

TEACHING SCIENCE, TECHNOLOGY AND MATHEMATICS EDUCATION IN A TERRORIST ENVIRONMENT: A CHALLENGE TO SUSTAINABLE NATIONAL DEVELOPMENT

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Abstract

Science, technology and mathematics education play a crucial role in the economic and social transformation of nations of the world. No wonder the Nigerian Policy on Education stipulates that science should be compulsory at the basic and secondary levels of education. At the tertiary level of education, the Unified Tertiary Matriculation Examinations Board mandates that admission into Nigerian universities should be in the ratio of 60:40 in favour of science and its related courses. Could these dreams be realized in an environment which poses serious threats to security, peace and educational advancement of the society? This paper focuses on the concept of terrorism and the devastating effects of terrorist attacks on effective delivery of science, technology, and mathematics (STM) education, particularly in the North East and North Central geo-political zones of Nigeria. The challenges the problem poses to sustainable national development were further discussed. Recommendations made were as follows: Nigeria should work in collaboration with notable countries of the world which has been able to tackle terrorism successfully as a way out of its present predicament; issues of terrorism and ways of averting them should be incorporated into the nation's school science curricular at all levels of education.

Introduction

Terrorism is one of the serious threats to human existence, world peace and sustainable national development. It makes nations live in perpetual fear and anxiety as a result of insecurity. Nigeria as a nation has been going through a period of brutal attacks and massive assaults on her citizens particularly in the North East and North Central geopolitical zones of the country by terrorists for some years now. The terrorists operate either under the umbrella of ethno-religious groups or pastoral herdsmen in the North Central zone, or, the notorious 'Boko Haram' Islamic Sect in the North East Zone.

Insurgency has affected every facet of the Nigerian economy but the sector that is worst hit is the education sector which is widely acknowledged as the hub of sustainable national development. This is due to the fact that it is in this sector that the nation's human resource development and labour force hinge, in this 21st century that is knowledge-based and technologically driven. There is a growing concern therefore, about the unprecedented spate or insurgency in Nigeria, particularly in the North East

and North Central geo-political zones and its devastating consequences on the delivery of education generally, and Science, Technology and Mathematics Education (STME) in particular, with respect to school attendance, teaching and learning of STM, and subsequently achievement outcomes of students.

The crucial role STME plays in the economic, social and technological transformation of nations of the world is profound and widely acknowledged. Little wonder, the Nigerian Policy on Education (Federal Ministry of Education – FME, 2009) stipulates that science and mathematics should be compulsory at the basic and secondary levels of education. Even, at the tertiary level of education, the Unified Tertiary Matriculation Examinations Board mandates that university admissions should be in the ratio of 60:40 in favour of science and its related fields. How realizable these dreams would be is food for thought and a matter of utmost concern to all well meaning Nigerians in the face of the spate or terrorist attacks in the country, particularly in the North East and North central geo-political zones.

Many schools in Borno and Yobe States have been closed down for fear of fresh attacks by insurgents; children are forced out of schools and exposed to different degrees of psychological trauma and stress, despite the concerted efforts by the government of Nigeria on the use of counter terrorism programmes, attacks, and enactment of the Terrorism Act (Federal Republic of Nigeria [FRN], 2011) which prohibits terrorism in all its ramifications.

The emergence of terrorist attacks in Nigeria, particularly in the North East and North Central Zones is against the effort of the government towards the realization of the Millennium Development Goals of eradicating illiteracy at the basic level of education, Education for All (EA) and environmental sustainability. It is also at variance with the realization of the objectives of the National Policy on Education on science literacy. Furthermore, it truncates the objectives of science education on producing scientists for national development, servicing studies in technological development, and preparation of children for future courses in science and its related fields, such as engineering, medicine, technology, etc. The STME sector appears to be most affected because of its critical role in the production of the labour force that would take the country to the next level in this era of global competitiveness in science and technology. It is against the fore-going backdrop that the paper discussed the issues of terrorism as it affects science, technology and mathematics education delivery and the challenge it poses to sustainable national development.

Conceptualizing Terrorism

The term terrorism has been defined in a wide array of ways by different authors, who agree that terrorism is a difficult concept to define. Apart from the issue of definition, terrorism has been categorized as international and domestic. The distinguishing feature of the definitions being the jurisdiction the act of terrorism covers. When terrorism for instance, occurs outside the territorial jurisdiction of a country or transcends a national boundary, it is regarded as international terrorism, whereas if it is within the territorial jurisdiction of a country, the act is regarded as domestic terrorism. What Nigeria has been experiencing by these definitions is domestic terrorism.

