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Re-engineering Science Education for Sustainable National Security

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Abstract

Nation-states are akin to living organisms. They possess adaptive features for their survival and security of their population. Similarly, nation-states also keep in place certain tangible and intangible structures for their survival and security for immortalizing their existence. The paper focused on how science education can be efficiently re-engineered, managed and utilized as a potent tool for sustainable national security. First, the paper critically scrutinized various elements of national security, such as economic, social, food, environment, military security, and so forth. The paper took into account the ongoing security challenges facing the nation. Second, the paper advocated for a strong synergy between the science education community, research scientists, entrepreneurs and the political class as part of measures to enhance sustainable national security. Finally, the paper calls for a mandatory qualitative functional science education programme at the secondary school level to ensure sustainable security in the country.

Keywords: Science education, Nigeria, national security, economic security and Science teaching

Introduction

The root of the need for security lies in the fact that conflict is an intrinsic element of the global socio-economic structure. In the perspective of the conflict theory propounded by Karl Marx according to Investopedia (2014), the human society is perpetually in conflict arising from competition for limited resources in the environment. The conflict theory postulates that a social order does not arise from consensus and conformity; it is maintained by domination and power. In other words, social order is maintained by economic dominance and military power. For instance, the United States of America owes its current domineering superpower status on global issues to its robust economic strength and superior military power. Since conflict is inevitable, security challenges will continue to be a reoccurring decimal in the society.

In this paper attempt was made to illuminate how science education can be re-engineered to serve as a potent tool for maintaining national security. The paper x-rayed science education as a specialized field of study and examined various security challenges confronting the country.

Science Education

Science education is an established sub-discipline in the field of education. It is a specialized field of study designed as preparation for a profession. It is dedicated to facilitating meaningful learning of scientific knowledge, ethics and process skills by the students and the population in general. Science education also focuses on the tasks of ensuring a steady flow of a critical mass of scientists in the fields of pure and applied sciences and technologists of all kinds to power sustainable socio-economic, scientific and technological growth and development in the society. Science education is also concerned with producing scientifically literate citizens who can adequately make informed scientific choices on socio-economic, personal and societal issues based on sound basic scientific knowledge

and attitude. The accomplishment of these tasks, amongst others, forms the basis of science teaching and learning activities in the classroom. The socio-economic power of a country is the hub of its security. Since the socio-economic development of a country cannot rise above its level of scientific and technological development, it is obvious that science education is a potent tool for the security of the country. It also domesticates scientific knowledge, processes and ethics and nourishes the infinite applications of modern science in all aspects of social enterprise.

National Security

The natural instinct to survive is not an exclusive preserve of organisms. Social institutions such as nation-states do also possess this attribute. Survival instinct is an in-built safety feature to improve the perpetuation of the entity as well as comfortable living. National security is essential for the survival of any nation-state; without it anarchism will take the center stage, and national disintegration shall become inevitable. Historically, according to Holmes (2015), the idea of national security emerged in 1648 at the Peace of Westphalia, and after the Second World War it became a prominent policy and an academic concept in the United States of America. National security requires the use of economic power, diplomacy, and projection of military and political power to improve the survival of the nation-state.

There are multitudes of definitions of the concept of national security; this suggests that it is a nebulous area having indefinable character but clearly definable elements. Indeed Baldwin (1997) observed that the concept of national security can be ambiguous if used without specification. Hence, identifying the major elements and sub-concepts of national security would be necessary to remove ambiguity. According to Ani (2010), national security can be viewed as a collection of precaution measures, human and material resources and institutions set up to secure a sovereign nation-state. The Longman Dictionary of Contemporary English (2012) stated that national security is all about "idea that a country must keep its secrets safe and its army strong in order to protect its citizens." Shehadey (2013) noted that national security requires the use of economic power, diplomacy, information, and projection of military are major elements of national security. Pimobighe (1990) reported in Pogson (2013) viewed national security as; condition or feeling of safety, the protection and preservation of core values and the absence of threats to these values. It also has to do with freedom from danger or threats to the country's ability to protect, develop itself and promote its legitimate interests.

