
SUSTAINABLE EDUCATION IN NIGERIA

Peer Reviewed Book Chapter

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Dr. Nwodo, Sylvester Nnaemeka.

Dept of Sociology and Anthropology, Faculty of Social Sciences, Enugu State University of Science and Technology.

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CONTRIBUTING AUTHORS

Victor OLUGBENGA AYOKO

Department of Educational Foundations, National Open University of Nigeria.

ORCHID ID: 0000-0001-5104-495X

Email: victorayoko@gmail.com

Michael I. Olumodeji (Ph.D.)

Department of Educational Management, Faculty of Education

ORCID: 0009-0000-5750-8399

Email: idowuolumodeji25@gmail.com

Victor C. Oyita (Ph.D.)

Department: Educational Management, Faculty of Education

Email: oyitavictor@gmail.com

Rilwan Abayomi Ajayi

Department of Educational Management, University of Abuja

Email: rilwan.ajayi@uniabuja.edu.ng

07030434751

Ihunda Aruchi JAPHET-NWAPI

Department of Educational Management Faculty of Education, Rivers State University.

Email: aruchiwigwe@yahoo.co.uk

08033369300

Amaewhule, Chinyere Eliphaletphebe (Ph.D.)

Department of Educational Management, Faculty of Education, Rivers State University.

ORCID: <https://orcid.org/0009-0003-3157-2415>

Email: chinyere.amaewhule@ust.edu.ng

Ayodele Ebunolu Nwisagbo, (Ph.D.)

Department of Educational management, Faculty of Education,

Rivers State University, Port Harcourt, Nigeria.

ORCID: <https://orcid.org/0009-0006-4395-8739>

Email: ebunolu.nwisagbo@ust.edu.ng

+2348064192896

Tambari Ayotunde Sam-Leeloo

Faculty of Science

National Open University of Nigeria, McCarthy Study Centre, Lagos State,

Email: tambarisamleeloo@gmail.com

Amarachi Cynthia Ineye-Briggs (Ph.D.)

Department of Educational management, Faculty of Education,

Rivers State University, Port Harcourt, Nigeria.

Email: Cynthia.ineye-briggs@ust.edu.ng

Amaewhule, Chinyere Eliphaletphebe (Ph.D.)

Department of Educational Management, Faculty of Education, Rivers State University.

ORCID: <https://orcid.org/0009-0003-3157-2415>

Email: chinyere.amaewhule@ust.edu.ng

Tamunomiebi Bamson, (Ph.D.)

Department Of Educational Management, Faculty of Education,

Rivers State University, Nkpolu-Oroworokwu, Port Harcourt, Rivers State, Nigeria.

Email: tamunomiebi.bamson@rsu.edu.ng

08033166956

Ihunda Aruchi JAPHET-NWAPI

Department: Educational Management Faculty of Education, Rivers State University

Email: aruchiwigwe@yahoo.co.uk

08033369300

Ezinne Nkeiru NWAMARA

Dept of Educational Management

Ignatius Ajuru university of Education Rivers State

Email: ezyky@yahoo.com

Ebikabowei MUSAH

Department of Educational Psychology and Counselling

University of Africa, Toru-Orua.

ORCID: <https://orcid.org/0000-0001-8894-6260>

Email: ebikabowei.musah@uat.edu.ng

Ihunda Aruchi JAPHET-NWAPI

Department of Educational Management

Faculty of Education, Rivers State University

Email: aruchiwigwe@yahoo.co.uk

08033369300

Niyi Jacob Ogunode

Department of educational management, University of Abuja, Nigeria

ORCID: 0000-0001-8678-2485

Email: niyijacobogunode@gmail.com

CONTRIBUTING AUTHORS

Mark Patience Ukwuori (Ph.D.)

Dept of Educational Administration and Planning,
Abia state university uturu

ORCID: <https://orcid.org/0009-0006-5213-4977>

Email: patiencemark859@gmail.com

08032613859

Dr. Nwodo, Sylvester Nnaemeka.