The Arab Convention for the Suppression of Terrorism (1998) defines terrorism as:
any act or threat of violence,

in addition to the already colonized areas in the state whatever its motives or purposes, that occurs seeking to sow panic among people, causing fear by harming them, or placing their lives, liberty or security in danger, or seeking to cause damage to the environment, or to public or private installations property or to occupying or seizing them....

The United Nations Council Resolutions 1566 (UNCR, 2004) defines terrorism as:

Criminal acts against civilians or non-combatants with the intent to cause death or serious bodily injury or taking hostages with the purpose to provoke a state of terror in the general public or in a group of persons, intimidate a population or compel a government or an international organization to do or abstain from doing any act.

Again, the UN panel on 17th March 2005, described terrorism as any act intended to cause death or serious bodily harm to civilians or non-combatants with the purpose of intimidating a population or compelling a government or an international organization...

Some features that are common to these definitions are: the use of violence or criminal acts against non-combatants or civilians and with the resultant effect of causing harm or bodily injury or death to defenceless individuals.

According to Nzewi (2014) Nigeria has witnessed terrorism from the 'Boko Haram' group from 2009. The scenario is frightening in the North East geopolitical zone where terrorist attacks are the order of the day. For instance, in Kumbaza village in Damboa local government area of Borno State, 60 women were reportedly abducted and at least 30 men killed in the attack while the remaining residents of the place fled in fear of further attacks by the insurgents. Bunin Yadi and Potiskum, located in Yobe

State were attacked by insurgents in August 2014 resulting in helpless citizens fleeing to Jos, Damaturu and some other places outside the North East. On NTA News, 3rd of October, 2014 it was reported that 116,000 persons were displaced in Yobe State as a result of terrorist attacks. The spate of destruction by the Boko Haram terrorist group is multifaceted, ranging from destruction of places of worship, homes and public places. This must have contributed to the placement of Nigeria on the world map as one of the 15 conflict areas in Africa (Essien, 2013).

Terrorism and sustainable national development

There is a strong relationship between sustainable national development and terrorism. Terrorism is inherently destructive of sustainable development. Clearly, terrorist attacks directly undermine a nation's peace and security. Such attacks also disrupt sustainable development indirectly (Atapattu, 2006). The World Summit on Sustainable Development (2002) also identifies terrorism as posing threats to sustainable development. When there is terrorism in any country, huge amounts of money are expended on defense activities. These are resources which ordinarily could be spent on social development, including poverty alleviation and sustainable national development. In an atmosphere of terrorism, education suffers, particularly for the internally displaced persons and no academic activities go on. The nation's labour force is equally adversely affected as a result of residents who are either killed by terrorists or displaced by insurgency and as such are thrown out of job.

How could national development be achieved or sustained in an atmosphere that is insecure? It is difficult if not impossible for any nation that is going through unprecedented security challenges, such as Nigeria to have any meaningful or sustainable national development. Sustainable development as cited by the Commission on Environment Development WCED, (1987 in Atapattu, (2006), is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development requires peace while terrorism depletes scarce resources otherwise needed for economic development, education, health care and other social development projects. There is no gain saying the fact that peace and security are critical to sustainable development. Little wonder, the world summit on sustainable development identified armed conflict and terrorism as posing severe threats to

sustainable development. The spate and trend of terrorist attacks on Nigerian citizens particularly in the North Central Zones in recent times have threatened development. It will take many decades of hard labour for this region of the country to regain its past glory in terms of development even after the cessation of insurgency.

Terrorist activities have done a lot of havoc on the citizenry. Individuals, communities and societies have been displaced from one part of the country to another. There is untold hardship and violation of human rights of the people. More than 10,000 people from Nigeria were reported to have fled from attacks to seek shelter in neighbouring countries of Cameroun, Niger and Chad. An annual report by the Nigeria Emergency Management Agency (NEMA), 2014 reveals that 33.3 million Nigerians were internally displaced in 2013 as a result of terrorist attacks.

Another report by NEMA shows that the attack in Damboa town, in Borno State by Boko Haram displaced 15,204 people, 10,204 people fled to Biu, 3,000 to Maiduguri and 2,000 to Goniri, all in Borno State. There are other people who fled to Kimba, Madaragau and Mandafuma which are still towns in Borno State. NEMA further, reported that 26,391 persons were forced out of their homes as a consequence of the fierce battle between the military forces and 'Boko Haram' insurgents. According to the report NEMA has placed 26,391 civilians who were displaced as a result of the crisis in two camps. These developments led the United Nations High Commission for Refugees (UNHCR) in 2014 to warn of an impending national disaster if the spate of the on-going insurgency in the North-Eastern region of Nigeria remains unresolved.

