Rebranding Science Education for Security and National Economic Growth: A Critical Review of Nigeria's Educational System

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Abstract

This paper aimed at critically reviewing the factors responsible for rebranding science education for security and national economic growth. It discusses the roles of science education in our nation. Nigeria is a blessed nation filled with sustainable economic opportunities which are opened to all its citizens especially the youths, by providing educational developments in all areas of its endeavors. Science education is akin to a bridge connecting to diverse fields of knowledge. The purpose of science education in Nigeria is particularly drawn from the national goals and philosophy of education as contained in the National Policy on Education (NPE). For instance, the goals of education in Nigeria include: Development of the individual into a morally sound, patriotic and effective citizen, and social abilities and competencies as equipment for the individual to live in and contribute to the development of the society. In rebranding Science Education, the nation's scientific, technological, industrial, and economic growth/advancement must be strongly rooted in its quality of science education, also by inculcating critical thinking in the educational curriculum. Therefore, sustainable growth in Nigeria's economy can only be assured on the foundation of an effective science education system. This paper also outlines the major challenges causing educational setbacks of science education in Nigeria. Hence, the purpose of this paper is to address the incompetencies arising from these challenges by identifying some ground-plans for rebranding science education in Nigeria. It is therefore imperative that the quality of science and technology education be improved in Nigeria if the country will breakthrough especially in this era of insecurity and beyond. To achieve this however calls for concerted efforts from the education stakeholders. Recommended among others is the need for science educators and other parastatals concerned to be enlightened and kept abreast of the guidelines provided in this study.

Keywords: Rebranding, Science Education, Security, National Economic growth, Nigeria's Educational System

Introduction

Science education is the field of science that is concerned with sharing of science content, some social science, and the process of teaching science pedagogy in order to provide expectations for the development of understanding part of the scientific community. The subjects included in the science education are physical, life, earth, and space sciences. It's also the Field that study and apply teaching and learning process to create thinking citizens through science knowledge. Science education is an indispensable tool for human development. It has been reorganized as the instrument per excellence for national building. Science education is amalgamation of science and education. Similarly, it is the education received through the process of science. Adekunle (2023) defined aspects of science to include cognitive science which takes care of the ethics or regulatory principles of science. The emphasis is doing science in the 21st century to catapult Nigeria to join the league of the foremost twenty industrialized nations of the world in year 2030. Inculcating scientific attitudes right from the basic education level serves as an interplay that can sharpen the attitude and the behavior of the populace to save our democracy from falling into comatose owing to conflict on unrest, kidnapping and insecurity in the country (Ingo, 2014). Ogunkunle, (2019) mentioned some of the attitude of science to include curiosity, creativity, skepticism or critical mindedness, persistence, knowledge, ability and suspended judgment, aversion to superstition, humility and punctuality.

On the other hand, education according to Adamu, Umar, Audu, and Musa (2021) empowers, emboldens, refines, civilize, enlighten, enriches, and give confidence to man. Science education according to Jegede (2019) can

be seen as learning science by acquiring and developing conceptual and theoretical knowledge through scientific inquiry and problem solving. In a similar view, Olarinoye (2022) sees science education as the identification, development and uses of talents, process skills for social progress. Bajah (2020) explain science education as an academic discipline in which people who study it get education to live an adjusted life, A synopsis of antisocial behaviors pervades in the country where hundreds of families are torn apart, hundreds of thousand lives are ruined and property worth millions of naira destroyed throwing the country into a state of insecurity because nobody is sure what would happen in the next moment, science education is central to the building and stabilizing the country. Science education seeks to achieve the following goals in Nigeria.

1. To cultivate inquiring, knowing and rational mind for the conduct of a good life and democracy.
2. To produce scientists for national development
3. To service, studies in technology and the cause of technology development, and
4. To provide knowledge and understanding of the complexity of the physical world, the forms and the conduct of life (FRN,2004).

