

REPOSITIONING SCIENCE, TECHNOLOGY AND MATHEMATICS (STM) EDUCATION IN NIGERIA

Dr. Agboghroma T.E.

Abstract

The paper attempted to discuss the need for the repositioning of Science, Technology and Mathematics (STM) Education in Nigeria. In order to achieve this, the purpose of STM Education in Nigeria as contained in the National Policy on Education and Oriafio's (2002) three-fold purpose of STM education were outlined. Issues on the need for repositioning STM education were raised, as well as the challenges ahead. The paper made plea that to be able to reposition STM education the curriculum would have to be carefully designed and implemented. Above all, the paper posits that the challenges of repositioning STM education should not be seen as problems, constraint and threats but as a conscious effort in redefining the role of STM education in Nigeria.

Introduction

Education is regarded as one of the most important instruments for the preparation of an individual for life in the community as well as reforming the society for relevance, adequacy and competitiveness in the world. Education is the cultural process by which successive generation of man takes their place in history as well as the key to the economic, socio-political and human resource development of any society. Science, Technology and Mathematics (STM) education as a concept in this write-up is that which can better the ways and means of man in his environment. The emphasis here about repositioning STM education is that that can enable people provide those essential requirements of life for a better and comfortable living. Hence, the essence of STM education is that it will put man on the path of accomplishing those basic necessities that will enhance a better living. Thus, STM education in this context must be capable of raising the benefiting society to a position of self-sufficiency in the provision of the following:-

- food and shelter for all;
- cheap and readily available means of transportation and communication;
- cheap and affordable medical care delivery;
- uninterrupted electricity and water supply; and
- other fundamental and yet dispensable needs of people.

Hence, STM education that falls short of the highlighted basic necessities of man is said not to have fulfilled the expectation for the overall development of the individual and the nation. In that circumstance, such STM education stands in need of repositioning (Urevbu, 1997; Imogie, 1998; lyobhebhe, 2002 and Oriafio, 2002).

Purpose of STM Education in Nigeria

The purpose of STM education, is derived from the National Educational objectives as outlined as follows:-

- (a) the inculcation of National consciousness and national unity;
- (b) the inculcation of the rights type of values and attitude for the survival of the individual and the Nigeria society;
- (c) the training of the mind In the understanding of the world around; and
- (d) the acquisition of appropriate skill and the development of mental physical and social abilities and competences as equipment for the individual to live in and contribute to the development of his society (FRN, 1998).

The attainment of the outlined objectives requires competence in Science and Technology. If Nigeria is to be counted among the league of nations as scientifically and technologically advanced, then its citizenry must be involved in competition in a highly competitive world dominated by developed and fast developing nations. Nigeria, as a nation, must strive to build in the nation's children an enduring educational foundation that will guarantee sustainable development.

According to Oriaifo (2002), STM education is not only based on the content and methodology alone but has a major task of helping mankind to accommodate, control and manage problems of life that are natural and man-made. Thus, STM education has the central purpose of assisting mankind develop necessary skills, attitudes and tools that will make man comfortable, peaceful, safe and progressive. Despite the opportunities that STM education can afford there are basically same parallel disadvantages that it may also afford. This is however dependant on the nation and its applicability either for good or for bad. STM education is an incontrovertible agent of change in society. It adds efficiency and effectiveness to the national productive processes and resources. In this consideration STM has direct correlation with the national socio-economic indices. This is expressed mathematically from the neo-classical economic presentation as $Y=f(N,L,K,T..)$ meaning the national income (Y), as a function of national resources (N), population (L), available Capital (K), as well as technical progress (T) (Oriaifo, 2002). On the whole STM education stimulates technical change, which in turn accounts for increase in productivity per capita and in real wages. According to Oriaifo, in developed countries of the world, it accounts for more than 56% of the increase in productivity per capita and in real wages, while the remaining 44% or less is usually attributed to increase in capita itself. It can therefore be said that growth in technical progress may be regarded as the vital catalyst, which reacts with all the other variable of the economy through STM education and training as well as through embodiment in new machines to arouse the phenomenal economic growth of the advanced economies for over the past one century.

The three-fold purpose of STM education in outline, according to Oriaifo (2002) include:-

- i) preparation of the more willing and able students with special abilities for further studies or higher education;
- ii) spreading scientific literacy to all and sundry; acquisition of multidimensional scientific and technological literacy to enable the citizenry fully appreciate the place of STM in their daily lives and in the life of the nation; and
- iii) providing required skills in the work force needed in the world of work: lower level skills, middle-level scientific and technical manpower as well as upper-level STM theoreticians and practitioners.

Judging from the aforementioned, Nigeria could be said to be under-developed due to the under developed economy which is as a result of the status of her STM education. Nigeria is classified as a (bird world country due to her socio-economic growth which has remained under developed due mainly to the poor nature of her technical progress. Thus, in order to improve her socio-economic status, repositioning STM education in Nigeria is inevitable. The process has to be continuous so as to ensure that adequate and commensurate knowledge, techniques and materials are evolved on a continuous basis to meet the problems of modern times.