Dept of Sociology and Anthropology, Faculty of
Social Sciences

Enugu State University of Science and Technology.

ORCID: <https://orcid.org/0009-0008-8260-2430>

Email: nwodo.sylvester@esut.edu.ng

Eke, Ben Ethel, (Ph.D.)

Department of Educational Psychology, Guidance
and Counselling, Faculty of Education,
Rivers State University, Port Harcourt

Email: ethel.eke@ust.edu.ng

KALAGBOR GBEKE, Ibiene (Ph.D.)

Department of Educational Management, Rivers
State University, Nkpolu-Oroworukwu, Port
Harcourt, Rivers State-Nigeria.

Email: ibiene.kalagbor_gbeke@ust.edu.ng

08035535232

NNADIEZE, Godfrey Chukwumeka (Ph.D.)

Department of Educational Management
Rivers State University, Nigeria

Email: godfrey.nnadieze@ust.edu.ng

08035052150

KALAGBOR GBEKE, Ibiene (Ph.D.)

Department of Educational Management, Rivers
State University, Nkpolu-Oroworukwu, Port
Harcourt, Rivers State-Nigeria.

Email: ibiene.kalagbor_gbeke@ust.edu.ng

08035535232

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3

THE ROLE OF SCIENCE EDUCATION IN SUSTAINABLE NATIONAL DEVELOPMENT IN NIGERIA

Ihunda Aruchi JAPHET-NWAPI

Department of Educational Management
Faculty of Education, Rivers State University.

Email: aruchiwigwe@yahoo.co.uk

08033369300

Amaewhule, Chinyere Eliphaletphebe (Ph.D.)

Department of Educational Management, Faculty of Education, Rivers State University.

ORCID: <https://orcid.org/0009-0003-3157-2415>

Email: chinyere.amaewhule@ust.edu.ng

Abstract

Science education occupies a strategic position in the development of every modern nation because it equips citizens with scientific knowledge, practical competencies, innovative skills, and problem-solving abilities required for economic growth and sustainable national transformation. In Nigeria, the relevance of science education has become increasingly important due to persistent developmental challenges such as unemployment, poverty, insecurity, environmental degradation, poor healthcare delivery, food insecurity, technological dependence, and low industrial productivity. Despite the abundant human and natural resources available in the country, inadequate investment in science and technology education has continued to limit Nigeria's capacity for innovation and sustainable development. This chapter examined the concept and objectives of science education and discussed its major roles in promoting sustainable development in Nigeria. The chapter specifically explored how science education contributes to technological advancement, environmental sustainability, agricultural development, manpower production, healthcare improvement, and rational thinking among citizens. The discussion adopted a review approach using relevant scholarly literature, policy documents, and empirical studies. Findings revealed that science education remains a fundamental instrument for achieving national development goals and improving the

socio-economic conditions of the country. However, challenges such as inadequate funding, shortage of qualified science teachers, poor laboratory facilities, weak policy implementation, and limited research support continue to hinder effective science education delivery in Nigeria. The chapter concluded that strengthening science education through improved funding, teacher training, curriculum innovation, and infrastructural development is essential for sustainable national progress.

Keywords: Science Education; Sustainable Development; Technological Advancement; Scientific Literacy; National Development.

3.0. Introduction

Nigeria is the most populous country in Africa and one of the largest economies on the continent. The country is richly endowed with human and natural resources, including petroleum, natural gas, solid minerals, agricultural land, and a youthful population capable of driving national development. Since independence in 1960, successive governments have implemented various educational reforms and developmental policies aimed at promoting economic growth, political stability, industrialization, and social transformation. Despite these efforts, Nigeria continues to face serious developmental challenges that threaten sustainable national progress. One of the major problems confronting Nigeria is the high rate of unemployment among young people. Many graduates leave tertiary institutions without employable skills needed in modern industries and technological sectors. This situation has contributed to rising poverty, criminal activities, cybercrime, migration pressures, and social instability in different parts of the country. In addition, Nigeria faces persistent challenges in the areas of electricity supply, healthcare delivery, food security, environmental management, and industrial development. The increasing effects of climate change, flooding, erosion, pollution, desertification, and insecurity further compound the developmental difficulties facing the nation.

