REPOSITIONING SCIENCE AND TECHNOLOGY EDUCATION FOR FURTHER DEVELOPMENT IN DELTA STATE

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Abstract
The paper is on the need for repositioning science and technology education for further development in Delta State. In trying to do this, the paper started by giving a brief historical evolution of science and technology education in Nigeria. It went on to discuss the challenges ahead for the development of science and technology education in the Nigerian school system and finally made recommendation on how science and technology education can be improved for further development in Delta State.

Introduction
It is not gain saying that science and technology have become critical factors of economic and social development. This is because of the role they play in national development. According to Otini (1997) citing from the work of Okundaye (1995) said:

.....through the application of science and technology the resources of nature have been transformed into goods and services for better quality of life. Thus, inspite of tremendous growth of world population, the application of science and technology to agriculture has sustained the population. In short the advances in science and technology has assured man of comfortable living, improved his thinking process and very importantly conserved his energy for other activities. The adoption of science and technology in national life marks the difference between development and underdevelopment (p.186).

From above statement science and technology are therefore very significant for national development. And this can only be achieved through science and technology education. This led to the observation made by Imiere (2004) that the quest for national development vis-à-vis scientific technological growth and self-reliance is matched with corresponding progress in science and technology education. Thus, it is the responsibility of any educational system in a country to prepare young people in the way they should spend the rest of their lives in trying to adapt to their environment. All around us are the products of science and technology and their application to our existence. Scientific and technological knowledge, skills and artifacts ‘invade’ all realms of life in modern society. In the work place, the public and private spheres and our leisure time are dependent on new
as well as upon more established technologies. In this present society, scientific and technological knowledge and skills are needed in the everyday living. Modern society is dominated by science and technology (Okoye, 2005).

Education in science and technology is so important not only to the citizenry, but also to our rulers and leaders – political, socio-economic, academic and even traditional. Hence, the developing status of a nation depends on the extent to which she can satisfy the basic and other needs of the people. And since the satisfaction of these needs depends to a large extent on science and technology, it then follows that science and technology education is a prerequisite for national development. Nigeria as a developing nation has had a fair share of experiences in science and technology education. Subsequently, in this paper, effort will be made to highlight these experiences by looking at the historical evolution of science and technology education in Nigeria, the development of science and technology education in the school system, the challenges ahead for repositioning science and technology education for further development and recommendation on the way forward.

**Historical Evolution of Science and Technology Education in Nigeria**

Like other African Nations, Nigeria’s Science and Technology Education started from the science and technology curriculum in the form of syllabuses of the different subjects set up primarily for examination purposes between the late 1950’s and the early 1960’s. According to Okoye (1997), the curriculum was left to grow by itself – a process akin to the evolutionary mechanism of natural selection. It was thought then that obsolete or irrelevant materials in the curriculum would die a natural death while the new ideas will gain prominence. The end result of this false assumption was the clustering of the curriculum with materials that presented an inadequate view of science and technology (Okoye, 1997).

Science and technology education came into effect in Nigeria after the Second World War. This followed a drift in science teaching in terms of objectives and practice in the early 1950’s. What was responsible for this shift of emphasis was as a result of the need for Nigerian children to be exposed to science teaching which is relevant to their environment and experience. But even before the echoes of the revolution in science and technology teaching reached the shores of Nigeria according to Okoye (1997), most educational administrators in Nigeria were already searching for ways and means by which science and technology teaching could be made compatible with the postulates of newly won independence politically. Several ministerial conferences e.g. Lagos (1964) were held which gradually evolved Pan-Nigeria policy on science and technology education that placed great premium on equipping each pupil with desirable scientific and technological knowledge, skills and attitude. And by late 1960’s many countries in Africa had begun to fell their
way towards a concerted science and technology policy.

As a follow up, the defunct Comparative Education Study, and Adaptation Center (CESAC) now National Education Research and Development Council (NERDC) was established in 1963 with a grant from the Ford Foundation at the University of Lagos (Ughamadu, 1998). CESAC was established as part of a centralized national effort to evolve a more suitable system of education that is continually adapted and responsive to the nation’s economic and social aspirations. With the contention by CESAC for the need to produce the needed scientific and technological manpower as well as the need to expand the base for scientific literacy in the emergent countries of Africa prompted United Nations Educational Scientific and Cultural Organization (UNESCO’s) decision to organize a meeting of science and technology education experts at Abidjan in 1960. This led to a survey of secondary school science and technology teaching in tropical Africa organized by CESAC under the auspices of UNESCO. The report of the survey shows a number of shortcomings which include:

1. Poorly equipped laboratories;
2. Shortage of funds,
3. Inadequate auxiliary facilities and basic services;
4. Lack of well trained laboratory assistants.

Part of the report also show gross inadequacy of qualified science and technical teachers.

In another development at the inaugural conference of Science Educators in Africa in 1980, most of the participants complained about the poor state of science teaching in their countries. Also at the first International Forum of African Science Educators (FASE) held in Harare (1986), the poor state of science teaching in Africa was a topic of major concern.

Looking at the historical past and present in the state of science and technology education in Nigeria, are a number of factors identified as affecting it. These factors among others are;

- a rapid increase of students’ population in schools without the requisite facilities in place to take care of the rising population of students.
- The incessarity of government’s commitment in the provision of funds and infrastructure to cater for the rising population of students in schools.
- The shortage of well-trained science teachers and laboratory assistants to take care of the increasing number of schools.
- The rate at which trained and qualified science and technology teachers leave the profession for other lucrative jobs;
- The rapid changing socio-political condition and the attendant change and contradictory educational policies.