Apart from destruction of lives, private and public outfits and property worth many millions of naira have been destroyed. An account by Nzewi (2014) shows that on June 16th, 2011, the police force headquarters in Abuja, was bombed, followed by the bombing of the United Nations House in Abuja which resulted in 23 deaths. In November 2011, there was a coordinated shooting attack on police facilities in Potiskum and Damaturu in Yobe State with a death toll of 150. Then, on 25th of December 2011, multiple bombing attacks killed dozens including 35 worshippers at St. Theresa's Catholic Church Madala in Abuja, in the North Central Senatorial zone, followed by the suicide bombing of the army headquarters in Kaduna, suicide bombing of three Churches in Kaduna leading to the death of 100 worshippers. The account of destruction of lives and

property by the Boko Haram terrorists is endless as the insurgency appears to occur on a daily basis. The fact remains that, the spate of insurgency particularly in the North East geo-political zone has truncated the development of the Nigerian nation which has the dream of becoming one of the world emerging economies come 2020. Resources of the nation are expended on security and rehabilitating victims of terrorism, and, on counter terrorism programmes. This implies that Nigeria will continue to lag behind as far as sustainable national development is concerned, particularly in the crisis ridden regions unless drastic and urgent measures are taken by the government to stem terrorism in the country.

It is critical that Nigeria employs a holistic approach to the issue of terrorism. The places already colonized by insurgents in the North - East geo-political zone should be reclaimed by the government to enable the internally displaced persons (IDPs) go back home. As soon as that is achieved, schools laboratory and workshop facilities should be rehabilitated and adequately equipped so that academic activities could start. The internally displaced persons (IDPs) should be properly rehabilitated. In as much as the government, non-governmental organizations and good spirited Nigerians are addressing the basic needs of the IDPs, their mental health and psychological well being should also be taken into consideration because many of them have been traumatized psychologically (Bahago, Ozoji, Attah & Onyejekwe, 2014). This can be achieved by providing psycho-social and rehabilitation clinics in primary health centres in crisis ridden zones and IDPs camps. This will go a long way towards rehabilitating the traumatized IDP's and re-integrating them into the society. By so doing they could contribute their quota to national development.

Science, technology and mathematics education delivery and terrorism: a challenge to sustainable development

The development of any nation depends on many factors which may either fast track or retard its growth among which STME delivery is central. There is no gain saying the fact that STME delivery is critical to national development. In realization of this fact the National Policy on Education in Nigeria stipulates that the study of science and mathematics should be made compulsory at the basic and secondary levels of education. The tertiary level of education is not left out because the United Tertiary Matriculation Examinations (UTME) board mandates that

admission of candidates into the nation's conventional universities should be in the ratio of 60:40 in favour of science and its related fields of study.

The Boko Haram insurgency is targeted at exterminating western education which is ironical because education has been acknowledged widely as a tool for social transformation emancipation of humankind, human and capital developments. Therefore, anything that hinders or disrupts the education system of any nation truncates sustainable national development. There is a long standing history of imbalance in western education between the Northern and Southern parts of Nigeria with the former having a larger percentage of drop out of school children than the latter. The on-going insurgency in the North-East geo-political zone, particularly, has worsened the condition of education there. Rufai, (2009) blamed the spate of declining enrolment of children in primary schools in Nigeria on the effect of long standing Islamic education in the North. The attacks in this part of the country has therefore worsened the situation. The Boko Haram insurgents have attacked and threatened schools in the North. In some of the attacks, teachers and students were killed and structures razed. An account by Nzewi (2014), on the 12th of March 2012, states that gun men linked to Boko Haram attacked Hausawa-Danmaliki Primary school in Kumboso, Kano State, killing several pupils and teachers. In September, 2012, a school of agriculture in Yobe State was attacked at night and more than 60 students were killed (Vanguard, 2013). In April 2014, over 200 girls were abducted from a secondary school in Chibok (Nzewi, 2014). School children and schools have been major targets as 'Boko Haram' guns around in North Eastern part of Nigeria; despite the efforts by the government and international communities to fight terrorism (Brown, 2014). Recently, bomb blasts killed about 17 students in Kano State Polytechnic in North Central State leaving many others injured.

