

THE ROLE OF GOVERNMENT IN SCIENCE AND TECHNOLOGY EDUCATION IN NIGERIA.

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Abstract

It is not an overstatement to say that science and technology are the basis for improved livelihood. This paper therefore examines the role of the Nigerian government in the development of Science and Technology education. Such roles include the formulation of a National Policy on Science and Technology and the expansion of science education at the primary and pre-university levels. In spite of the laudable effort by the government, the situation in Nigeria today reveals, poignantly, the enormity of crisis in science and technology education. Strategies, which the government can use to ensure that Nigeria finds a position in the world map of developed nations, are suggested. The paper concludes that if the government would initiate a vivid Science and Technology direction, it would be the better for it in the near future.

Introduction

The awareness of the importance of science and technology education by some nations of the world prompted the formulation of policies that facilitated their scientific and technological growth. Nineteen years ago, African Ministers of Education resolved, in Harare, Zimbabwe, to draw up and implement, within the next two decades educational policies to develop and accentuate science and technology education at all levels and popularise science among the general public in order to promote full utilization of modern scientific and technological knowledge in development and to stimulate interest in scientific fields (Daily Times, 1998).

In pursuance of science and technology development, the Federal Ministry of Science and Technology, in 1987, launched the National Policy on Science and Technology in Nigeria (Federal Ministry of Science and Technology, 1986.) One of the objectives of the policy was to put Nigeria in the world map of scientifically and technologically developed countries within a short time span. The highlight of the Blue print includes the inculcation of science and technology in the thinking and working process of Nigerian citizens. This highlight tended to saddle on teachers a responsibility of imparting the science and technology culture into the Nigerian populace. Consequently, the government of Nigeria was faced with the Herculean task of promoting science and technology culture in its society through the training of teachers who are facilitators to the learning of science and technology. A meaningful and relevant education in science and technology offers virile opportunities for national development.

There are diverse definitions of science since scientists differ in their creativity, ingenuity and area of research. All the definitions, however, centre on science being a product, process and attitude (Agbo, 2000). Science is a dynamic and organised body of knowledge. Farrant

(1980) defines it as the system used by men to increase their knowledge of the physical world through observation, measurements, analysis, experiment and deductions.

Nwachukwu in Obodo (1991) views technology as an evolutionary process in man's thinking, culture and work taking place over many years. Technology can then be said to be the net total of methods and techniques used in science and engineering to solve problems posed by modern societies.

Science and technology are closely related. While science asks the question "Why?", technology asks "How?". Since the beginning of the scientific age, the society has continued to look up to science to help solve the mesh in technology. In spite of the laudable efforts of government, the level of development in the country since the policy formulation on science and technology has remained low. One is forced to ask the questions: Has the objective of inculcating the science and technology culture been achieved? Has the government succeeded in placing Nigeria in the world map of developed countries?

Government's Involvement in Science and Technology Education in Nigeria

The pivotal role of science and technology education in national development has been the subject of many national and international conferences (Gomwalk, 1996). It is also in view of the significant roles of science and technology education in national development that the Federal Government of Nigeria:

1. saw the need to expand science education at the primary and pre-university levels (FRN 1985);
2. paid a monthly allowance equivalent to the salary of a third class clerk to secondary school students to cover feeding, lodging and books;
3. made tuition free at all levels;
4. upgraded Colleges of Arts, Science and Technology to Universities to create more opportunities for Higher School Certificate (H.S.C) holders;
5. formulated the National Policy on Education in 1979, making science and technology core school subjects;
6. formulated a National Policy on Science and Technology in 1980
7. established a full-fledged Ministry of Science and Technology in 1979, charging it with the responsibilities of promoting and developing scientific and technological research in the country;
8. put in place a 70:30 enrolment policy to govern admissions into technology programmes based in polytechnics and Technical Colleges;
9. put in place a 60:40 of Science to Humanities admission policy to guide university admissions;
10. purchased and distributed technical equipment and machinery to secondary schools;
11. established various Technical Colleges, Polytechnics and Universities of Technology at strategic locations in the country. These include 118 Technical Colleges, 11 Colleges of Education (Technical), 39 Colleges of Agriculture and 8 Universities of Technology (Anikweze, 1998).

The Crisis in Science and Technology Education in Nigeria

The situation in Nigeria today reveals, poignantly, the enormity of crisis in science and technology education. Since the Harare declaration and the nation's policy formulation on science and technology, the problem has worsened in the country despite huge financial commitments by the government. This emphasizes the need to re-assess our science and technology policy and be more dedicated to the goals of the Harare declaration.

It is unfortunate that science and technology have persistently been ineffective in the promotion of the nation's socio-economic sector. Where government's involvement in science and technology education is only quantitative and not qualitative as evidenced in the establishment of more Polytechnics, Universities of Technology, Special Science Schools and Technical colleges without correspondingly equipping them, the outcome is science and technology education that is theory-based, textbook-bound and examination-oriented, contrary to the intention of learning by inquiry and research .