Above therefore calls for a repositioning of science and technology education for a better and further development in Nigeria.
The Development of Science and Technology Education in the School System in Nigeria

The development of science and technology education in Nigeria became prominent after independence in 1960. This was necessitated by the United Nations 1963’s conference on the application of science and technology for the benefit of 3rd world countries and also from the 1964 UNESCO International Conference on Research and Training in Africa. The Nigerian Government in 1967 engaged the services of a UNESCO science policy advice to reassess the status of science and technology education in the country and advice it an appropriate policy measures. This resulted in the establishment of the Nigerian Council for Science and Technology (NCST) in 1967 (Okoye, 1997).

In 1977, NCST, together with its research councils was replaced by the National Science and Technology Research Department Agency (NSTDA). This agency assists in offering research grants to tertiary institutions for project of national interest. And with the establishment of the Federal Ministry of Science and Technology in 1979, it took over the duties of NSTDA.

Successive governments in Nigeria on realization of science and technology education have contributed towards the development of science and technology education. The following are some of the achievement made by government in attempting to popularize science and technology in Nigeria, as follows:

- The introduction of science fairs and clubs in schools;
- The introduction of junior engineers, technician scientist (JETS) competitions in secondary schools;
- The establishment of special science secondary schools in some states of the federation;
- The pegging of the approved quota for admission into Nigerian universities at sixty percent (60%) for science and science related subjects and forty percent (40%) for Arts;
- The establishment of specialized institutions in the areas of science and technology by the Federal Government e.g. Federal Universities of Technology and Agriculture;
- Award of scholarship to deserving students studying science and technology subjects;
- Establishing of polytechnics, technical college and colleges of education (technical) in many states of Nigeria;
- Organization of regular annual in-service and short term training to enhance the competence of science, mathematics and primary science teachers across the country;
- Full implementation of the Industrial Training Fund (ITF) scheme for students to enhance STM education.
- Establishment of science and technical colleges at lower levels to encourage teaching and learning of science and technical subjects;
- Publication of science and technology journals by bodies such as STAN,
NBTE and other bodies to improve and broaden their knowledge;

- Organization of science workshops, conferences and seminars to encourage the teaching of Science, Technology and Mathematics (STM) in schools;
- Provision of adequate teaching materials and textbooks as well as infrastructures and instructional aids for the teaching of science and technology in schools;
- Establishment of scientific and technological research centres for research purposes and production of scientific, technological and teaching materials.
- The introduction of computer education as well as computer assisted learning (FMST, 1986; Okoye, 1997; Imiere, 2004; Agboghoroma and Umudhe, 2006; Agboghoroma and Olodu, 2007 and Agboghoroma, 2008).

**Challenges Ahead for the Repositioning of Science and Technology Education for Further Development**

In stressing the need for a virile educational system, Akpochafo (2002) quoting Darah (1996) said *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 science and technology in a good stead so as to benefit maximally from her national and international pursuits. The question as to the need of repositioning science and technology education in Nigeria is, what basic direction should science and technology education take? Since the world in which Nigeria is part of is changing so rapidly we may not be able to save ourselves as a nation from the consequences of these changes if we do not take the right turn now. Science and technology education is one of the most powerful instruments that can enable 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 science and technology education will include the following:

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

- Provision of adequate textbooks, purchase of scientific and technological equipments, provision of enough classrooms and laboratories.
- The science and technology time table need to be better planned to prevent overcrowding.
- The issue of lack of cooperation by administrations as well as pressure of external certificate examinations needs to be well tackled and minimized to promote a healthy administration and better performance on the part of students and schools.
- The need for the provision of funds to encourage research in science and technology education.
- The need to involve the society as well as the local communities in science and technology education with an enhanced science and technology curriculum to reflect the contemporary and emerging needs of the society.

**Conclusion**

Science and technology education as a means of repositioning education for further sustainable development in Nigeria no doubt has been discussed in this paper. It is pertinent to note that development can best be achieved when concerted effort is made by government in areas of science and technology education. The paper therefore call for a sustainable science and technology education programme for further development of Delta State and the nation at large.

**Recommendations**

Based on the challenges mentioned above, the following recommendations are made to reposition science and technology education for further development as follows:

- The science and technology teachers from primary to tertiary institutions should be helped to be effective in science and technology teaching through organizing science and technology workshops, seminars and in-service training;
- Government should try to encourage science and technology education by providing incentive and bursary award to science and technology education students in tertiary institutions;
- Professionally and qualified science and technology education teachers should be employed;
- Teachers of science and technology education should try to improve their teaching methods to help develop students’ interest in science and technology education;
- The government should provide the necessary resources and implement...
suitable policies in science and technology education;
• Public education campaign should be mounted to educate the citizens of the outcomes of science and technology education;
• The science and technology education curriculum planners should plan the curriculum to reflect the contemporary and emerging needs of the society;
• Students should be exposed to practicals in science and technology so that they do not just look at the abstract nature of science and technology;
• Government should provide adequate textbooks, equipments, classrooms and laboratories for the teaching and learning of science and technology;
• Government should introduce the use of local language to teach science and technology in schools.

References


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