Another major concern is the country's heavy dependence on imported technologies, equipment, and technical expertise. Most industries in Nigeria rely substantially on foreign innovations and machinery because local scientific and technological capacities remain underdeveloped. This dependence weakens national productivity, limits industrial competitiveness, and reduces opportunities for indigenous technological growth. Similarly, poor investment in scientific research and innovation has slowed the pace of economic diversification and sustainable development in the country. Education is widely recognized as an important instrument for national transformation, but science education occupies a particularly significant position because of its direct connection with technological advancement, industrialization, innovation, and problem-solving (Nwuche, & Enyia, 2024). Science education equips individuals with scientific knowledge, practical skills, critical thinking abilities, and creative competencies required for addressing societal challenges. It also



develops a scientifically literate population capable of making informed decisions about health, agriculture, environmental protection, and technological development.

The prioritization of science education in Nigeria has become necessary because sustainable national development cannot be achieved without a strong scientific and technological foundation. Countries such as China, Japan, the United States, and South Korea attained rapid economic and industrial growth largely through strategic investments in science, technology, engineering, and innovation. Nigeria must therefore strengthen science education if it hopes to compete effectively in the global knowledge economy and achieve meaningful national transformation (Obodo, A. C., Nweze, & Ani, 2023). Science education is also essential for the realization of the Sustainable Development Goals (SDGs). Quality science education contributes directly to poverty reduction, quality healthcare, environmental sustainability, food security, clean energy development, and economic productivity. Through science education, learners acquire practical competencies that promote entrepreneurship, innovation, and self-reliance. Furthermore, scientific literacy helps citizens understand environmental issues, public health challenges, and technological changes affecting society.

In Nigerian schools and tertiary institutions, science education supports the training of professionals such as engineers, medical doctors, pharmacists, agricultural scientists, laboratory technologists, ICT specialists, and science teachers who contribute significantly to national growth and development. The development of competent scientific manpower is therefore essential for strengthening Nigeria's industrial capacity and reducing technological dependence on foreign nations (Ndayebom & Olamoyegun, 2022).

Despite its importance, science education in Nigeria continues to face numerous challenges. Many schools lack functional laboratories, instructional materials, electricity, and qualified science teachers. Inadequate funding, overcrowded classrooms, weak curriculum implementation, poor motivation of teachers, and limited research facilities negatively affect the quality of science education across the country. These problems have reduced students' interest and performance in science-related subjects and limited the production of skilled scientific manpower. It is against this background that this chapter examines the concept, objectives, and roles of science education in promoting sustainable development in Nigeria. The chapter highlights the relevance of science education to national growth and emphasizes the need for government and other stakeholders to prioritize science education for sustainable socio-economic transformation.

3.1. Conceptual Terms

Concept of Science Education

Science education is the process of teaching and learning scientific knowledge, skills, attitudes, and values needed for understanding the natural world and solving human problems through inquiry and experimentation (UNESCO, 2018). Pember and Humbe defined science education as a systematic process of teaching and training learners to improve their understanding of the



environment and develop scientific inquiry skills for problem-solving in society. Science education can also be described as an aspect of education that equips learners with scientific literacy, practical competencies, and critical thinking abilities necessary for technological advancement and national development. According to the Federal Republic of Nigeria National Policy on Education, science education is an educational programme designed to cultivate rational thinking, scientific attitudes, and technological competence for individual and societal growth. Okoli, Obiajulu, and Ella viewed science education as an instrument for sustainable development that enables citizens to apply scientific principles in addressing environmental, economic, and social challenges confronting society.