Concerted efforts to provide security in different societies predated the dawn of modern civilization. The focus of national security in the early decades of modern nation-states was on providing military security to deter and combat internal and external aggression. Major threats to national security emanated mostly from ideological and territorial disputes among nation-states during the early decades of modern nation-states. Several perspectives of national security abound in literature, prominent among which are; idealism, realism, pluralism and structuralism. The idealists considered the welfare of humanity, organizations and national interests to be of uppermost importance in national security and dream of a New World Order predominated by peaceful co-existence and cooperation. The two world wars significantly weakened this notion of national security and paved way for the dominance of the rival realism framework. According to Pogson (2013), the concern of the realists is the ability to deter, fight, and defeat any threat to the survival of the nation-state. The military-industrial complex phenomenon, arms race and the cold war are reflections of this perspective of national security. Pluralists contended that economic interests rather than security governed global politics. Structuralism also stresses the importance of world economic structures on socio-political life of nation-states (Pogson, 2013)

In this paper, national security challenge is conceived to cover negative impact on the society which poses either real or potential danger to peaceful co-existence, sustainable growth and development of human capital and material resources, as well as the survival of the nation-state. It is

evident from the foregoing that national security is too serious a matter to entrust to any state apparatus; groups, security experts or individuals.

Elements of National Security and Nigeria Security Challenges

There is no universally accepted list of what constitutes national security because it is still a hazy field. Frequently cited components of national security in literature include; military, economic, political, energy, food, environment, natural resource, cyber, and intellectual security, among others. It is difficult to finger out any nation-state that is free from any of these security challenges, not even the United States of America. This paper briefly examined economic, military, food, unemployment, environment, resources and climate change amongst other security factors as they impinge on the security of Nigeria a nation-state.

Economic security: The security capacity of the country seems to be directly proportional to its economic power. It is not a concurrence that the country with the most advanced and robust economy today, the U.S.A. is now the only military superpower. Frequently, nation-states employ their economic power as both offensive and defensive weapon. Chun (2008) rightly noted that nation-states are often affected by economic events that threaten their security, while it is also common for nation-states to use their economic power to pursue objectives and obtain more economic resources as national goals. The economy of the country provides the needed resources to keep and maintain military capability.

A weak economy is a breeding ground for civil unrest, terrorism, political instability and military uprising, among other threats to national security. Chun (2008) observed that economic power seems to assume the dominant coercive force globally in this era of globalization. For instance, the U.S.A. and its allies imposed economic sanctions on Iran and North Korea regimes rather than using military power to stop the nuclear weapons ambition of the regimes (Moscow Times, 2014). Economic aids such as a direct loan, technical support and services from economically powerful nations to economically weak nations like Nigeria are used to develop bilateral relationship between the countries thereby reducing conflicts and the attendant threats to security of the countries. Economic aids also tend to foster symbiotic relationship between the donors and the recipient countries. The benefits to the donor countries include access to cheap natural resource, cheap labour and market of the poor countries. On the other hand, economic aids stimulate the economy of the recipient countries and helps them to stem and prevent threats to internal security such as civil uprising due to economic hardships.

Capitalism, the dominant global political economy, emerged from the ruins of feudalism through the conquest of economically weak nation by the few nations with robust military and economic power. Ukah, Ukandu and Ugwu (2015) noted that "Historically, conquest of nations have made conquerors rich through plunder, access to new resources and enlarged trade through controlling of the conquered nations' economy." Historically, Nigeria came under the British rule during the time of colonialism. Sadly, 53 years after gaining political independence, the country's economy is yet to overcome the ruination of its economy by the colonialist nation-state, mainly due to; endemic corrupt practices, political instability, and bad governance. Unemployment, underemployment and inflation, now constitute the major trend in the country's economy. Unemployment undoubtedly contributed to the emergency of the dreaded *Boko Haram*, homegrown terrorist organization and the Niger Delta militants. The National Bureau of Statistics (2011) set the unemployment figure in Nigeria at 23.9% despite the fact that Nigeria is the 12th largest producer of oil in the world. The government's gross debt as a percentage of GDP stood at 18.3% according to Global Finance (2013). The Economic Watch (2010) further explained the consequences of unemployment in Nigeria as follows:

“Unemployment in Nigeria has resulted in more and more people who do not have purchasing power. Less consumption has led to lower production, and poor economic growth. Unemployment also has social consequences as it increases the rate of crime” October, 14.

