
COMBATING HUMAN SECURITY CHALLENGES IN NIGERIA: A TECHNICAL REVIEW OF THE ROLES OF MATHEMATICS AND SCIENCE EDUCATION

By

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ABSTRACT

In recent years, the security of lives and property has become an issue so much so that the attention of the world has been shifted to virtually every nook and cranny of the globe with the view to addressing the issue that is considered impending. The problem could not be said to be restricted to terrorism alone, which is believed by some countries to be perpetrated through a number of ways; which include but not limited to physical attacks, bomb detonation, launching of rockets, cybercrime etc., it can also take the form of illegal acquisition of territories through annexation by some countries that are powerful over others and thereby rendering the inhabitants of such places vulnerable. Some security concerns are in the forms of health hazards, communal clashes in the quest for political superiority or relevance, resisting some hard economic policies, xenophobic attacks, insurgency, youth restiveness, vandalism, cattle rustling and the like. The paper argues that all these problems could be tackled and addressed if the knowledge of mathematics and science are considered pivotal in nation building because, in the process the citizenry would be made enlightened and as such reduce the possibility of engaging in such heinous activities. In the end, the paper recommends that the recent pronouncement by the federal government of declaring science education free for all Nigerians should not only be made sustainable but compulsory.

Keywords: Mathematics Education, Science Education, Human Security Needs

INTRODUCTION

Human security needs has been a contentious issue especially with the current global trend of terrorism and other condemnable practices by their perpetrators. This drew the attention of the world to come up with policies capable of ameliorating the menace to a certain extent. In the Human Development Index (HDI) published annually by United Nation Development Programme (2013) reported that global development challenges are so complex and transboundary and take the forms of poverty, climate change or peace and security. The challenges are

pressing and considered transboundary because no part of the world now can be said to be completely insulated from one form of crime or another. Even though human security need is considered of utmost importance, it is greatly undermined by some threats, including but not limited to hunger, crime, disease, unemployment, human right violations and environmental challenges (Gomez & Gasper, 1994).

In order to address the issues raised above however, Mathematics is considered central in everything embarked upon by the society thereby making it

inseparable from state affairs. This prompted Charalampous and Rowland (2012) to assert that mathematics, in addition to being instrumental in the process of addressing security challenges, is a source of security in this uncertain world. By implication, if mathematics is to be employed in human affairs, all troubles likely to be experienced or encountered could be addressed. Again because of the centrality of human security need, in his hierarchy, Maslow (1970) placed security need second only to physiological need.

Science education also plays a critical role in addressing human security issues. This is seen in evolving scientific means to combat crimes such as cybercrime, fraud, blocking financial leakages, auditing irregularities and providing forensic support for financial institutions. Providing humanitarian assistance in the crisis-ridden nations through scientific approaches is also very paramount and worthy of mentioning. It is therefore very instructive and impeccable to note here that the duo of science and mathematics could be employed in addressing a wide spectrum of human needs; in the hope of ensuring a safe and crime-free society where all the citizenry have equal opportunity to partake in the affairs of the nation devoid of any form of rancor and acrimony.

HUMAN SECURITY NEEDS

A lot have been written on human security (Tsai, 2009; Gasper, 2008; Annan, 2000). Each of these viewed the concept from a particular perspective. In Europe for instance, the need to address human security was in the form of settling disputes amongst EU nations with varying policies. This was explained lucidly by United Nations (2009) that human security, in addition to being multi-disciplinary in its context, whose aim is human development, is equally people-centred, multi-sectoral, comprehensive, context-specific and prevention-oriented. Similarly, on human security doctrine for Europe, the report focuses on the situations of extreme insecurity where European forces might be deployed to

address the menace; in which the operation shall include but not limited to disarmament, rescue operations, conflict prevention, peace-keeping tasks, crisis management and post-conflict stabilization (Barcelona Report, n.d). What is central in the Europe's philosophy for addressing human security challenges is to rid its people from the shackles of crises in the crisis-ridden regions and emancipate them from economic woes through inter-governmental collaboration among states.

In America, including countries in the Latin, the challenges in human security was considered to be migration-based (Koser, 2005) because of some factors outlined as key dilemmas which include political will, labour market demands, state sovereignty and human rights. It was further argued that irregular migration poses a real threat to the hosting countries as well as exposing the migrants to insecurity and vulnerabilities. Most of these migrants, sometimes even from African countries; Middle East and Caribbean are trooping to America to have a standard of living considered worthwhile and to be free from insecurity, poverty, hunger and sectarian conflicts. America as such could serve as a safe haven for them.

