



STEMJAS



STEM JOURNAL OF ANAMBRA STAN

Volume 5(1);2025
ISSN:2705-1579

EDITOR-IN-CHIEF
PROF. EBELE C. OKIGBO



STEM Journal of Anambra State (STEMJAS), 5(1); 2025



STEM JOURNAL

OF ANAMBRA STATE

(STEMJAS), 5(1); 2025



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ISSN: 2705-1579

Published & Printed by:

FAB ANIEH NIGERIA LIMITED

Fab Anieh House

Opposite COFI Premium Lounge

Okpuno, Awka

Tel: 08035619395

G-mail: fabprezz82@gmail.com



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EDITORIAL

STEM Journal of Anambra STAN (STEMJAS) is a publication of **Science Teachers Association of Nigeria, Anambra State Chapter**. STEMJAS is developed to disseminate information on Science, Technology, Engineering and Mathematics (STEM) to teachers, teacher-trainers, researchers and other interested persons. Articles that are of relevance to STEM education are published in this journal.

We are grateful to the contributors and hope that our readers will enjoy reading these contributions.

Prof. Ebele C. Okigbo

Editor-in-Chief



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MITIGATING INSECURITY CHALLENGES IN NIGERIA: TRANSFORMATIVE ROLES OF SCIENCE EDUCATION

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Abstract

The study investigated mitigating insecurity challenges in Nigeria: transformative roles of science education. Three research questions guided the study. Descriptive survey research design was used. The sample consisted of 300 Science Education students randomly drawn out of three sampled tertiary institutions out of the twelve (12) higher institutions of learning in Anambra State, Nigeria. The instrument used for data collection was the questionnaire titled Questionnaire on the roles of science education in mitigating insecurity in Nigeria, which was subjected to validation by other experts and reliability by Pearson Product Correlation Coefficient, obtaining a value of .83. The data were collected electronically and subjected to analysis using mean and standard deviation to give answers to the research questions. The cut off mean value of 2.50 was used. The findings of the study revealed that political instability, ethnic and religious tensions, poverty, unemployment, corruption, lack of access to education, among others cause insecurity, and science education can mitigate the challenges through STEM education, promotion of critical thinking and problem-solving skills among Nigerian youth, reduction in the spread of misinformation and promotion transformative media literacy among Nigerian youth, as well as promoting entrepreneurship and job creation among Nigerian youth. The study therefore recommended that a revised science education curriculum focusing on critical thinking and directed towards mitigating insecurity in Nigeria should be considered. Also, this revised curriculum should be made available to schools at primary, secondary and tertiary education levels.

Keywords: Nigerian Security, Science Education, Transformative roles



Introduction

In recent time, Nigeria has been enmeshed in a firebox of insecurity leading to scores of harms and deaths of innocent civilians, foreigners, some members of the nation's security personnel, elected officials and even many government workers (Aledare, Ono, Oluwemimo & Okpe, 2021). The insecurity challenges have assumed formidable dimensions forcing the country's political and economic managers and, indeed the entire nation, to be circumspect and of course rue the loss of their loved ones, investments and the cumulative absence of safety in most parts of the country; as the number of violent crimes such as kidnappings, ritual, killings, carjacking, suicide bombings, religious killings, politically-motivated killing and violence, ethnic clashes, armed banditry and other forms of unchartered evils have increasingly become the regular signature that characterized life in Nigeria since 2009 (Imhonopi & Urim, 2012). This spike in violent crimes did not emanate from nothing or sudden changes in the country, it has consciously grown over time. Over the years, the neglect of, and constant involvement in violent crimes by the citizens and government have played a crucial in the unsavory state of the country; with the civil war having a big root in religion and ethnicity, the Niger/Delta violence from lack of inclusion and recognition, the marginalization of smaller ethnic groups by larger ones, the religious killings and hate crimes; which were haphazardly handled by the government left a big loophole in the security status of the country, and creating room for insecurity to sneak in.

According to Farlex (2025), insecurity comes from the word insecure; which is the situation of not being sure or certain, or being doubtful of an event, so that one feels unguarded or inadequately safe. Okoli and Anadozie (2022) sees it as a state off being unsafe or insecure, and a state of mind characterized by self-doubt and vulnerability. Insecurity is ultimately a disservice to the citizens and general population of Nigeria, and frankly, to the nation itself; since the lack of safety breeches a number of national objectives. According to FRN (2019), a number of national objectives include to;

1. Protect Nigerian People and Territory
2. Promote Nigeria's Prosperity and Sustainable Development
3. Promote National Unity and Peaceful Co-existence
4. Promote our Regional and International Interests.