The number of Nigerians under the poverty line stood at 70% in year 2010 as reported in the World Fact book (America Central Intelligence Agency (CIA), 2013). Economic security significantly rests on the ability of a country to make policies grow her economy in a desired manner. The protection of jobs by country for the citizenry makes it possible for a country to be well secured economically. Sadly this is not the situation in Nigeria.

A decade ago the country put forward an ambitious economic plan, the National Economic Empowerment and Development Strategy (NEEDS) to jump start the economy. The NEEDS programme was to have the state version known as SEEDS and the local government version known as LEEDS. The strategy focused on four strategies namely; reducing poverty, generating employment, creating wealth, and reorienting values (National Planning Commission, 2004). There are no credible indications of the success of the plan. According to Bambale (2011) NEEDS failed to make any significant impact on the standard of lives, infrastructure and poverty in the land. After rebasing its GDP in the first quarter of 2014, Nigeria became the largest economy in Africa (BBC News, 2014) and the 26th in the world. However, the nation's GDP (\$2.688) places it at the 121st position in the world's per capita GDP ranking. Nigeria still remains one of the poorest countries in Africa and the world because the economy is yet to be an industrial economy as rightly explained by Enwegbara (2014).

Unemployment: A universally accepted definition of unemployment is yet to emerge; hence, several conceptions of unemployment abound in literature. The International Labour Organisation (ILO) viewed person between the ages of 15-64 who, during the reference period were available for work, seeking for a job and were unable to find work to be unemployed. In Nigeria, unemployment rate is calculated to be the proportion of those seeking for work but could not find work within 40 hours during the reference period to the total current active labour population. Evidence abounds in literature that at least five major types of unemployment exist in Nigeria according to Dalhatu and Bagaji (2014) namely; Structural, Frictional, Cyclical, Seasonal, and Residual unemployment. Structural unemployment refers to the employment of a worker without adequate qualification to meet the responsibilities of his/her job. This may be the result of several factors among which is technological displacement. For instance, many workers were displaced in banks and other places of work when computers were introduced. Frictional unemployment refers to the time when a person is searching for another job after moving out of one job. Many workers usually lose their jobs during economic recession, depressions and changing business conditions. This is called cyclical unemployment or “demand deficient” Annual seasonal variations dictate the demand for some jobs such as farming and road construction. Demand for farm labour increases during the rainy season, whereas road construction works increases during the dry season. Hence, workers are often relieved of their work depending on the prevailing season. This type of unemployment is known as seasonal unemployment. Residual unemployment takes place when physically and mentally challenged individuals who often have low level of productivity due to their disabilities are employed.

Unemployment rate is on the increase in the country jumping from 19.7% in 2009 to 23.9% in 2011 (National Bureau of Statistics, 2011). The National Population Commission (NPC) noted that, “Figures from the National Bureau of Statistics clearly illustrated the deep challenges in Nigeria's labour market, where the country's rapid economic growth has not translated into effective job creation” (Punch, 2013). The commission further stated that additional 2.1 million unemployed persons in 2011 joined the 1.5 million unemployed people produced in 2010. Unemployment in rural

areas was said to be higher (25.6%) than in urban areas, while just 209,239 jobs were created in 2011 as reported by the Federal Ministry of Labour and Productivity. Unemployment situation in the country has risen to an alarming state; for example, not less than 18 applicants were stampeded to death at various venues of aptitude test for recruitment into the Nigeria Immigration Service (NIS) recently (Punch, 2014, March 16). Over 520,000 applicants applied for the only 4,556 vacant positions at the NIS. The National Bureau of Statistics (NBS) (2012) annual report revealed that 54% of the youth are unemployed, out of which 51.9% were female. The report put the number of youth age of 15-35 years at 64 million (Vanguard, 2013), which is more than double the global youth unemployment rate.

The World Bank recently indicted the Nigerian government stating that the number of Nigerians living in poverty is increasing significantly (Premium Times, 2013). The report also said that progress towards a number of other Millennium Development Goals has also been disappointing.

Military security: One of the major attributes of nation-states is the presence of a coercive apparatus in the form of military and paramilitary outfits. Indeed nation-states often assume the monopoly of the legal use of violence within their territorial boundaries. Hence, traditionally military security refers to the capability of a country to use military force to defend itself against external aggression. Military security remains a vital element in national security despite its seemingly ineffectiveness against internal aggressions such as terrorism. According to Ukah, Ukandu and Ugwu (2015), military security is often used synonymously with "security". This may be due to the fact that it is the earliest recognized form of national security. It is essentially the setting up and maintenance of protective measures that guarantee sustainable state of inviolability from both internal and external hostile influences and aggression.