From the fore going, science education can be seen as a solution to a given physical, biological or social problem, this implies that a scientifically literate individual is a fast thinker who devises a solution even before the problem comes. Submissively the goal of science education in Nigeria, if rigorously pursued, could assist to produce critically minded individuals who would help to maintain the security and conflict-free society. A scientifically literate individual utilizes rational thinking to situation and shelf maiming, killing and destruction of properties, government-owned structures and individual buildings. Scientific minds explore their environment to discover latent potentials which could be used to improve the socio-economic situation of the country and harvest other people's opinion on how best to improve the policy which invariably prevents conflict and ensures national stability. The ethical behaviours of science are such that will promote the fundamental unity of the country and harmonious relationship with one another inadvertently, scientific attitude could be employed in resolving differences and explore factors that forestall unity instead of what disintegrate the nation.

The purposes of science education in Nigeria are particularly drawn from the national goals and philosophy of education as contained in the National Policy on Education (NPE). For instance, the goals of education in Nigeria include: Development of the individual into a morally sound, patriotic and effective citizen, and social abilities and competencies as equipment for the individual to live in and contribute to the development of the society (FRN 2013, p.2). These goals appear very lofty, but vague. For instance, what defines moral soundness when morality is itself "indefinable" (Skorupski 2023, p.121), and is subject to social and cultural interpretations? In addition, what criteria are set to identify an "effective citizen"? What is the parameter to measure one who has cultivated an „inquiring, knowing and rational mind"? In addition, what does "for the conduct of a good life and democracy" mean? These are clearly subject to different interpretations by the end users of the policy. The science subject curricula also derived their specific objectives from the NPE national and science education goals. For instance, the objectives of the Basic Science and Technology (BST) curriculum for the first 9 years of school are to enable learners to: Develop interest in science and technology, acquire basic knowledge and skills in science and technology, apply their scientific and technological knowledge and skills to meet societal needs, take advantage of the numerous career

opportunities offered by science and technology, become prepared for further studies in science and technology, avoid drug abuse and related vices, and be safety and security conscious (FME 2012, p.4).

Science Education is a field of study that exposes learners to the contents as well as the methodology of acquiring scientific knowledge for applications in relevant and practical areas of life such as life on the planet, production of essential human needs like soaps of all kinds, creams, drinks, petroleum and its by-products, clothing, drugs, household utensils and chemicals for preservation of food items as well as textiles are all products and principles gotten from the study of chemistry which is a core science subject. Science activities are embarked by man in search of basic needs for survival. In line with this Okeke (2022), defines science education as an integrated field of study that that considers both the subject matter of science discipline (biology, physics, chemistry, mathematics, integrated science and agriculture as well) as well as the process involved in the teaching and learning of science. Science education is akin to a bridge connecting to a bridge connecting diverse fields of knowledge

Science education is described by Pembe and Hombe (2020) as a process of teaching and learning especially in schools to improve one's knowledge and develop one's skills of systematic inquiry as well as natural attitudinal characteristics. Science education involves the study of science in depth and in addition, knowledge and concepts are learnt and verified. It has been recognized and identified globally as a pre-requisite for technological development (Okoli et al 2019). This implies that no country can be globally recognized without talking about its scientific advancements. According to Lewis (2019), science identifies natural phenomenaappropriate to a child's interest and skills. He also went on to say that science education equips teachers, learners and the society with the skills, materials and freedom to perform noble tasks useful for improving socio-economic standard. In addition, he added that science education courses are designed to produce capable scientists who contribute meaningfully to the academic excellence of the society to raise the economic level of the nation. Science is an area of learning that is absolutely necessary for development because of his linkage to technology and industry (Batomalaque, 2015 as cited by Danjuma and Adakole, 2019). Scientific development is essential for better quality of life, the sustainable development of the planet and peaceful co-existence among the citizens. From the immediate basic essentials of life such as access to water, food and shelter, to other issues such as management of agricultural and water resources, health, energy resources, biodiversity, environmental conservation, communication, transportation, petroleum and other mineral resources, science provides the basis for action at the local, regional, national and translational levels (UNESCO, 2015). This is because science and technology has been identified as the key drivers for growth and sustainable social and economic development and transformations at all levels.