The school system is seen as a safe place for grooming and nurturing great Nigerians who are expected to pilot the affairs of the nation in the future and take Nigeria to greater heights, particularly in this era that is knowledge-based and technologically - driven. Looking at the scenario in the North East, it is unimaginable how students are currently learning in an environment that is volatile and insecure. Pupils and students will definitely be in a state of perpetual fear and apprehension. Perception of fear is known to affect the way people act and behave. Moreover, fear

will definitely affect attendance of pupils and students in schools since schools are no longer safe. Students' performance in STME will be adversely affected, as well as, the mental health and the general well being of the learners and their teachers.. It is no surprise that students' performance in the 2014 West African Senior Secondary School Certificate Examination was very poor. The failure rate as reported by the West African Examinations Council (WAEC, 2014) was over 70%.

A survey by Education (2011) shows that 62% of school children in Borno State are not in primary school while in Zamfara State 68% are out of school with the two States having the highest number of out of school children. The survey further shows that 72% of the children in Borno State have never been to school and the lowest number of children are in the Northern region of Nigeria. On the part of parents, the survey shows that 80% of the parents in Zamfara State are not literate, 78% and 47% of them in Yobe and Adamawa States cannot read or write in English.

Terrorist attacks on helpless citizens in the Northern part of Nigeria have caused a lot of setback in the education sector generally and in science, technology and mathematics education (STME) delivery in particular. Access to STME is hindered in the crisis ridden zones where academic activities have been crippled at all levels of education. They are a hindrance to the realization of the goal of the National Policy on Education (2009) which states that the federal government has adopted education as an instrument par excellence for national development. The vital role STME plays in the technological and socio-economic transformation of any nation is widely recognized. Developed nations of the world such as United States of American, Japan, China and Britain are rated as world powers as a result of their prowess in the field of STME. That is why the Nigerian government places a high premium on improving science, technology and mathematics education delivery at all levels of education.

Despite the efforts of the government in ensuring that STME is given its pride of place, research evidences show that students perform poorly in science, technology and mathematics courses at all levels of education in private and public examinations (2010, WAEC, 2000-2014; Bot & Timku, 2014). With the current spate of insurgency in the country the objectives of the National Policy on Education can hardly be achieved, particularly in the crisis-ridden regions of the country. Basic and secondary schools in such places have either been destroyed or turned into living places for the terrorists, and camps for the

internally displaced persons. An interview conducted by the authors revealed that one of the Colleges of Education in Adamawa State, namely, College of Education, Hong has been closed down for almost one year now because of threats of bombing the institution by 'Boko Haram'. The May 2014 bomb blast in Jos, Plateau State, disrupted academic activities in schools at all levels of education in Jos metropolis for about two weeks.

Threats of attacks by 'Boko Haram' have prompted local education officials in collaboration with the Ministry of Education to close down hundred of schools in Borno State. This situation is worrisome and unfortunate because the future of every country lies on how it invests in the development, awareness and productivity of its citizens which is through education.

Conclusion and Recommendations

Nigeria is being bedevilled by the activities of terrorists which have been on for years now. However, the capacity of the country to fight terrorism in all its ramifications will show the extent the country can brace up with its plans for sustainable national development. Terrorism which is an impediment to national development in Nigeria requires urgent and concerted efforts by all and sundry. It is not a matter that the federal government could handle alone. It is in the light of this that the paper suggests that:

1. Nigeria should work in collaboration with notable countries of the world which have been able to tackle the issue of terrorism successfully for a way out of this hydra-headed problem besieging the country.
2. There should be training and retraining of security operatives on tactical ways of fighting terrorism.
3. Infiltration of terrorists into the nation's military force should be avoided through applying very stringent and careful measures in recruitment of soldiers.
4. Immigration department of the government should tighten up the nation's security at the countries borders.
5. The nation's security services at all tiers of government should work in synergy towards fishing out the leaders of the terrorists groups for them to be brought to book.
6. The government should step up the use of air force jets to monitor activities and movements across the borders and crises- ridden regions

- of the North East geo-political zone.
7. Awareness and enlightenment programmes on dangers of terrorism and ways of averting it should be increased through the media, such as, jingles on radio and television programmes.
 8. Peace building and reconciliation initiatives and groups should be formed by religious and civil leaders.
 9. The government should provide schools and facilities for teaching and learning particularly in the area of STME as soon as insurgents are flushed out of the endangered regions of the country.
 10. Issues bordering on terrorism should be incorporated into the nation's school STM curriculum in order to expose students to the dangers of terrorism and preventive measures against it.
 11. Symposia and conferences should be mounted on aversion of terrorism among others.

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