In Asia, the trend is virtually the same. For instance, a study conducted by Acharya, Singhdeo and Rajaretnam (2011) in India, explores the nexus between conflict and development; the aim of which was to develop a mechanism by policy makers to address human security challenges. The study examined the poorest part of India and the areas prone to insurgency as well. Furthermore, because of its relevance and importance, the study set a 14-indicator scale to gauge the state's capacity to deal decisively with the threat of insecurity as a subset of human security needs and they are: poverty, rural youth unemployment, school dropouts, infant mortality, morbidity, crime against children, crime against women, incidences of corruption, encroachment of forest area, non-adoption of the right policies, gap between budgeted spending and actual spending in social sectors, pending

cases in courts, occurrence of incidences of violence and presence of security personnel. This according to the study forms the composite index of human security (Acharya, Singhdeo & Rajaretnam, 2011).

In Africa, a lot of provisions have equally been made in an attempt to address human security challenges that have, over the years bedeviled the affairs of the continent. These range from Boko Haram insurgency and militancy in Nigeria, Al-Shabbab insurgency and incessant bomb detonation in Somalia, political instability and insurrection in Egypt and South Sudan, Ebola outbreak in Liberia, Sierra Leone and Guinea and also xenophobic attacks in South Africa. These are indications that the problems bedeviling the continent are enormous enough to call for concern and for the need to address them decisively. Some security needs of this part of the world is in terms of food; whereby so many parts of the continent are suffering from hunger and acute food shortage because of crisis-induced instances and some are due to natural disasters (Food and Agricultural Organization, 2008).

In Nigeria specifically, the security need is the same. This is in view of the fact that a lot of regions, if not all of the country suffer one security challenge or another. For instance, North-Eastern part of the country is experiencing the problem of Boko Haram in Borno, Adamawa and Yobe States. In North-Central, the problem is that of communal clashes, religious intolerance and settler-indigene uprisings in Plateau, Nasarawa, Benue and some parts of Kogi States. In the North-West, the problem is in the form of desert encroachment, outbreaks of pandemics due to illegal mining and cattle rustling amongst others in Sokoto, Kebbi, Katsina, Kaduna, Jigawa and Zamfara States. In support of some of these claims, Ewetan and Urhie (2014) report that, the country experienced a severe security challenge decades ago; since the time of Maitatsine who had similar antics with Boko Haram – wanton destruction of lives and properties

through bomb blast, indiscriminate massacre of people on religious ground, religious intolerance etc.

In the Niger Delta region (South-South), there is high level of youth restiveness – manifested in the form of militancy, pipeline vandalization, piracy and a host of other criminal activities in states like Bayelsa, Akwa-Ibom, Crossriver and Rivers States. In South-East, it is kidnapping for ransom that is prevalent in addition to child labour and trafficking in Enugu, Abia, Imo, Ebonyi and Anambra States. Lamenting on the security situation in the South-East, Ukiwo and Chukwuma (2012: P8) had this to say “while no region in Nigeria can be said to be immune from violence and crime, political and security governance has continue to be a major source of concern to many stakeholders; whereby statistics from 2010 edition of the annual National Crime and Safety Survey (NCSS) conducted by the CLEEN Foundation indicate that Ebonyi, Abia and Imo States have the highest level of kidnapping in Nigeria”.

South-West also has its own share of the security threat facing the region. Because of the high number of youth produced annually with degrees in various areas of specialization, whose concentration comes from the region and who could not get jobs readily available for them after graduation, the security challenge is very enormous and unavoidable. Therefore, in attempt to portray the nexus between security and youth unemployment in the country, Adesina (2013) maintained that the scandalous population of unemployed persons (mostly youth) will certainly be detrimental and pose a great security challenge to the country. This according to him is evident when a certain advert is made on vacancies that are handful but with countless number of applicants who indicate interest.

In line with this, Comfort, David and Moses (2013) submit that the issue of insecurity in Nigeria has taken a formidable dimension that requires all-hands-on-deck approach because it has gone to the extent of threatening the corporate existence of the country as an

entity. Therefore, to reduce the extent of these problems and security challenges facing virtually every nook and cranny of this country, stringent measures have to be taken to put a drastic end to these calamities.

Addressing Human Security Needs through Mathematics Education

As pointed out above, there is high need of applying certain approaches in dealing decisively with the issue of human security because as it stands now, the country is virtually marred with serious security challenges capable of threatening the continuous existence of some sensitive institutions in the country. The question begging for answer at this juncture is that, what is that approach that is suitable to be used in addressing these challenges? As would be seen in due course, the paper argues that mathematics education is very central and pivotal in piloting the security affairs of the country. This is because a lot of submissions have been made by scholars on the instrumentality of mathematics in addressing challenges in the country that have direct bearing to security. Failure to address them may subsequently be detrimental to the country and would have serious security implication. For instance, failure to engage youth in gainful employment opportunities may trigger them to become involved in many social problems unfolding in the society like thuggery, snatching, drugging, theft, trafficking and prostitution amongst others (Tsafé & Yusha'u, 2014). Similarly, a lot of mathematical models have also been used to address challenges of varying magnitude as they affect the affairs of the country.