Science education in Nigeria plays a crucial role in addressing national insecurity and promote economic growth, particularly in areas such as technology, healthcare, and environmental management.However, despite the abovementioned roles of science education to national development, Nigeria has lacked sustainable science education since its independence and as a result; science education has not beenable to move the country into industrialization and raised her above poverty level. Similarly, Momeke (2019) supported this notion that science education has failed to produce skilled human resources needed for transformation into national prosperity. This implies that most of Nigeria's development in the direction of modernization has been haphazard leading to the acquisition of obsolete technology. Sustainable science education development therefore represents a catalytic

process for social educational, training and public awareness- the values, behaviour and lifestyles required for a sustainable future (Okoli et al. 2023).

It is a fact that only quality science education can bring about effective learning among students which will eventually produce undoubted development for any country. Quality science education provides an effective science teaching which occurs when students learn and achieve the much needed scientific and economic goals and not just being able to repeat scientific knowledge (Omoifo, 2020). Recent studies have reported that the poor quality of teaching and teachers were dominant factors for students' poor performances science subjects. For instance, in a research conducted by Awodeji et al., (2020) on science education in south-west Nigeria, it was found that many factors such as inadequately equipped science laboratories, inadequate access to ICT by the educators, low ratio of teachers to students are challenges in majority of the schools. Other factors include lack of textbooks science apparatus, laboratory facilities and poorly equipped laboratory halls (Batomalaque, 2015). Large class sizes, inadequate funding, insufficient curriculum resources, poor and use of traditional teaching strategies and lack of supports for teachers among other factors further limits and downgrade the quality of science teaching and learning in Nigerian schools (Okebukola, 2019). Thus, improving science education has become of paramount importance in determining a country's socio-economic development. Nevertheless, this may be difficult to achieve without the adequate understanding of the current status of science education and the means to improve it.

The Roles of Science Education in National Development

The roles of science education in national development cannot be over-emphasized. Through science education, an individual can become self-employed (Adagba, Ugwu & Eme, 2022). Science education leads to several scientific fields and professions like engineering manufacturing, mining, and construction industries (Omosewo, 2019). Science education prepares the youths of Nigeria and other nations for fulfilling career prospects and trains their minds for employment opportunities. Science has become a crucial factor for sustainable national development. In line with this, Ezeliora (2022) documented that in a developing country, issues of science and technology education are very important, as it is a means through which the nation can achieve national development. Science education has made significant progress in agriculture, health, energy, water and environment to alleviate poverty. Therefore, science has provided the basis for the aggregate improvement in human health, certain scourge diseases have been eliminated, example (small pox) and mortality associated with everyday health related events and infectious diseases have also been reduced. Advances in science knowledge have facilitated higher yields and greater efficiency in agriculture. Mechanized agriculture, use of fertilizer and other agro-chemicals in the farm, have led to more food production with reduced or no labour. Improved knowledge of plant biology and breeding technique have led to better seed and cultivation practices and improvement in herbal medicine. Study of some scientific courses like fisheries and aquaculture has led to entrepreneurship, thereby reducing unemployment. Generally, the problems of mass unemployment, inflation, infrastructural decay, collapse of health and educational services and many others can all be traced to inadequate attention paid to science education.

