SCIENCE AND NATIONAL CONSCIOUSNESS IN NIGERIA, EMERGING ISSUES, CHALLENGES AND PROSPECTS

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Abstract
The role of national consciousness in the socio-economic and scientific development of a nation cannot be over emphasized. National consciousness promotes national unity, sustainable development, peace, respect for diversity, security of life and property and others. This paper investigated the correlation of science and low level of national consciousness in our nation despite the pledge to serve Nigeria with all our strength and defend her unity. The rationale of the paper derives from the understanding that science and national consciousness is of immense benefit to the nation's development and have great prospects if well developed. It is in this bid that the paper is considering the issues of science and national identity and need for value reorientation. This paper also examined pertinent issues and challenges affecting science and national consciousness. It was found that science in Nigeria has been in existence since the commencement of private education in 1842. However, its progress has not featured great incorporation in the manufacturing and industrial sector of the economy. It is therefore, recommended that science education should be given greater emphases in real life situations in the Nigerian socio economic environment.

Keywords: Science, National Consciousness, Emerging Issues, Challenges and Prospects.

Introduction

Modern societies are dominated and driven by ideas and products from science and technology (S &T) and it is very likely that the influence of science and technology on our lives will continue to increase in the years to come. Scientific and technological knowledge, skills and artifacts invade all realms of life in modern society. The workplace and the public sphere are increasingly dependent on new as well as upon more established technologies. Scientific and technological knowledge and skills and national consciousness are crucial for most of our actions and decisions as workers, voters, consumers, etc. Meaningful and independent participation in modern democracies assumes ability to judge the evidence and arguments associated with the many socio-scientific issues that appear on the political agenda (Ozumba, 2014).

Development at any phase is always linked with technology and technology happens when there is advancement in science. Hence science, technology and development are all proportional to each other (Ozumba, 2014). Science and Technology are tools that solve quite readily the numerous challenges people face in life daily (Ozumba, 2014). In a country like Nigeria, which seeks to improve the quality of life of all the citizens, this involves attempting to solve many problems facing the population. These problems include ill health, illiteracy, public utilities, inadequate education facilities, hunger and unemployment. Others are general security of life and properties, youth restiveness, poor industrial and communication infrastructure and corruption.

These problems acting either individually or collectively hinder development by making the people less capable of making meaningful contribution to national development. The problems also weaken determination and motivation of the people for self-reliance. However, science and technology and national consciousness have helped humans conquer many problems they face in their struggle for survival in their environment (Uduigwomen, 2009).

This paper is written in response to the high pitch concern expressed by the patriotic citizens of this country. Nigeria's image and reckoning seem to be nose diving in almost all facets of noble ratings whether from the perspective of its politics, economy, Ethics, security, education and so on. In the recent past, the increasing rate of Cyber crime and clamor for dismemberment of the federation has reached its highest crescendo. The call for national conference and re-engineering of our polity has topped the national agenda and discourse.

As the Japanese model of national development holds "the search for identity comes when there is national crisis". Nigeria, no doubt is in serious crisis and the time to seek honest solution is now if we are not to have more intractable problems in our hands.

The Concept Science, Technology and National Consciousness

Science emerged as human's invented ways of organizing their experiences. Sheldon, (2017) stated that the ways of organizing human experiences has been described as major branches of knowledge, which help us to resolve or at least reduce the numerous anxieties that results from conflicts and problems of our daily experiences, while technology is said to be the systemic application of scientific knowledge of technique gained from science in producing and making use of materials like machines, tools, weapons etc., it deals with the application of knowledge in providing solutions to practical problems of humans and their environment. Consequently, it is safe to say that science and technology are twin terms that are closely related.

Furthermore, science is concerned with the search for and understanding of knowledge about nature, technology deals with the scientific application of knowledge in the solution of practical problems of everyday living (Robert, 2015). The product of science are ideas, theories and principles arrived at through a process of continuous enquiry, guess, devices, procedures, processes and materials, which are usually but not always derived from science.

Oxford Dictionary (2014), defines science as "the intellectual and practical activity encompassing the systematic study of the structure and behavior of the physical and natural

world through observation and experiment". Science is the pursuit and application of knowledge and understanding of the natural and world following a systematic methodology based on evidence (Uduigwomen, 2009).

According to Morris and Morris (2009), define science as "the systematic observation of natural events and conditions in order to discover facts about them and to formulate laws and principles based on these facts. It is also the organized body of knowledge that is derived from such observations and that can be verified or tested by further investigation."

Science involves more than the gaining of knowledge. It is the systematic and organized inquiry into the natural world and its phenomena. Science is about gaining a deeper and often useful understanding of the world (Sheldon, 2017).

Science consists simply of the formulation and testing of hypotheses based on observational evidence; experiments are important where applicable, but their function is merely to simplify observation by imposing controlled conditions (Robert, 2015).

National consciousness on the other hand is a shared sense of national identity and a shared understanding that group of people shares a common ethnic/linguistic/ cultural background (Oloko, 2014).