These objectives have been poorly catered to in the mind and lives of many Nigerians; people are afraid move across states, and even within the state out of fear for their lives. Properties are vandalized, and peaceful co-existence is a pretext for those who actually attempt it, and to top it all, while Nigeria may have a good international coalition in the world, it would be a thing of naivety to claim the people of the world do not know a thing or two about the insecurity crises of the country. Adagba *et al.* (2012) had made this observation when he



argued that the primordial tendencies of various ethnic groups towards violence, the perennial eruption of various ethnic militias and the preponderant religious fundamentalism in place, given expression to by some sections of the dominant religious establishments in Nigeria, have inevitably aggravated the scale and propensity of insecurity and widened its scope in various ramifications. This was validated in Aledare *et al.* (2021), as they confirmed that it may not be unconnected with the increasing ethnic hate, religious bigotry, political rivalry and a growing population of disgruntled citizens in the country who feel that they have been short-changed and given very limited or no access to the common patrimony.

Government has tried everything from force-for-force to carrot-and-stick approach to diplomacy but the problem seems to rise with greater monstrosity like the proverbial phoenix (Aledare *et al.*, 2021). There has also been strong advocacy for a multi-stakeholder intervention to the insecurity question rather than lean on military options alone (Imhonopi and Urim, 2013), but the problem has defied the present attention and medication it is getting. These analyses portend grave consequences for human security and national development especially for a developing country like Nigeria where processes of investigation, documentation, reportage, etc. are not up to par in terms of levels of sophistication and globally accepted minimum standards (Nnaji, 2015). To other extent, the relative development of Nigeria makes it possible for suggestions, researches and innovations, in different areas. It is safe to say that since the country is still developing, ideas and suggestions are still relatively welcomed, and references can be drawn from other developed countries that has made incredible progress in the security departments. One such progress can be seen in the developed world, where science and technology are paving ways and consistently quashing insecurity. This ultimately leads to the current study's quest on how Science Education can mitigate insecurity.

Science Education is a vital component of modern education, playing a crucial role in developing critical thinking, problem-solving, and analytical skills in students. As the world grapples with complex challenges such as climate change, pandemics, and technological advancements, science education has become more essential than ever. According to Yacoubian (2018), science education is defined as the process of teaching and learning science, with the goal of developing scientific literacy and promoting critical thinking and problem-solving skills. Science education encompasses various disciplines, including biology, chemistry, physics, computer science, mathematics and an integration of all sciences in integrated science. It is typically taught in formal educational settings, such as secondary schools and universities. The importance of science education cannot be overstated as it has helped students develop critical thinking and problem-solving skills, which are essential for



navigating the complexities of modern life (Kuhn, 2018). This is evident in some transformative roles of science education which are important in preparing students for the rapidly changing world. Some of these roles which could mitigate insecurity are seen in technology with inventions like security camera, security alarms, finger print detection, forensic science, among others; science education through fostering critical thinking skills also educate individuals on alertness, attentiveness and reading patterns, among others skills that Detectives use in uncovering crimes.

The role of science education in mitigating insecurity has been of trend in recent research studies, with Aledare *et al.* (2021) in a Case for Science Education in Mitigating Insecurity in Nigeria, concluding that national security and stability is reliant on the individuals working together in a coordinated and effective manner, which can only be achieved through science education. They therefore recommended that science education should be made compulsory from the basic education levels in the country as this will help them to have the opportunity to learn and inculcate scientific literacy and foster unity and stability, principally, be made compulsory and free for all. In the same vein, Okoli and Anadozie (2022) in Science Education as a Tool for Combating Insecurity in the Country, concluded that science education and science educators should be seen as an important tool to combat insecurity in the country. To combat insecurity, they believe that all strategies must be employed by the country to protect the citizens from all kinds of threats. They also state that science education should be seen as a tool to combat insecurity as the various skills and knowledge that will help promote good morals in the citizens are all embedded in it, most of all, it creates avenue for self-employment, to keep the citizens busy, so they will not be involved in acts that poses threat to the country thereby causing insecurity of different forms. Okoli and Anadozie suggest that everything must not be left to the government, and that all hands must be on deck in the quest to combat insecurity, so that a better country, a secured environment; which gives rise to a habitable home and human development especially in the area of science may be attained.

Other studies have also suggested science education as a tool for national development, and while national development may not be directly related to insecurity, there is an indirect correlation between them since better developed countries are better equipped to handle insecurity. Some these studies can be seen in Anaeto *et al.* (2016), where they analysed the roles of science and technology in national development. They concluded that the gap between rich and poor countries can largely be attributed to the differences in technology and the difficulty in their application. The study recommended policy options for reaping benefits from science and technology in Nigeria which include among others that the educational system shall emphasize science at all levels and re-orient the entire society towards scientific



thinking in order to develop new technologies and adapt existing ones to improve the societal wellbeing. Finally, considering the roles of science and technology in national development, it is imperative to stimulate demand for technology from both private and public sectors. This was further confirmed in Walker and De Paula (2022) in their study, Science, technology and innovation for sustainable development: Lessons from the Caribbean's energy transition.