In bioterrorism for instance – a type of terrorism that employs the use biological agents to achieve its goal, a certain mathematical model was developed to contain the problem. According to Banks, Castillo-Chavez and Jiang (2005) mathematical model of viral transmission and control can be used to contain such disease as small fox,

influenza and food and mouth disease amongst others. By extension, similar models could be developed to curtail the menace of quite a number of security threats that can be detrimental to any country. This could be models such as the ones used in information-based organizations through cloud computing to prevent security threats before they penetrate systems, resource allocation and maximization models can be used (Ngenzi, Selvarani & Suchithrar, 2014). It should be noted however, that there are quite a number of mathematical models out there that can be employed to address a lot of security issues.

Addressing Human Security Needs through Science Education

Human security needs could be addressed using science-based approaches. This entails looking at the holistic nature of science itself and theories advanced over the years to counter such challenges should they become prevalent in a given society. In addition, some techniques developed also help a great deal in addressing and tackling serious challenges which hitherto could not have been possible. In an attempt to provide an analogy of science as presently being used to overcome some security challenges as against what the society used to have in the past, Barnett, Matthew and O'Brien (2010 p:3) stated that

Throughout most of human history, the constraints imposed by local environmental conditions and their natural variability were powerful determinants of the security of individuals and societies: animals, droughts, floods, frosts, pathogens, storms, and other environmental perturbations were significant causes of mortality, morbidity, and social disruption. In today's modern societies, technology, trade,

industrialization, the use of fossil fuels, occupational specialization, and higher levels of social organization have all weakened the constraints that local environments place on human security.

This is an indication that science can be employed in addressing pressing security challenges bedeviling any nation. For instance, through science and technology approaches, the problem of drought could be addressed through the establishment of dams and lakes to aid agricultural activities. This approach was found to be successful in countries like Israel and Egypt. This reduced to a greater extent the security risk in food production and ultimately in the overall security of the two countries. In addition to the creation of dams, micro-climate can as well be created to cater for the problem of drought, desertification and enhancement of agricultural activities throughout the country. It is an approach that was found useful in many advanced countries on earth today.

Flooding is another natural disaster triggered by global warming, which science could be applied to address. This should be done through enactment of certain laws to compel countries with high level greenhouse gas emission to reduce the rate of the emission or devise means of converting the gases to lessen their effect so as to prevent the ozone layer from being depleted. This is why in the aftermath of the recent conference held in Paris, France by United Nations on Climate Change; an agreement was reached by the participating countries on the need to keep the world temperature below 2 degree Celsius by the end of the century (United Nations, 2015). However, if this is successfully achieved, many countries that are prone to natural disasters like Tsunami, flooding etc. would be greatly assisted and the security threat that would have emanated therefrom will be curtailed as well.

In an attempt to provide a suitable scientific theory that can be used in combating terrorism and security threat of a country, Tambo and Ann (2011: pl) provided a wide range of security threats that would warrant applying a certain science-based theory to address it as follows:

Security is a critical concern around the world that arises in protecting our ports, airports, transportation or other critical national infrastructure from adversaries, in protecting our wildlife and forests from poachers and smugglers, and in curtailing the illegal flow of weapons, drugs and money; and it arises in problems ranging from physical to cyber-physical systems. In all of these problems, we have limited security resources which prevent full security coverage at all times; instead, limited security resources must be deployed intelligently taking into account differences in priorities of targets requiring security coverage, the responses of the adversaries to the security posture and potential uncertainty over the types, capabilities, knowledge and priorities of adversaries faced.

According to them, the approach to addressing issues of security concern in any given society is holistic and all-encompassing and went ahead to assert that the suitable scientific theory to be employed in addressing the foregoing security problems is game theory. This, they maintained could be done through security resource allocation and scheduling problems after a certain algorithm must have been developed.

CONCLUSION

The paper delved on the area of human security need as it relates to mathematics and science education. The duo as argued by the paper could be employed in addressing pressing security issues. In mathematics for example, the paper argued that some mathematical models could be developed whose aim will be to address security challenges bedeviling the country while in science education, so many theories were developed that can be used to address the security challenge facing the country.

RECOMMENDATIONS

- Science and Mathematics education should be given a priority in curriculum development and a huge investment should be made so as to take it to next level.
- Security agencies of the country like Police, Civil Defence, Army and DSS should be subjected to rigorous training and refresher courses on counter terrorism operations so as to be up to date on the security need of the country.
- Regional security agencies that look after the country's border like Customs should be empowered to ensure territorial integrity and prevent external aggression.
- Agreement reached by the participating countries in the last Climate Change conference held at Paris about reducing the world temperature by 2 percent should be respected. This will go a long way in helping the vulnerable countries (Nigeria inclusive) reduce the risk of natural disasters arising from global warming.

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