Why we Must Reposition STM Education in Nigeria

Repositioning provides the unique opportunity to stop and re-appraise existing condition with an aim of correcting ills and improving prevailing situation for a better tomorrow. In the specific case of STM education, repositioning is dictated by the general aim of bringing it to a greater relevance to align with conditions and requirements of Nigeria of the 21st century. As will be outlined below, among others, the particular reasons for repositioning education in Nigeria as opined by Oriaifo (2002:50-61) include:

- i) Adjusting the purposes and programmes of STM education in line with the current rapid expansion in formal education at all levels in Nigeria in the last three decades,
- ii) Matching the methodology and content of STM education with the discernible trend in the next decade which is clearly showing a tendency towards a revolution and a further unprecedented expansions in technical education,
- iii) The need for the production of high level professionally-trained manpower in all fields of STM for appropriate national growth and development.
- iv) The desirability to assist practitioners came to terms with themselves and function effectively in the environment that will be dominated by principles and products of STM.
- v) Making STM education integrated and socially relevant in Nigeria.
- vi) Readjusting Nigerians attitudinally to embrace STM education as a way of life and means to

- the improvement of the socio-economic standing of the individual and the nation at large.
- vii) Bringing the generality of Nigerians to understand and accept to operationalize the letter of the lofty philosophy and goals of education in Nigeria.

Repositioning STM Education: The Challenges

Attempts have been made to advance reasons why STM education in Nigeria requires a new direction. In this section, attempt would-be made to discuss the direction that STM education in Nigeria is expected to take as well as the challenges that goes along with it. In stressing the need for a virile educational system, Darah (1996) cited by Akpochafo (2002) had this to say, "Education is the key weapon employed by any serious society to sustain its capacity to be competitive in the world". Nigeria requires an educational system that will put her STM education in a good stead so as to benefit maximally from her national and international pursuits. The question as to the need of repositioning of STM education in Nigeria is what basic direction should STM take? As has been said earlier the world in which Nigeria is part is changing so rapidly to the extent that we may not be able to save ourselves the consequences of those changes if we "do not take the right turn now. To reposition STM education, the curriculum will have to be carefully designed and implemented to encourage creativity, independence and adaptation in the use of new teaching methodology. Meeting the future needs of STM teachers would require placing emphasis on the use of up-to-date interactive teaching approaches such as constructivism, learner- centered , activity based, hands-on, and mind on activities. STM teachers must be able to think globally but act locally. That is, STM teachers must be capable of bringing STM close to the students through meaningful pedagogy. This can be achieved by teaching STM through cultural heritage by bringing examples from our culture. Another area that needs attention is the training, retention and welfare of STM teachers. So far in Nigeria no welfare package commensurate with the discipline of teachers is being adopted in remunerating teachers. As long as the government and all stakeholders in education continue to adhere to the prevailing situation whereby anybody teaching any subject continues to receive the same welfare package without regard to STM personnel, effectiveness in the delivery of STM may be hard to attain, no matter the vision of 2010 and beyond.

Science, Technology and Mathematics Education is one of the most powerful instruments for enabling all members of the society to face new challenges and to find their roles as productive members of society. The major challenges that Nigeria must address in order to evolve enlightened vision of STM education will include the following;-

1. Creating education policy frame works that will consider STM education as essential integral part of general education of the Nigerian child.
2. Enhancing the status of STM teachers as well as STM programmes in institutions of learning. This can be achieved by giving a welfare package that is befitting to STM personnel both at the lower and higher levels of education. And at the same time creating an enabling psycho-pedagogical environment in schools.
3. Taking advantage of the information technology that is presently in vogue by applying them in STM teaching-learning process without the loss of the valuable aspects of traditional teaching methods which require the personal nature of the teacher - learner relationship.
4. providing the essential need for innovation in STM education remains the teachers role and new methods must be discovered for the training of STM teachers. This should be accompanied by the continuous upgrading of their competencies and their professional development.

The above challenges should be seen as challenge and opportunities and not as problems, constraints and threats. They should be regarded as useful strategies needed to make right choice for the future in the place of STM education in Nigeria.

Conclusion

This paper attempted to discuss repositioning Science, technology and Mathematics (STM) Education in Nigeria. In order to achieve this, the purpose of STM education in Nigeria as contained in

National Policy on Education as well as the three-fold purpose of STM education by Oriafio (2002) were outlined. Issues that bordered on why we must reposition STM education in Nigeria were also raised as well as the challenges on repositioning STM education were also discussed. The paper, made plea that to be able to reposition Science, Technology and Mathematics Education, the curriculum would have to be carefully designed and implemented. Above all, the paper posit that the challenges of repositioning STM education should not be seen as problems, constraints and threats, but as opportunities to make the right choice for the future in the place of STM education in Nigeria.

References

- AkpochaTor, W.P (2002). Refocusing Education in Nigeria: Making More Sense out of the effort in Oriafio, S.O.; P.O.E. Nwaokolo and G.C. Igborgbor (eds.) *Refocusing Education in Nigeria: A Book of Reading*. Benin City; Zekol Graphics Publishers pp. 38-42.
- Federal Government of Nigeria (1998). *National Policy on Education*, Lagos NERDC.
- Imogie, A. (1998). Value for University Education for 21st Century. A Paper Presented in the 1997/98 Session Open University Lecture Series of Ogun State University, Ago-Iwoye 7 May, 1998.
- Iyobhebhe, A.E. (2002). Refocusing Science, Technology and Mathematics (STM) Education for Modernization in Nigeria in Oriafio, S.O.; P.O.E. Nwaokolo and G.C. Igborgbor (Eds) *Refocusing Education in Nigeria: A Book of Reading*. Benin City: Zekol Graphics Publishers pp. 69-74.
- Oriafio, S.O (2002). Re-focusing Science, Technology and Mathematics (STM) Education in Nigeria in Oriafio, S.O.; P.O.E. Nwaokolo and G.C. Igborgbor (eds) *Refocusing Education in Nigeria: A Boole of Readings*. Benin City: Zekol Graphics Publishers pp. 50-61.
- Urevbu, A.O. (1997). Creating the School we Deserve: Reflection on Education Pedagogy and Curriculum. Inaugural Lecture Series 49. University of Benin.