Although Nigeria is not currently under any real external military aggression, the country is not free from serious internal military aggression since 1999 when it returned to democratic rule. There are military aggressions from militia groups in different geopolitical zones of the country. They include the dreaded *Boko Haram* from the North-East, *Bakassi Boys* from the South-East, Movement for the Emancipation of Niger Delta (MEND) from the South-South, and Odua People's Congress from the South-West among others. The south-south region is also invested with kidnappers, armed robbers, hostage-takers, and pirates, (Ewetan, 2014). These militant groups constitute momentous danger to the corporate existence of the country. A nation-state that cannot deter or defeat internal military aggression is likely to crumble under formidable external aggression. In the recent past, the international community has considered Nigeria to be a failed nation-state (Proshare, 2013). The appalling security challenges it has been facing contributed to the failed nation-state status. Nigeria occupied the 15th position among the 117 failed nation-states in the world in 2013, according to a survey conducted by the United States think-tank and the Fund for Peace (Proshare, 2013).

Nigeria, the most populous country in Africa is also the largest economy in Africa can boast of over 80,000 active military manpower (Kale (2014). Indeed Nigeria has the largest army in the West Africa sub region. Its defense budget for year 2011 was about 348 billion naira. Thus, Nigeria has been a globally recognized regional power in West Africa sub region (Adusei, 2013). However, in recent time the country's military capacity is questionable. It is not astounding that in a recent rating of military strength and firepower, the country was ranked fourth in Africa behind Egypt, Ethiopia and South Africa and 47th in the world, (Global Fire Power, 2014).

It is obvious from above that Nigeria is no longer capable of providing regional military leadership in current time. Thus, the country is highly vulnerable to security challenges from neighbouring countries. The challenges may not necessarily be external military aggression, but events in other countries can spillover to the country.

Environmental/Resources Security: Both natural and anthropogenic activities that impinge on the natural environment and resources in a way that threatens national security constitute environmental security challenge. Many environmental security challenges transcend geopolitical border of countries thereby making it difficult to be resolved within the national borders without international agreement. Desertification, climate change resulting from global warming, loss of biodiversity and deforestation are instances of transnational environmental security challenges facing the country. Climate change can bring about droughts, storms, rise in sea level, flood, unpredictable rainfall pattern, desertification and many other extreme weather conditions with devastating impacts on the economy, human life, livestock, and properties. For example, it was reported that the National Emergency Management Agency of Nigeria (NEMA) disclosed that the country lost 2.6 trillion Naira to flood disaster in 2012 (This Day Live, 2013). The flood, which was attributed to climate change ravaged 21 out of 36 States in the country.

Food security: Food security in the view of the Global Harvest Initiative (2013) exists when people have economic and physical access to enough, safe and nutritious food at all times to meet their dietary needs and food preferences for an active and healthy life. Availability of adequate amount of food, stability of supply over time, access to the available food and food utilization, are the major aspects of food security. The capability of a country to feed its citizens either through direct food production or by importation of food is termed National Food Security. Factors such as low income, poor information and communication infrastructural facilities, and weak market can inhibit access to food by Households and individuals. National food security is not an absolute guarantee for Household and individual food security (Adebayo, 2010).

In Nigeria, several programmes such as the Structural Adjustment Programme (SAP) and NEEDS have been targeted at achieving both the national, household and individual food security. A key element of the programs is the deregulation of the agricultural sector. Agriculture sector employs up to 70% of the population and accounts for 40% of the Gross Domestic Product (GDP). Characteristically most of the agricultural productions are dependent on rain, so it is at the mercy of the unpredictable weather. Livestock farming is predominant in the northern part of the country and it accounts for 5% of the GDP. Livestock farming is exposed to declining pasture due to climate change-induced desertification among other factors. Food production in the country is highly vulnerable to climate change (World Bank, 2013). Indeed experts now argued that significant food and nutrition problems exist in Nigeria. Results of some empirical studies on food security conducted among rural communities in Nigeria also, revealed inadequate calorie consumption due to food insecurity. For instance, Agada and Igbokwe (2014) carried out a study to identify the factors influencing food security and the coping strategies utilized during food shortage in three rural communities. The results of the study indicated that less than 50% of the households in two out of the three rural communities were food insecure. The study also showed that the common coping strategies used by the communities were reliance on less preferred food and limiting food portions at meal times, while calorie consumption was just fairly adequate. The result of the study earlier conducted by Babatunde, Omotesho and Sholotan (2007) also, revealed that 64% of the rural farming households sampled was food insecure.