Historically, a rise in national consciousness has been the first step towards the creation of a nation. National consciousness, at a glance, is one's level of awareness , of the collective and ones understanding that without "them" there are no "us" (Ozumba, 2014). It is the mere awareness of the many shared attitudes and beliefs towards things like family, customs, societal and gender roles, etc. The awareness allows one to have a "collective identity" which allows them to be knowledgeable of not only where they are but how those places and people around them are so significant in that they ultimately make the collective, a nation. In short, national consciousness can be defined as a specific core of attitudes that provide habitual modes for regarding life's phenomena (Oladipo, 2009).

For the importance of science and technology to be achieved in Nigeria, we must revive the high level of national consciousness in the past. Scientists from every region, tribe and culture must look beyond our differences to create innovative ideas, products and services for solving problems especially those problems peculiar to Nigeria in other to develop the nation and make it indeed the giant of Africa.

Emerging Issues in Science in Nigeria

Nigeria used to be an agrarian economy until the 1970s. It used to be the major agricultural country producing for internal usage as well as for exportation. The percentage share of these export crops in the total domestic export fell from 79.9% in 1960 to 2.6% in 1980 (Akakuru *et al.,* 2020).

The Federal Government made an entry into the Automotive business in the 1970's through agreement it had with a number of auto plants in Europe to step up two car passenger and four truck and light commercial vehicles assembly plants, using completely knocked down parts. The agreement later gave birth to Peugeot Nigeria LTD (PAN), Kaduna; Volkswagen Nigeria LTD (VWON), Lagos; Anambra Motor Manufacturing Company (ANAMCO), Enugu; Styer Nigeria LTD, Bauchi; National Truck Manufacturer (NTM), Kano; and Leyland Nigeria LTD, Ibadan. These companies were however privatized in 2007. Many of the auto component manufacturers, including Dunlop and Michellin also closed shops after establishing rubber plantations in Calabar and Benin respectively for the sourcing of local raw materials (Ogah, 2015).

It is however disheartening that Malaysia, which even took different species of palm tree seedling from Nigeria at independence in 1960, has researched so much and so well into its production more than Nigeria (Oladipo, 2009). Locally the country produces dye cloth, smith metals like iron, bronze and gold. It even manufactures soap, processes cotton into cloth and other finished goods but all these are in crude form devoid of further research (Edobor & Maliki, 2006). They stated that the country has not made enough progress in research due to some superstitious beliefs and ancestral domination of certain areas of technology. These areas are so much guarded in secrecy that other families are not allowed to get a glimpse of ideas about them. The rural-urban drift of youth did not allow them get much of this technical gift peculiar to their ancestors until their elders die with much of the knowledge.

By 1990, Nigeria's agricultural production shifted to a mono-economic product found in oil. The few surviving local technology were abandoned. Even science and technology policies are not being well articulated. The economy has experienced a lot of gas flaring and if it has ever conducted any serious research into this area at all, Nigerians are not seeing the results, not to talk of implementing the findings.

The industrial sector now depends heavily on importation of raw materials from overseas countries to keep the wheel of industrialization going despite the local content policy which ensure that a high proportion of project inputs are sourced from the host country without compromising the economics of the project or sector being leveraged. The policy also aimed at attracting foreign investment, revive the comatose plants and encourage transfer of technology and advance manufacturing activities needed for the production of affordable vehicles in the country (Ogah, 2015).

Foreign experts also provide the maintenance of the machineries. It will be noted that many of the technological growth devoid of development are being carried out by foreigners who are paid for by lifting of barrels of oil. The country continues to rely on technological transfer, which seems to be a mirage. There is technological growth but without technological development. The educational set up seems to betray the quest for scientific and technological take-off. The technical colleges have now been converted to secondary schools. Even the existing ones at the state level are so much theoretical in orientation (Ajewole & Owolabi, 2009).

In terms of policy, the Federal Republic of Nigeria (2013) provides for 70:30 ratio of admission into technology based courses and liberal arts. This policy is either deliberately not being followed or there are no candidates for the number of places. Granted that many of the senior secondary schools are comprehensive in offering disciplines like Arts, and Commercial subjects, the observation is that few percentages offer sciences while many concentrate on the liberal arts and the commercial subjects. Could it be that science is not popularized or the equipment is not there or/and the quality of manpower to provide the knowledge is lacking?

The administrative policies of managing the affairs of science and technology in this country leave much to be desired. We have many research institutes that much are not being heard of in terms of activities. (Ajewole & Owolabi,2009)

There is Federal Institute of Industrial Research, Owerri (FIIRO) that has been in existence before the country's independence but not much is heard of it again. Nigeria also has Standard Organization of Nigeria (SON), Raw Materials Research and Development Council (RMRDC), which are considered not very active in terms of quality control of raw materials into our industries. It is only of recent that the effort of National Agency for Food and Drug Administration and Control (NAFDAC) is being recognized. This is due to the leadership of the administrative system in the agency (FRN, 2013). The nation equally has specialized Universities in Agriculture, Science and Technology, both at federal and state levels. Some of these Universities are: Federal University of Technology Minna; Federal University of Technology, Akure; Federal University of Technology, Owerri; Ladoke Akintola University of Technology Ogbomosho, Oyo State; Rivers State University of Science and Technology, Port Harcourt; Cross River State University of Science and Technology, Calabar; Enugu State University of Technology, Enugu; Modibbo Adama University of Technology, Yola; Akwa-ibom State University of Technology; Ondo State University of Science and Technology, Okitipupa, and so on. The impact of these specialized Science and Technology Universities is not being felt yet. It could be because they are not well-equipped or the quality of manpower in the organizations and institutions is not up to the standard that would make meaningful impact. Not much cooperation too is seen between them and the industries in terms of Student Industrial Work Experience Scheme (SIWES) and research results utilization. The lack-luster performance of these institutions can also be attributed to poor funding, infrastructural deficit, corruption and the race to gain political points.