In a situation where teachers' welfare and motivation is not the priority of the government but, rather, politicians are held up high like demi gods, what one gets is a Nigerian society where a significant proportion of the children and youth stand a good probability of remaining superstitious, unscientific and technologically illiterate.

Other problems confronting science and technology education include shortage of qualified teachers, ill-equipped laboratories, overcrowded classrooms, inadequate supply of teaching materials and relevant textbooks. These crises, particularly at the secondary school level of education are compounded by the phenomenon of mass failure or under achievement in public examinations (WAEC, 1996). Commenting on science students' performance at the 29th International Conference of the Science Teachers' Association of Nigeria (STAN) in Ibadan, Ajakaiye in Akpan (1999) observed that :

The persistently poor results in science subjects among students over the last decade or so, underscores a basically gradual deteriorating situation in our educational institutions.

The trend for poor performance in the sciences has continued unabated (Olawaju, 1991; Ijerhime in Akpan, 1999.) Even though a falling standard of education in the country is no more a controversy, the decline is felt most in the sciences and applied sciences (Akpan, 1995b, WAEC in Akpan, 1999). The falling standard in performance is at all levels of the country' s educational system. This is why Alhaji Aliyu Umar, one time Niger state Mass Mobilization for Social and Economic Recovery (MAMSER) boss, according to Ajakaiye in Akpan (1999), lamented that:

a decaying primary school system and a weakening secondary school system have forced the Universities to take near illiterate persons as undergraduates with the result that the University products do not meet the manpower needs of the society.

It is the same deteriorating system that is enforcing on Colleges of Education and Polytechnics the creation of extra burden for the institutions in the name of pre-N.C.E and Pre-ND levels. Usually, students are admitted into these higher institutions academically malnourished and must be 'treated' like a doctor would a patient in the hospital . This requires extra efforts and finance on the part of the institutions.

The picture of Science and Technology education in Nigeria painted above is a pathetic

one. The situation is grim and cannot be waived aside if the nation must make up for lost grounds in technological advancement and also confront the challenges of the future.

Strategies for Improving Science and Technology Education in Nigeria.

The government has not been able to make good its statement that all teachers in our educational institutions will be professionally trained (FRN, 1985). To improve the teaching-learning process, teaching should be professionalized so that only those with a background training in education should be employed to teach the sciences in our institutions. However, those without training in education, such as those with Bachelor of Science (B.Sc) certificates that are already teaching, should be made to undergo post-graduate studies in education leading to the award of Post-Graduate Diploma in Education (PGDE) certificate. Professionalizing teaching will improve the standard of science and technology as trained, experienced and seasoned professionals are bound to provide effective management for optimal results.

According to the Federal Republic of Nigeria's (1985) National Policy on Education, government formulated a policy to make available materials and manpower for the teaching of science in primary and secondary schools. Government backed this policy statement up by introducing science in the institutions. It should redeem its statement by equipping the existing science and technical laboratories and workshops with standard facilities. Where laboratories and workshops are not in existence, government should provide such for technological advancement.

Research institutes in the various science fields and special observatories should be created for science and technology teachers. These will enable our teachers to come out with recent and useful scientific findings for science and technology development in the country. The world's tiniest particle called electron neutrino detected recently in Sudbury Neutrino Observatory (SNO) in Canada (STAN Bulletin, 1999) could have been detected in Nigeria.

In its editorial, STAN observed that government has been paying lip service to science and technology education (STAN Bulletin, 1999). This is attested to by the poor funding of some institutions of learning, dilapidated institutional infrastructures and inadequate reward for excellence in science teaching and learning. Institutions of science learning such as Government Science schools should be well-funded. Teachers should be motivated through the provision of handsome salaries and allowances as presently agitated for by some of the Academic unions. Being in a democratic era, Nigeria's social, political and economic development must be viewed within an entire framework and role analysis of science and technology. Nigerians who have dared to invent prototypes should be encouraged and supported. This will enhance technological growth. Nigeria should also encourage science and technology activities. An instance is in the launching of the Russian "Sputnik I" spaceship into space by the defunct U.S.S.R. in 1957. Shortly after the feat, the United States of American government initiated policies that supported science education at all levels. The American government not only formulated the policies but it monitored the policies to their effectiveness. This attitude has seen the American technology and other countries' technologies soaring high.

Conclusion

The government of Nigeria must be predisposed to cultivate in teachers the motive to succeed. Excellence and skill proficiency should be rewarded in the teachers as teachers that are well -versed in their fields and can demonstrate excellence with learning materials, possess the ability of encouraging curiosity in students. The curiosity will in turn lead to creativity in the students. If the government would initiate a distinct direction that will promote science and technology culture in Nigeria, it would be the better off.

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