The country relied on huge food importation due to low food production, increase in population and high post-harvest losses which created a gap between actual food production and quantity available for supply (Adebayo, 2010). The Nigerian Observer of March 11, 2014 reported "the Federal Ministry of Agriculture and Rural Development estimated that Nigeria was spending over 3 billion Dollars annually on food Importation." In year 2012, the country was ranked 80 out of 105 nations assessed on food affordability, availability and quality by the Global Food Security Index (Vanguard, 2012, September 26). Any nation that cannot feed its citizen is surely not secure since only healthy individuals can participate in any form socioeconomic activities and national security.

Re-engineering Science Education for National Security

Science education in Nigeria is still mostly bookish, despite the numerous post-independence curricula reforms. There is also mismatch between the science education curriculum and the demands of highly competitive local and global business. The bookish nature of science education partially accounts for the glut of the labour market with unemployed graduates, poverty, economic and food insecurity in the country. Nigeria is yet to use science education fully to propel its national security. To do this, restructuring of the curriculum, policy and practice of science education is inevitable. The curriculum should reflect the demands of national security in an integrated and pragmatic manner. It should also include transferable skills that can meet the need of the technology-driven competitive global market. The infusion of basic entrepreneurship skills into the curriculum becomes imperative as rightly suggested by Ezeudu, Ofoegbu & Anyaegbunnam (2013). The introduction of entrepreneurship skills into the curriculum could stimulate learners to embrace science and technological-related careers and eliminate the mismatch between science curriculum and the needs of the modern economy. A strong synergy between the science education community, research scientists, entrepreneurs and the political class can facilitate the restructuring of the curriculum to enhance national security.

It is acknowledged that the economic survival of the country, to a large extent, rests squarely on its level of scientific and technological development. Economic security requires a critical mass of scientists, engineers, technicians and technologists in various fields, who can spawn new knowledge and use it creatively to ensure sustainable economic development. These invaluable cadres of human capital are products of Science Education. Sustainable economic development and security also require scientifically and technologically literate citizens who can make informed economic decisions. Herein lies the indispensable role of Science Education in the economic security of the country. Indeed it is certainly not a concurrence that the most secured leading global economic, the U.S.A, is also the most scientifically and technologically advanced country. The success story of the U.S.A is undoubtedly traceable to the content, principles and practice of Science Education in the USA.

Nigeria took a step backward in its recent effort to reform secondary school education curriculum. The reform removed science disciplines from the list of core subjects that every student must offer and sit for at the final public Senior School Certificate Examinations (Abimbola, 2013). Hitherto, students are required to sit for at least one of the science subjects at the final public Senior School Certificate Examinations. The removal of science subjects as core subjects from the curriculum could undermine the economic security of the country because fewer students than before the introduction of the new curriculum will enroll in any science subject. The removal of science subjects from the list of core disciplines in the curriculum could result into dearth of skilled manpower in the fields of science and technology and other related fields that are needed to power the economy. The society would also gradually become glut with scientifically illiterate citizens who may not cope successfully with the dictates of the science and technology driven global economy. They would find it difficult, in their economic lives, to successfully address science-related issues in their lives and employment. It is necessary to revert to the status quo immediately to avert the aforementioned negative results.

Unemployment is a major national security challenge facing the country as earlier discussed. The labour market is saturated with graduate unemployment. Graduate unemployment is, to a large extent, the negative impact of the bookish nature of science education in the country. Students are often made merely to take or copy note after listening to the teacher's exposition on scientific concepts and theories tailored towards passing the final examinations. Practicable socio-economic applications of scientific knowledge, process skills and ethics are outside both the curriculum and the examinations syllabi. For instance, entomology is an aspect of the biology curriculum from the Basic School level to

the University level. However basic hands-on skills in apiculture for commercial production of honey and other bee hives products are excluded from the biology curriculum. It is necessary to re-engineer science education curriculum to accommodate practicable socio-economic applications of scientific knowledge, process skills and ethics as a measure to stem graduate unemployment. Doing this will provide opportunities for science graduates and non-graduates to setup their own small or medium scale science-related business enterprises, thereby boosting the national security.