Challenges facing the development of science in Nigeria

The effective implementation of Science in Nigeria towards sustainable national development is not without some hitches (Isoun, 2014). The nation present approach to education has failed to encourage individual initiative and efforts through research and development of ideas into concrete problem solving devices. Some critical areas of science implementation challenges include;

i. Funding

The success of any educational policy and program depends largely on funding. Inadequate funding hinders the provision of sound and qualitative education while adequate funding

facilitates quality education, provision of infrastructure, recruitment of qualified manpower, mitigates strike actions and enhances good working environment.

ii. Lack of Instructional Materials

The instructional materials such as equipped workshops, libraries and laboratories needed by the teacher to explain the lessons for easy understanding by the students are grossly inadequate, (Isoun, 2014). Maintains that the availability and use of instructional materials have significant effect on the performance of the learner.

iii. Attitude Towards Science and Technology

Many of our students have a negative attitudes towards science subjects and they believe that science subjects are very difficult especially mathematics, physics and chemistry. The wrong attitude has negative effect on science and technology education in Nigeria.

iv. Teachers' Attitude

Some teachers tend to be so conservative in their approach to teaching. They find it difficult to adopt new approaches in teaching their subject matter. Some are not committed and thereby discourage their students.

v. Inadequate Teachers

Science and technology teachers are generally in short supply in Nigerian. There are not enough qualified teachers to teach the subjects in the schools.

vi. Large Class Size

The ratio of teacher: pupil is a big challenge to science and technology education in Nigeria. According to the Federal Republic of Nigeria (2013), the teacher, pupil ratio should be 1:35 but this is contrary to what is observed in Nigerian schools today. In many schools today the teacher, pupil ratio is more than 1:60 (Okereke & Ughasoro, 2015).

vii. Poor Remuneration

Science and technology teachers are not adequately compensated financially compared to their inputs in education. The salary of these teachers can barely sustain them and their families for a month. Little or nothing is done to motivate these teachers in order to get the best out of them.

viii. Politics of Education

Most Nigerian politicians are not taking matters of education with the seriousness it requires, probably because most if not all their children, grandchildren and relations do not school in Nigeria. They pay lip service to education especially science and technology education.

Prospects of Science and National Consciousness in Nigeria

In spite of the enormous challenges confronting science and national consciousness in Nigeria, there are great prospects for science in advancing the nation. Some of the efforts put in place for the enhancement of science for national development include:

- The introduction of science fairs and clubs in schools.
- The introduction of junior engineers and technician scientists (JETS) competitions in schools.
- The establishment of special science and technical schools in the federation.
- The use of quota for admission and accreditation of courses into Nigerian universities and polytechnics as sixty percent (60%) for sciences and forty percent (40%) for Arts and Seventy percent (70%) sciences and Thirty percent (30%) for Arts respectively.
- The award of scholarships to deserving students studying science and technology subjects.
- Establishment of Polytechnics, Colleges of Education and Technical colleges in Nigeria.
- The establishment and implementation of the Industrial Training Fund (ITF) scheme.
- The organization and sponsoring of science and technology conferences, workshops and seminars to encourage science and technology education.
- The introduction of computer education in schools.

Suggestions for Way Forward

i. Educational facilities in the learning of science and technology in the schools should be improved so that the learning could be enhanced. Such facilities include regular supply of electricity, adequate access to Internet, and adequate laboratories and libraries.
ii. Launching national education reforms focusing on innovation and entrepreneurship. This can help produce the next generation of scientists, engineers, entrepreneurs and innovation leaders who are patriotic and believe in the Nigeria project.
iii. A robust orientation program should be organized on every medium of communication to reawaken our sense of citizenship.
iv. National consciousness should be included in the school curriculum from the nursery to the tertiary level and be made compulsory.

Conclusion

This paper has revealed that development process in Nigeria seems not to have recognized the critical role of science and technology education and national consciousness in terms of recognizing indigenous efforts in the development of science and technology. Moreover, the study reveals the need for policy consistency in the National Policy on Education. It can be concluded that Nigeria lacks the required science and technology education culture to make her great in the committee of technologically advanced nations of the world. Despite its wealth and human capital, the Nigerian economy is largely driven by the service sector, especially the telecommunication and entertainment industries, and by oil extraction. Science and national consciousness is very vital in the development of the nation. A lot needs to be done to improve the nation's science and technology and national consciousness especially through educational institutions.

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