Rebranding Science Education in Nigeria

Any nation's scientific, technological, industrial, and economic growth/advancement can be attributed to be strongly rooted in its quality of science education. Therefore, sustainable growth in Nigeria's economy can only be assured on the foundation of an effective science education system. Therefore, rebranding science education is necessary to substantiate the claim which has been argued that: it is science education that can single-handedly solve the problem of poverty, lack of availability of food, issues of superstition, and deadening customs and traditions in Nigerian societies, the problem of hunger, large waste circulated without recycling and problems of corrupts and rich country inhabited by poor and starving citizens. Therefore, at every turn, we must seek the help of science and technology education to improve the Nigerian society. The future belongs to those who make friends with science (Weiss, 2021). Nigeria‘s economic stability can function properly on the bedrock of an effective science education. For this reason, curricula contents and intended learning objectives of science education are directed at achieving core national aspirations capable of producing the goods and services needed for the economy's growth and national security. Lawal and Usman (2018) noted that the subjects to be taught and the nation concerned needs usually drive the contents of such subjects in the curricula. To further illustrate this view, the Nigerian Educational Research and Development Council (NERDC) was directed by the National Council on Education (NCE) in 2005 to review and re-align the existing Senior Secondary School curricula to meet the targets of the Federal Government reform in the context of the National Economic Empowerment and Development Strategies, (NEEDS) and the Millennium Development Goals (MDGs). The critical aims of the MDGs and NEEDS that prompted and made these curricula reforms imperative include value orientation, poverty eradication, job creation, wealth generation, and using education to empower the masses economically.

Another way of rebranding Science Education is by inculcating critical thinking in the educational curriculum. Critical thinking can lead to meaningful results through creative ways of understanding and willingness to consider views where necessary (Solomon et al., 2018). His study has its basis in the National Policy on Education, which states that the major goal of education is to train and prepare people who will cultivate inquiry habits, acquire knowledge and rational minds, conduct a good life and produce scientists for national development. Some researchers, such as (Cottrel, 2011) and Brookhart (2010), state that critical thinking is a means of scientific and reflective thinking in pursuing relevant and reliable knowledge about the world. Critical thinking should be reflective, responsible, skillful, and focused on deciding what to believe or not. It is also seen as higher-order thinking and involves the formation of logical inference. According to Solomon et al. (2018), critical thinking skills help students to organize ideas and components of basic science and technology concepts by searching for meaningful patterns of organizing information and putting things in groups. Students can establish the relationship between two or more ideas through critical thinking. When students acquire critical thinking skills on habit, they will have control over what they think and the areas they need to focus on in learning. As a matter of necessity, science education should be an activity and inquiry-based process, at a level where the younger generation is to be nurtured.

However, there are reforms, as observed by Okonkwo (2010), adopted in Nigerian schools because they placed much emphasis on practical, laboratory, or activity-based work in line with the demand of science teaching,

which requires the development of certain skills and attitudes. According to Lawal and Usman (2018), the practical-based instructional strategy is a science teaching strategy that involves learners manipulating a set of consciously provided materials or equipment in a controlled environment, following procedures that stimulate scientific thought and develop scientific skills and attitude under the overall guidance of an instructor. According to Isa and Usman (2021), this potential has been attributed to the practical-based instructional strategy's capacity to engage learners in knowledge construction. Drawing from their previous experiences and creating new experiences that remain with them for a long time might be helpful for them in their day-to-day activities and enable them to be innovative, empowering them economically.

Science education in Nigeria has not been able to utilize its full potentials because of several factors hindering its development. Notable authors like Ezenwa (2022); Ezeliora (2021); OECD (2018), have identified problems affecting the teaching and learning of science in Nigerian schools as; poor laboratory facilities, students' and science teacher's attitudes towards learning and teaching of science, poor curriculum, inadequate number of useful and qualified teachers, poor fundingfor project executions.

One of the major challenges facing Nigeria in education sector is inadequate funding by the federal, state, and local government. Over the years, education has been poorly funded in Nigeria in spite of its roles in national development. Due to the low allocation to the educational sector, educational institutions have not been receiving adequate fund for science and technology provision (Uwaifo, 2010). Unfortunately, in Nigeria, the low level of funding of schools makes it impossible to properly and adequately equip their workshops, laboratories, studios and classrooms suffice it to say that the necessary facilities needed for effective teaching and learning of science are not adequately available in most Nigeria Schools. This problem is even aggravated by high cost of this equipment as most of the science laboratories in Nigerian schools are poorly equipped.

