

(Critical Review) Repositioning Science and Technology Education for Security and National Economic Growth and Development in Nigeria

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ABSTRACT

This article examined the repositioning of science and technology education for security and economic growth and development in Nigeria. The wreck on the nation's image by the incidences of insurgency has caused negative effects on the nation's security and economic development. Security issues are presently major challenges in Nigeria, especially in Northern Nigeria. Furthermore, the continuous rise in insecurity and deterioration in the economic development in Nigeria has called for concern among researchers and policymakers over the years. This article highlights the need for rebranding Nigerians through the internal process of repositioning the science and technology education system for national security and economic sustainability. Literature and other research papers using to gather information. The paper recommends that the nation adopt a proactive approach to improving the teaching and learning of science and technology education professionally and empowering youth while taking everlasting measures to curtail the issues of insurgencies in Nigeria. In other words, we need to reposition our youth's mental reasoning and economically empower them to certify the demands of the modern world. Repositioning Nigerian is one of the fruitful tools to achieve this objective, and rebranding directs the power and energy of Nigerians toward academic and productive goals.

INTRODUCTION

Science and technology education is a type of education aimed at producing scientifically literate citizens and potentially scientific and technical human resources. In contrast, technology education gave on to acquire practical and applied skills and basic scientific knowledge ([Abbas, Babangida, and Muhammad, 2019](#)). It was designed to assist individuals/learners in developing certain scientific skills, knowledge, attitudes, and work habits needed for self-reliance. The term 'sustainable development means the development that can be continuous over a certain period. [The World Commission on Environment and Development \(1987\)](#) defined sustainable development as the development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

According to Ballar in [Ige \(2013\)](#), humans can survive using rational use of renewable resources by restraining from disrupting the ecosystem or over-exploiting natural resources and by refraining

from activities that destroy cultures and societies and instead allow them to reach their optimum potential. Sustainable development can also be described as the development that builds on the present and provides enabling environment for future generations to develop and meet their needs.

Advances in science education are key to a nation's ability to safeguard national security, empower economic growth, manufacture better and qualitative products, improve health care, develop cleaner and more efficient domestic energy sources and preserve the environment. For Nigeria to be among the twentieth largest economies by the year 2030, it will be essential that Nigeria rebrand her science and technology education. However, evidence indicates that current educational pathways are not leading to a sufficiently large and well-trained science and technology education workforce to achieve this goal ([Tsafe & Yusha'u, 2016](#)).

According to [Adofu et al. \(2019\)](#), the term insecurity is known in Nigerian societies and exists even in the most primitive communities of the world. In order to give a standard definition of insecurity, it is pertinent to briefly look at what security is all about. Encyclopedia Britannica defined security as a social contract in which the people willingly surrender their right to the government, which oversees the survival of all, necessitated by the need for security. However, according to [Abdullahi et al. \(2019\)](#), toward the end of the cold war, there was an attempt to move the concept of security from a static-centric perspective to a wider view that places a premium on individuals in society, as human security embodies the components of national security, human rights, and national development as the measuring tools for explaining the term.

In our societies today in Nigeria, if educational issues are raised, the instincts that readily reflect always on Nigerian's minds are always fluctuations or decline in quality, dilapidated facilities, lack of funds, inconsistent educational policy, gender inequalities, teacher quality and productivity, frequent ASUU strikes and so on. As Africa's largest black nation, Nigeria, with a population of over 200 million and one of the largest black countries in the sub-Sahara of Africa, according to [Adofu et al. \(2019\)](#), has a national policy on education geared toward enhancing literate individuals who would empower the economic growth, manufacture better and qualitative products which inturns reduce unemployment rates and curtailing security challenges since the 1980s. However, the repositioning Nigeria campaign championed by [Adofu et al. \(2019\)](#) is to reinforce quality and productive science and technology education so that Nigerians may have much confidence and faith in their government and her policies to alleviate poverty and improve the economic status via wealth accumulation.

[Muhammad \(2018\)](#) observed that Nigeria could not wait till all the problems bedeviling her worsened before taking necessary steps in repositioning/ rebranding to batter her image and improve her security challenges via the educational sector. It is in line with the fact that the low productivity of Nigeria's educational system has not only dealt a deadly blow to the country's image before the world but also has destructive effects as well as a deteriorating impact on the nation's economic growth and development ([Muhammad 2018](#)). Given these, the crisis bedeviling our educational system can also stem from repositioning ([Abdullahi & Bello, 2012](#); [Ige, 2013](#); and [Muhammad, 2018](#)).