Conflict and war are inescapable in human society, hence, the craving for military security and supremacy by countries shall continue unabated. The armament industrial complex is powered by digital technology, thereby making the maintenance of large battalions of military personnel unnecessary. The recent emergent and use of Killer robots, which are lethal autonomous weapons testifies to this development. Schechter (2014) noted that killer robots are,

"machines that can select and destroy targets without human intervention — are the next step in modern warfare, a natural evolution beyond today's remotely operated drones and Unmanned ground vehicles."

These deadly digital-driven weapons could not have evolved without advancement in science and technology. Indeed, the armament industrial complex is not an exclusive preserve of the military; it is also powered by entrepreneurs, scientists, engineers, technologists and technicians. There is no single science discipline that is not relevant in the field of military technology. It is necessary to stem and reverse students swing away from science in order to meet the manpower need of the armament industrial complex. It is equally necessary to restructure science education curriculum to foster the links between science and other school subjects to eliminate the negative stigma cast on science as a difficult discipline by the students. Similarly, the contents, modes of instruction and assessment of science education should depart from focusing primarily on scientific knowledge to the detriment of the processes and ethics of science. The steps described above could attract more students to study science than ever before.

Overgrazing, deforestation, bush burning, domestic and industrial use of fossil fuels among other environmentally unfriendly anthropogenic activities exacerbates environmental security challenges in the country. Unfriendly anthropogenic activities are connected to the fact that the country is still glutted with scientifically illiterate population. Thus, it is not unreasonable to advocate for the introduction of environmental study into the science education curriculum at Basic and post-Basic School levels. Environmental study will facilitate the development of environmental consciousness and positive attitude in the citizens. By extension, it would enable the citizens to protect the environment consciously through environmental friendly projects and activities at home and work. For example, when individuals, business outfits, industries and organizations are aware of the negative impacts of their carbon footprints arising from their daily activities, they would likely undertake carbon offsetting measures after calculating their carbon footprints. Nigerians would thus become active participants in the global efforts to address climate change and promote national environmental security.

In Nigeria, the agriculture sector accounts for 40% of the country GDP despite the fact that not less than 70% of the citizens are working in the sector. The fact that Nigeria is a net importer of food testifies to the inefficiency in its agricultural practice. Inefficiency in agricultural practice calls for the review of the agricultural science curriculum to produce a new generation of agriculturalists who are capable of employing best practices in food production. The review of the agricultural science curriculum should accommodate basic entrepreneurship skills. Entrepreneurship skills would empower agricultural graduates and non-graduates alike to setup small or medium scale agricultural ventures to feed the country instead of queuing up at the labour market. It is not necessary for the country to tie down up to 70% of its population on the agricultural sector to attain national food

security. The agricultural science component of science education should be re-engineered to produce a critical mass of new generations of agriculturalists who can employ modern science and digital technologies to leverage food production. Excess manpower presently locked up in this sector will become available to other sectors of the economy and national security needs.

Conclusion

Science education and education in general are indispensable potent tools for the attainment of national security. The abysmal performance of Nigerian students in science subjects is well documented in science education literature as rightly observed by Abimbola (2013). Students' poor performance in science is the most serious challenge to national security because Nigeria will not achieve steady national security without significant improvements in the field of science education and education in general. It is crucial to re-engineer and manage science education to improve students' performance as part of efforts to achieve regular national security.

There's no doubt that re-engineering the science education curriculum alone would not address all other obstacles to students' performance in science. Hence, there is a need to complement it with other changes such as, using digital technologies (ICTs) to deliver teaching, learning and other educational services, and improvement in the quality of science teachers. The use of ICTs to leverage teaching and learning equally calls for reforms in science teacher education programs, tailored towards production of a new breed of science teachers who can efficiently deploy digital technologies in the classroom setting. Provision of adequate fund, incentives to science teachers, basic infrastructural facilities in schools, and science teaching materials will go a long way in improving science education in the country and by extension increase national security. Finally, we advocated for a mandatory qualitative functional science education programme at the secondary school level to ensure sustainable security in the country.

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