Poorly equipped laboratory and laboratory facilities have been a major concern in recent years in science classrooms. It is on this note that Akpan (2023) stated that the success of any science subject depends on the provision of laboratory facilities and strategies employed during teaching which helps in facilitating the academic outcome of learners. Other practical learning models alsoenhances scienceteachingsin the laboratory as it provides students the opportunity to engage in the process of discovery andinquiryduring practical sessions. In spite of these benefits, many schools in Nigeria are yet to acquire a standard environment for learning science while those available in some schools are ill-equipped for effective science teaching (Akpan, 2023).

Shortage of well-trained science teachers and laboratory technologists is an indispensable determinant in the successful implementation of any curriculum. Achieving qualitative science education depends largely on the effectiveness and competency of the science teacher in the schools (Ezeliora, 2020). This was confirmed by Animalu (2018) who stated that in most institutions of learning, science is sometimes poorly handled because of the death of qualified science teachers due to laboratory hazards and accidents being faced by instructors during classroom instructions. This problem ranges from teacher's low academic qualifications, lack of knowledge of subject matter, poor commitment, incompetencies and lack of skilledinstructors. This of course does not only lead to poor performance of the students but also leads to low enrolment of the students into science courses. Different scholars (Ugwu, 2018; Asikhia, 2010; Akani, 2012), have shown that teachers are inadequate for science education in Nigeria

and every effective science education requires adequate curriculum content that would be able to address the nations' economic as well as the societal needs of the citizens. Functional education is determined by the quality of the curriculum content and its implementation (Offorma, 2016). Science curriculum content needs to be valid, relevant, significant, learnable, consistent and up-to-date with the current societal realities of the country, which will be useful and reflect the interest of the learners (Ivowi, 2019). The impediments of science education curriculum in Nigeria are; shortage of indigenous teaching personnel who are competent with sufficient practical experience, overloaded academic context, lack of standard materials with foreign background and models in terms of equipment and scientific infrastructure (Uwaifo, 2016).

Science curriculums which are poorly designed will definitely give rise tounemployable graduates in the labour market (Borisida, 2021; Okebukola, 2019). Rapid increase in students' population in schools without theserequisite facilities continues to increaseevery day. The quantity and quality of available specimen and apparatus are nothing compared to the number of students involved in practical sessions. This population explosion has posed negativedraw backs on students' achievement especially in external examinations. Okebukola, (2019) stated that large class size makes monitoring of students difficult and such overcrowded classroom is already straining existing facilities like lecture room where students stand to receive lecture. Most of the science teachers do not have proper ideas about ICTand therefore finds it difficult to impact same during classroom instructions. These challenges therefore call for a rebranding of science education for a better and sustainable development in Nigeria.

Ground-Plans for Rebranding Science Education in Nigeria

It is imperative that the quality of science and technology education be improved in Nigeria if the country will breakthrough in this area of insecurity in this decade and beyond. To achieve this however calls for concerted efforts from the education stakeholders. In this regard, the following measures are suggested as follows:

1. **Arresting youth restiveness in the nation:** More than 50% of the nations' population comprises of the youth. Kakistocracy and poor state of the nation has therefore given rise to youth unemployment across the six geo-political zones. Massive unemployment in the nation has led to youth wantonness and restiveness which should be arrested accordingly. this is due to the high level of illiteracy among the youths. Adequate knowledge of science awareness should be created among the young citizens and proper critical thinking skills imbibed in them. This will help them to identify and understand these problems faced by the nations and suitably find possible meansto fix them.
2. **Adequate funding**: For effective implementation of science and & technology programmes, there should be improved funding of education to meet the 26% of Gross Domestic Product (GDP)standard already set by UNESCO. Adequate funding of education would guarantee increased funding of science and technology education on which it depends. Private sector should assist government in the funding of education, particularly through the provision of facilities and donation of money, libraries, laboratories, and workshop for educational institutions. Both state and federal governments in Nigeria should improve budgetary allocation to the science education sector. Government should also explore the possibility of partnering with stakeholders and private sectors in the funding of education by donation of money. For instance, federal government should empower the National Science and Technology Fund (NSTF), and direct the science and technology-related establishments such as oil companies,

industries to pay a certain percentage of their annual income to the government for promotion of science education in Nigeria. The government should ensure that more funds are allocated for provision of some basic infrastructure, equipment and materials needed by teachers for quality instruction in schools. The relevant agencies like Tertiary Education Trust Fund (TETFUND) should also monitor the institutions to ensure that fundsreleased for such procurement are properly utilized.