Science Education and National Security

According to [Adofu \(2019\)](#), insecurity may result from a hostile environment dominated by an individual's insensitivity to man. Most people in authority today in Nigeria take advantage of their positions to enforce policies that tarnish and destroy the masses. United Nations Development Programme ([UNDP, 1994](#)) defined human security as chronic threats such as hunger, disease, and repression. Security means protection from hidden and hurtful disruptions in our daily lives, homes, offices, or societies. Security may also be defined as protection against something that might happen in the future or as the activities involved in protecting a country, a building, or persons against threats, danger, and more. ([Wehmeier & Ashby, 2002](#)). Generally, security is always associated with peace, happiness, safety, protecting human and physical resources, the absence of crisis, and threats to human injury, among others ([Godly, 2012](#)).

On the other hand, [Godly \(2012\)](#) opined that insecurity increases the cost of business, farming, and transportation costs. Many firms in different industries relocated from the Niger Delta apart of the fall in output and the increased cost of production. Furthermore, some left the communities entirely due to insurgencies. Examples include Zamfara, Sokoto, Katsina, parts of Borno, and the Eastern part of the country. [Adofu et al. \(2019\)](#) argued that an insecure environment. Impinges on development; it

disenfranchises communities, contributes to poverty, distorts economies, creates instability, and stunts political development. In Nigeria, apart from the millions of people who had been killed since the inception of Boko haram, Banditry, Kidnappers, and more, sources of livelihood were destroyed, families got disintegrated, and social infrastructure was disrupted ([Adofu et al. 2019](#)).

[Okonkwo \(2010\)](#) opined that Nigeria's security should be based on a holistic view that sees the citizens as the primary beneficiaries of every security and developmental deliverable the state can offer. On their own, [Nwanegbo and Odigbo \(2013\)](#) stipulate that Nigeria's security should be strengthened by the Federal Republic of Nigeria (FRN) so that it can advance the interests and objectives to curtail both internal and external aggression, crime, reduces corruption, enhance product development, and improve the welfare and quality of life of every Nigerians. The reverse of security is insecurity, which can be seen as the absence of security mentioned earlier. The common description of insecurity is uncertainty, hazard, danger, want of safety, want of confidence, state of doubt, inadequately guarded and protected, lack of protection and being unsafe, instability and others. In the words of [Nwanegbo and Odigbo \(2013\)](#), insecurity is a state of not knowing, a lack of control, and the inability to take defensive actions against forces that portend danger or harm to an individual or group or that make them vulnerable.

Science and Technology Education and Economic Growth and Development.

The linkages between science, technology, engineering, innovation, and economic empowerment are fairly well established. For example, a significant part of economic advancement has been attributed to improved productivity from technological innovation. Similarly, science education promotes creativity, innovation, productivity, and economic growth ([Zakariyya and Bello, 2018](#)).

Education is a tool for social and economic empowerment and a means of developing qualities in a rich and fulfilled life. The worth status of an individual level and the development of every society depend on the quality of education invested. Hence, educational development became the major criterion for measuring overall national development ([Muhammad, Yusha'u & Lawal, 2018](#)). Development means improvement or change in growth. It implies and describes the process of economic, political, and social transformation. The development of any nation starts with the development of the individual within the society. It is because it is knowledge, skills, and competencies of human resources that determine to a great extent, the level of wealth and development of a nation. According to [Muhammad et al. \(2018\)](#), education contributes to economic growth through human resources development, which entails imparting individuals' knowledge, skills, and competencies.

By 2030, according to [Isa and Usman \(2021\)](#), more than half of the jobs in the world will be science, technology, engineering, and mathematics-based. Real investment is on human resources; therefore, developing minds capable of harnessing natural resources is the foundation of economic growth and empowerment. Moreover, modern societies are living in a world defined by science. Science is an integral part of human civilization; our culture depends on science for its material welfare ([Ibrahim & Umar, 2018](#)).

Repositioning and Rebranding of Science and Technology Education

Any nation's scientific, technological, industrial, and economic growth/advancement is 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, repositioning or rebranding science education is necessary to substantiate the claim it has been argued that: it is science education 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 Nigerian societies. The future belongs to those who make friends with science ([Weiss, 2001](#)).

Nigeria's scientific, technological, industrial, and economic growth can only be assured on the foundation of an effective science and technology 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 people economically.

Another way of repositioning/rebranding Science and Technology Education is by inculcating critical thinking in the student's mind. 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 and technology education should be activity and inquiry-based, 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.

CONCLUSION

Curricula contents and intended learning objectives of science and technology education should be rebranded or restructured to achieve core national aspirations capable of producing the goods and services needed to empower the economy and national security

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