societal value of systematic skepticism and to develop a healthy balance in their own minds between openness and skepticism.

The Social Value of Mathematics, Science and Technology

There is another sense in which values come into play in thinking about the outcomes of the learning process. Quite apart from what scientific values students may adopt for themselves, there is the issue of what students should know and believe about the general social value of those endeavors. Where are the societal shortcomings that lead us to such an overwhelming “fear” of mathematics resulting in a general avoidance of the subject? From the earliest time we are told that mathematics is important to almost any endeavor we choose to pursue. Is it necessary that every graduate be convinced of the great value to society of science, mathematics and technology? On balance, science, mathematics and technology have advanced the quality of human existence, and students should become thoughtful supporters of them.

Attitudes toward Mathematics, Science and Technology Learning

Students in elementary school have a spontaneous interest in nature and numbers. Nevertheless, many students emerge from school fearing mathematics and disdaining science as too hard to learn. They see mathematics only as an academic activity not as a way of understanding the world in which they live.

The consequences of this aversion are severe, for it means that the lives of too many students are being limited and the nation's overall pool of talent from which mathematicians, scientists and engineers are drawn is smaller than it should be.

The school may not be able to turn this situation around by themselves, but they are essential in doing so. It is within teachers' power to foster positive attitudes among their students. If they choose significant, accessible, and exciting topics in mathematics and science, if they feature teamwork as well as competition among students, if they focus on exploring and understanding more than the rote memorization of terms, and if they make sure all their students know they are expected to explore and learn and have their achievement acknowledged, then nearly all of those students will indeed learn.

No nation can develop scientifically and technologically without proper foundation in school mathematics. (Okafor 2005) its usefulness in every living cannot be over emphasized. Kolawole (2004) simply defined mathematics as a human invention born out of human resolve to solve human problems. Nnadozie (2004) it is the science of quantity and space also Obado (2010) define it as a language that use careful defined term concise symbolic representation which add precision to communication. Sum it up above one may define mathematics as a way of thinking and of getting numerical, pictorial and image result from that thinking. According to Audu (2003), mathematics is an indispensable medium by

which and within which science expresses, formulate and communicates itself. mathematics not only clarifies and makes rigorously workable concepts and laws of science but also at certain crucial instance became an indispensable constituent of their creation and emergence as well. Audu (2005) in order to drive actual benefit of democracy, science and technology it requires an informed population, which understand the nature the important and challenge of mathematics.

It is imperative to discuss that Mathematics Education is the key to the success in our efforts to meet up with modern world of science and technology. As it rightly put by Adetula (2009) that mathematics is pervasive in today's world, competence is vital to every individuals meaningful and productive life and outstanding ability is a precious societal resources solely needed to maintain leadership in a scientific and technological world. In essence, Mathematic is integral to everything about life. Every occupation which the pupils may choose to pursue in life are full of the opportunity and the need to apply Mathematical studies provides example of the power of free and rational thought, since it reflects societal thought, feelings, beliefs and action. Therefore, its study is very important for self and national development.

III. APPROPRIATE TECHNOLOGICAL DEVELOPMENT

According to Oyeyinka (2009) defined technology as the mastery and utilization of manufacturing and industrial methods, systematic application of knowledge to practical task in industry. The ultimate aim of any form of technological innovation is to raise the standard of living of the people. Thus the first step in any programmed for massive technological development or innovation is the formation of a new educational curriculum that should define a new and better life. The second step should be the mathematical formulation of a relevant and realistic theory of effort towards the selection and invention of the appropriate means to the end in view.

The devilment of technology must include knowledge of how to design, fabricate, produce modern tools of production and finance their distribution. This is where we are faced in this country with serious political and moral issues or, in fact a vicious circle because there is no indigenous technology and we cannot really succeed with borrowed technology. At present we are borrowing ideas, skills, machinery, and personnel, but the concept of technological transfer is a myth. Coupled with the other problems in the effective dimension of education. Too often in our present circumstances, people are employed to post not necessarily because of their qualification, experience or efficiency but because of their connections.

National Problem

In view of the significant position of primary education and as the foundation level of Nigerian's educational system, it has become very clear to all concerned that, there is an increasing need for the pupils of primary school age to learn more mathematical terms, principles, operations and scientific pattern of thoughts. Thus reasons why more attention is given to primary school mathematics syllabus that generate life problems which are in line pupil levels of understanding. However the low level of literacy in mathematics in particular and science and technology in general are now recognized as a single most exhibiting factor in our efforts towards development in science and technology . equally importance, the environment in which teaching and learning are taking place in Nigeria is to say the least harsh. School infrastructure is largely poor, teachers quality and quantity are deficient, curriculum are over loaded. The stories at tertiary and university level are the same.

Filling the Gap Between Secondary School Mathematics And Our Societal Need.

There is the need to upgrade the mathematical knowledge of bricklayers, carpenters, tailors, farmers, market traders, etc. in our society, to reduce poverty in the society. Topics such as simple geometry, areas and volumes of solid figures, everyday arithmetic, simple proportions, ratios, statistics etc. will assist them a lot in carrying out their daily activities.

For roadside welders to effectively appreciate the areas and volumes of the rectangular or cylindrical objects being constructed for kerosene surface tanks and underground petrol tanks respectively, they need to have the knowledge of how to find the areas and volumes of this objects and the number of liters they can contain. Even when they are under the supervision of site engineers for the construction work in the industrial sector such as oil and gas industry the little mathematics knowledge will assist them a lot. The construction of measuring cans of similar shapes but of different sizes

to measure engine oil and other liquids is best carried out if these road side welders are exposed to elementary mathematics.

Carpenters and bricklayers need to know how to measure angles such as 30° , 45° , 60° , 90° etc that are being used when they are roofing houses or building structures.

To prepare the quantity of materials for building construction or fabrication purposes requires elementary mathematics.

The motor and motorcycle spare parts dealers need short course on simple bookkeeping, profit and loss, simple interest, compound interest etc for them to improve on their transaction.

Transporters in our society need the basic knowledge of conversions from meters' to feet, inches to centimeters mile to kilometer gram to kilogram to turn for their daily need.

This will enable them to face the challenges in the society. With adequate funding and proper implementation of the UBE programmed, the efforts of the government at various levels can be appreciated in our society at large.

UBE, programmed should not be restricted to the area of school environment alone. It should be a robust programmed that will educate the masses that are illiterates most especially in mathematics

IV. CONCLUSION

The present school system still needs to be completely overhauled to suit the stark realities of the Nigerian economy. Our school should pay more attention to technology saleable skills from secondary school to universities and trade students, the principle of appropriate technology, which require less capital, but more labor intensive is the solution for reducing the ever-increasing rate of graduate unemployment. It is only by the adaption of appropriate technology with the system of functional education that Nigeria will acquire a technological identity. Appropriate technology requires attitude changes of Nigerians to appreciate what is hers, mathematics and appropriate technology will not only make the nation self sufficient by alleviating poverty, but make individual self-employed and self sufficient.

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