Research Questions

This study sought to answer the following questions;

1. What are the causes of insecurity in Nigeria?
2. How can science education contribute to mitigating insecurity challenges in Nigeria?
3. What are the transformative roles of science education in addressing insecurity?

Method

The study adopted descriptive survey design. The population of the study consists of all the science education students in the twelve (12) tertiary institutions in Anambra State. Three of the tertiary institutions in Anambra State were randomly selected, the institution consisting of two universities and one College of Education; Nnamdi Azikiwe University, Awka; Chukwuemeka Odumegwu Ojukwu University, Igbariam and Federal College of Education Technical, Umunze namely. One hundred (100) students were randomly selected from the Science Education Department in each of the sampled schools. The students, made up of 87 males and 213 females make up the research participants. The instrument for data collection which consists of 26 items was a questionnaire constructed by the researchers, titled "Questionnaire on the roles of science education in mitigating insecurity in Nigeria". The instrument was validated by two other experts in science education and Measurement and Evaluation, and was subjected to Pearson Correlation Coefficient and a value of 0.83 was obtained; suggesting that the instrument is fairly reliable. The data was collected through a dissemination of the link containing the questionnaire by the researchers across the sampled schools, and data collected were analyzed using mean and standard deviation to answer the research questions. The cut off mean value of 2.50 was used to take decisions where any item that has a mean score equal to or above 2.50 indicates agreed while any item or cluster with a mean score or less than 2.50 signifies disagreed.



Results

Research Question 1: What are the causes of insecurity in Nigeria?

Table 1: Mean and standard deviation of the Causes of Insecurity in Nigeria by science education students in Anambra State

S/N	STATEMENT	MEAN	SD	REMARK
1.	I think that economic factors are the primary source of insecurity in Nigeria	3.22	1.24	Agree
2.	I think that political instability is the primary source of insecurity in Nigeria	4.79	0.37	Agree
3.	I think that social inequality is the primary source of insecurity in Nigeria	2.74	1.14	Agree
4.	I think that ethnic/religious tensions are the primary source of insecurity in Nigeria	4.48	0.59	Agree
5.	To what extent do you think poverty and unemployment contribute to insecurity in Nigeria?	4.74	0.45	Agree
6.	How important is corruption in perpetuating insecurity in Nigeria?	4.62	0.51	Agree
7.	Do you think the Nigerian government's response to insecurity has been effective?	1.00	0.00	Disagree
8.	To what extent do you think ethnic and religious tensions contribute to insecurity in Nigeria?	4.51	0.45	Agree
9.	How significant is the role of external factors (e.g. international terrorism) in Nigeria's insecurity?	2.29	1.11	Disagree
10.	Do you think the lack of access to education and job opportunities contributes to insecurity in Nigeria?	3.38	1.41	Agree
11.	To what extent do you think the activities of militant groups (e.g. Boko Haram) contribute to insecurity in Nigeria?	3.84	1.12	Agree
12.	How important is the role of community engagement and participation in addressing insecurity in Nigeria?	3.62	1.31	Agree
Grand Mean		3.62	1.22	Agree

Table 1 shows the causes of insecurity according to science education students in tertiary institutions of Anambra State. Both mean of means and means of individual questions suggests diverse reasons as the cause of insecurity in Nigeria. While every other questions are in the



agreement margin of 2.50, only questions about the government efforts and the impact of international bodies suggest disagreement. The standard deviation also shows little spread, with a 1.2 score suggesting that the responses are clustered (unison).

Research Question 2: How can science education contribute to mitigating insecurity challenges in Nigeria?

Table 2: Mean and standard deviation of how Science Education can Contribute to the Mitigation of Insecurity Challenges in Nigeria

S/N	STATEMENT	MEAN	SD	REMARK
1	To what extent do you think science education can play a role in addressing the root causes of insecurity in Nigeria?	3.93	0.45	Agree
2	How important is the incorporation of peace education and conflict resolution into science education in Nigeria?	3.84	0.52	Agree
3	STEM education (science, technology, engineering, and mathematics) can play in promoting economic development and reducing poverty in Nigeria	3.33	1.31	Agree
4	To what extent do you think science education can help to promote critical thinking and problem-solving skills among Nigerian youth?	4.09	0.32	Agree
5	Science education can play a role in promoting cultural understanding and tolerance among different ethnic and religious groups in Nigeria?	2.24	1.23	Disagree
6	To what extent do you think science education can help to reduce the spread of misinformation and promote media literacy among Nigerian youth?	3.13	1.33	Agree
7	What role do you think science education can play in promoting entrepreneurship and job creation among Nigerian youth?	2.73	0.73	Agree
Grand Mean		3.33	0.68	Agree

Table 2 shows the contribution of science education in mitigating insecurity according to science education students in three selected tertiary institutions. Mean including mean and means of questions suggests that science education can play a role in mitigating insecurity in Nigeria, as they are all in the agreement range of 2.5. While all other questions are in the agreement margin, only one question about the ability of science education to promote cultural



understanding among different ethnic groups and religion suggests disagreement. The standard deviation also shows little spread, with a 0.68 score suggesting that the responses are clustered (unison).