3. **Recruitment of and training of teachers**: The attainment of goals of science education is largely dependent on the quality of teachers and the level of their understanding of the subject content coupled with the appropriate skills of imparting the knowledge. There should be proper staffing of schools in terms of quality and quantity. Due to dynamism of knowledge and continuous change in scientific concepts, there is need for proper training of the teachers at all levels and engaging in professional development through; conferences, seminars and workshops on current trends in science and technology, scholarship for further study, grants for research into innovative teaching and learning processes, training on the use and application of technologies like smart board, projector, in teaching and learning of science. In view of the role of teacher in science and technology education provision and the shortage that characterized this in schools, more academic staff in the areas of science and technology should be recruited by the tertiary intuitions; science and technology teachers should be committed to the job and be motivatedthrough improved conditions of service.
4. **Appropriate pedagogy should be adopted by teachers:** Science should be taught based on our culture, drawing examples from our local environment. Good practices for effective implementation of inquiry-based science education must be identified and properly implemented as the teaching and learning of the science requires the use of discovery approach, inquiry as well as innovative methods that stimulate students' interest. Science teachers should be encouraged to integrate technological tools into their teaching to follow suit with the global trend in learning. This can be done through exposing the students to technological equipment such as internet, online media, computer software and multimedia presentation. Opportunities to enrich teachers' practices and competencies through in-service training, conferences, seminars and workshops should be provided on a regular basis to help them keep abreast with recent developments in the field of science and broaden their knowledge of subject matter. There is need for regular review of science curriculum. Those aspects that are too lengthy should be reduced and pave ways for the current trend in science education. Emphasis should be laid on entrepreneurial subjects to enable students prepare for labour market, also be self-employed after graduating from school.
5. **Motivation of science and technology teachers:** Government should encourage teachers in the area of science and technology to be able to perform better. At the primary and secondary level, government should give special science and technology allowance to teachers. Promotions should be given as at when due to enable them perform better in their different areas of disciplines.
6. **Admission by merit into higher institutions**: Financial involvement should be totally discouraged during admission processes. In view of the negative effect of the implementation of this policy, particularly on the quality of graduates, Government should make it a standing policy that only those that qualify should be admitted to tertiary institutions as this will pave way for education to all and sundry.

7. **Provision of laboratory and workshop facilities in all schools:** Considering the importance of laboratory in science teaching, government should provide the necessary facilities and reagents needed in the laboratory, and employ experienced laboratory technologists who will be assisting the science teachers in conducting practical work. This would help to reduce the work load on the teacher and improve the efficiency of the teaching. In view of the importance of laboratory in science and technology teaching, government should equip the laboratories and provide or employ laboratory assistants who would have a better understanding of laboratory work. This would help to reduce the work load on the part of the science teachers and improve their efficiency
8. **Regular review of science and technology curriculum:** Although Government has not relented in its effort to produce better curriculum for educational system in Nigeria, it is imperative that government should review secondary education curriculum particularly the aspects that concerns science and technology on a regular or annual basis. Those topics that had been adjudged to be too lengthy should be reduced so that they can be covered by teachers and assimilated properly by students within the time frame provided.
9. **Improved commitment of science and technology teachers**: Teachers of science and technology in educational institutions should be fully committed to their job and shun acts that are capable of undermining their duties in the institutions. Regular meetings should be held by the school management and proper disciplinary measures should be adopted to deal with defaulters.
10. **Curbing student unrest, strikes and cultism in tertiary institutions:** It is not a gainsaying that strikes, student unrest and cultism have over the years been causing delay in the graduation of students as well as reducing the period of training of students in tertiary institutions owing to the usual compression of academic calendar, it is thus imperative for Government to continue to dialogue with students on the need to shun the involvement in these acts which have been detrimental to the teaching of insecurity and the development of sustainable education in tertiary institutions. Institutions' administrators should be alive to their responsibilities and exert much effort towards nipping these crises in the bud in their respective institutions.
11. **Poverty eradication/alleviation:** It is obvious that poverty has been the bane of education in Nigeria. It thus behooves on Government to encourage students from the less privileged homes towards studying science and technology, through the provision of scholarships and bursaries to students. Private sector and Non-Governmental Organizations (NGOs) should however complement government efforts in this area by instituting scholarships and bursaries for students in science and technology fields.
12. **Science enrolment ratio enforcement:** It is of no doubt that hard work attracts good rewards. It is on this note that government should implement strategies to reinforce the scienceenrollment policy. Government might, for instance, reward institutions for their achievement of the goal or target scholarships at students in particular disciplines. Institutions and other educational bodies like Joint Admissions and Matriculation Board (JAMB) should reduce the cut-off marks to an average point to enable students gain access into these institutions to study their preferred course of disciplines.