Research Question 3: What are the transformative roles of science education in addressing insecurity?

Table 3: Mean and standard deviation of the Transformative Roles of Science Education in Addressing Insecurity

S/N	STATEMENT	MEAN	SD	REMARK
1	To what extent do you think science education can play a transformative role in addressing insecurity challenges in Nigeria?	3.52	0.65	Agree
2	How transformative is the incorporation of peace education and conflict resolution into science education in promoting national security?	3.03	0.82	Agree
3	STEM education (science, technology, engineering, and mathematics) can play a transformative role in promoting economic development and reducing poverty-related insecurity?	4.03	0.36	Agree
4	To what extent do you think science education can promote critical thinking and problem-solving skills among Nigerian youth, thereby reducing the appeal of extremist ideologies?	4.22	0.34	Agree
5	Science education can play transformative role in promoting cultural understanding and tolerance among different ethnic and religious groups in Nigeria, thereby reducing inter-communal tensions?	2.73	1.43	Agree
6	To what extent do you think science education can help to reduce the spread of misinformation and promote transformative media literacy among Nigerian youth, thereby reducing the risk of radicalization?	3.34	1.23	Agree
7	Science education can play a transformative role in promoting entrepreneurship and job creation among Nigerian youth, thereby reducing poverty-related insecurity?	2.63	1.72	Agree
Mean		3.36	0.61	Agree

Table 3 shows the transformative roles of science education in mitigating insecurity according to science education students in three selected tertiary institutions. Mean including mean and means of questions suggests that science education can play a role in mitigating insecurity in Nigeria. All the questions are in the agreement margin, and the standard deviation also shows little spread, with a 0.6 score suggesting that the responses are clustered (unison).



Discussion

The findings of the study established some causes of insecurity, and supports the transformative roles that science education can play in mitigating the challenges of insecurity. Some of the root causes of insecurity Nigeria as suggesting by the findings include, but not limited to; economic factors, political instability, social inequality, ethnic and religious tensions, poverty, unemployment, corruption, lack of access to education and not enough response from the government, among others. These problems were mentioned in Aledare *et al.* (2021), who confirmed that insecurity may not be unconnected with the increasing ethnic hate, religious bigotry, political rivalry and a growing population of disgruntled citizens in the country who feel that they have been short-changed and given very limited or no access to the common patrimony. The finding is also in agreement with Adagba *et al.* (2012) who made the observation that the primordial tendencies of various ethnic groups towards violence, the perennial eruption of various ethnic militias and the preponderant religious fundamentalism in place has caused a spike in insecurity in the country. The findings of the study also support science education as a tool; both transformative and otherwise; of mitigating the challenges of insecurity. The responses suggest that science education can play a transformative role in addressing insecurity challenges in Nigeria through STEM education, promotion of critical thinking and problem-solving skills among Nigerian youth, reduction in the spread of misinformation and promotion transformative media literacy among Nigerian youth, as well as promoting entrepreneurship and job creation among Nigerian youth, thereby reducing poverty-related insecurity. These findings are in line with Aledare *et al.* (2021) in a Case for Science Education in Mitigating Insecurity in Nigeria; where they opined that national security and stability is reliant on the individuals working together in a coordinated and effective manner, which can only be achieved through science education. The results are also in agreement with Okoli and Anadozie (2022) who in Science Education as a Tool for Combating Insecurity in the Country, concluded that science education and science educators should be seen as an important tool to combat insecurity in the country; thus, leading them to state that science education should be seen as a tool to combat insecurity as the various skills and knowledge that will help promote good morals in the citizens are all embedded in it, most of all, it creates avenue for self-employment, to keep the citizens busy, so they will not be involved in acts that poses threat to the country thereby causing insecurity of different forms.



Conclusion

Based on the findings of the study, it can be implied that while the causes of insecurity in Nigeria is embedded in our roots; places like religion, ethnicity, government; science education can play a transformative in the mitigation of insecurity in Nigeria.

Recommendations

Based on the findings of the study, the following recommendations were made;

1. A revised science education curriculum focusing on critical thinking and directed towards mitigating insecurity in Nigeria should be considered.
2. This revised curriculum should be available to every education level; primary, secondary and tertiary.
3. The revised curriculum available to higher institution students should be inculcated as general studies, so as to ensure its availability to all students in different fields.



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