13. **Recruitment of more guidance-counselors:** Government should recruit and post more Guidance-Counselor to schools, particularly to those schools without any. The guidance counselors in schools should however be up to their responsibilities and ensure effective guidance of students in the choice of career.
14. **Curbing corruption in educational system:** In view of its negative effects, Government should curtail corruption in educational institutions. Those caught in the act should be reprimanded to serve as deterrent to others. Government should however continue to institute measures aiming at preventing the misappropriation of money meant for science and technology in educational institutions and at the elms of government.
15. **Adequate training of pupils in primary schools to imbibe science and technology culture:** It needs not be overemphasized that the background of a child plays influential role in the academic performance at other levels of the educational system. In is thus imperative for adequate and thorough training to be provided for pupils at the primary level so that they can build on the foundation at the secondary and tertiary levels.
16. **Modernization of science and technology teaching:** Science and technology teaching methods should be modernized to bring life back into it. To do this, a policy on standards of professional development of teachers through trainings should be implemented, requiring teachers to maintain a reasonable level of pedagogical content knowledge and skills. Also, Computer Aided teaching should be emphasized in schools by government in line with global trends. Teachers may sometimes make use of virtual learning as a means to educate the 21st century learners for a more productive performance.
17. **Removing gender barrier in science and technology education:** Removing gender biases in instruction and instructional materials and the positive presence of female role models are strategies to keep in university science and technology programmes once they are there. Special programmes and scholarships should stimulate girls who want to enter Science and Technology programmes. No programme should be seen as selective for both genders.

Conclusion

Science education as a tool for driving national and economic development in Nigeria should be properly addressed and rebranded for a better profitability in the nation's economy. It is pertinent to note that development can best be achieved when concerted effort is made by government in areas of science education. If Nigeria is to develop and build a self-reliant nation, emphasis has to be made continually on the development, growth and restructuring of science education in our school system. The roles of science and technology in national development cannot be overemphasized. In all aspects of human activities such as health, agriculture, communication, food security, transportation, among others, science and technology are applicable. In spite of the effort of government in Nigeria at promoting science and technology education, many issues are at stake that serves as barriers to the accomplishment of this feat. This paper thus examined how issues such as inadequate funding, inappropriate curriculum, lack ofill-equipped laboratory and workshop, low quantity, quality and commitment of teachers, poor academic performance of students, low quality graduates, frequent closure of tertiary institutions, among others, are affecting science education in the midst of security challenges and poorly structured government in Nigeria. Judging from the fact that Nigeria is a developing country which needs to move forward in the area of science and technology development, it is imperative for these issues to be tackled. To achieve this, improved funding of education, curbing examination malpractices, student unrest, and cultism in tertiary institutions, among

others, were recommended. Above all, it is therefore thoughtful that youths should be empowered to become instruments of change in the nation. It is thus hopeful that quantitative and qualitative science and technology education will be achieved in Nigeria if these measures are adopted which will however become a pivot of change in the nation for a better sustainable development.

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