Science education identifies natural phenomena appropriate to child interest and skills. Also, he went on to say that science education equips teachers, learners and the society with knowledge, skills, equipment and freedom to perform noble task useful for improving socioeconomic standard. In addition, he added that science education courses are designed to produce capable scientists who contribute meaningfully to academic excellence of the society to raise the economic level of nations (Lewis 2015). Science as systematic investigations of nature with a view to understudy and harnessing them to serve human needs (Okoro (2013). Science education involves the study of science in depth and in addition, educational knowledge and concepts are learnt and verified. It has been recognized worldwide as a pre-requisite in technological development (Okoli et. al. 2013).

Science education is a veritable instrument for national development (Dajal, & Mohammed, 2019). Science is a way of seeking information (process) and also an accumulated knowledge resulting from research (products) (Okon – Enoh, 2008). Science education is described by Pember & Humbe (2009) as a process of teaching or training especially, in school to improve one's knowledge about environment and to develop one's skill of systematic inquiry as well as natural attitudinal characteristics. This implies that no country can be globally recognized without talking about its scientific advancements. Science education is the mother of all sciences. It comprises of chemistry, physics, mathematics, biology, physical and health, and computer science. Olatunde-Aiyedun and Ogunode (2021) observes that Science Education is the main component of school curricula in almost every country. Hence, it is essential to maintain and develop the technical infrastructures, national securities and economic prosperities for the future. If well developed and executed, Science Education can provide a stable flow of graduates into high-level jobs that require advanced scientific knowledge and expertise (Millar, 2011). Science education promotes intellectual respect for Mother Nature. This action can inform choices with regard to how technology is used to enhance the current living conditions for humans and other living things. Science education encourages learners to reason critically so as to make decisions that are well informed. There are no shortcomings in science education, good knowledge of science principles and facts are vital for a comprehensive education (Harry, 2011). Although there has been tremendous increase in the net enrolment of learners, the question is whether this increase has translated to qualitative education (Emechebe, 2012). The objectives of Science education includes; To develop



scientific literacy and critical thinking among learners; To prepare students for careers in science, technology, engineering, and innovation; To promote problem-solving skills for addressing societal and environmental challenges; To foster national development through technological advancement and industrial growth; and To inculcate scientific attitudes such as curiosity, objectivity, creativity, and rational decision-making.

3.2. Result and Discussion: Roles of Science Education in Sustainable Development in Nigeria

i. Promotion of Technological Advancement and Industrial Development

Science education plays a major role in promoting technological innovation and industrial growth in Nigeria. Nations that invest heavily in science education often experience rapid technological transformation because scientific knowledge forms the foundation for engineering, manufacturing, and digital innovation. Science education provides learners with theoretical knowledge and practical competencies needed for technological creativity and industrial productivity. Through the teaching of physics, chemistry, biology, computer science, and technical education, students acquire scientific principles that can be applied in solving real-life industrial and technological problems (Olumide & Irinoye, 2025).

In Nigeria, science education contributes to the training of engineers, medical professionals, agricultural scientists, software developers, ICT specialists, and industrial technologists who drive national economic growth. Universities, polytechnics, colleges of education, and research institutes serve as centres for scientific innovation where students and researchers engage in experimentation, invention, and technological development. The integration of practical science into school curricula encourages creativity, innovation, and entrepreneurship among learners. This has resulted in the emergence of Nigerian youths involved in renewable energy production, software engineering, robotics, digital communication, and local manufacturing of scientific equipment (Okoli, Obiajulu, & Ella, 2013; Ogunode & Aiyedun, 2020). Science education also promotes industrialization by providing industries with skilled manpower capable of operating sophisticated machines, conducting industrial research, and improving production processes. Industries such as telecommunications, oil and gas, construction, aviation, manufacturing, and automobile production depend heavily on scientifically trained personnel for efficiency and sustainability. The development of indigenous technologies through science education reduces overdependence on imported technologies and strengthens local capacity for innovation. For instance, Nigerian scientists and engineers have contributed to the development of solar-powered devices, locally fabricated agricultural equipment, and digital payment technologies that support economic diversification. Science education supports the realization of the Sustainable Development Goals (SDGs), particularly Goal 8 on decent work and economic growth and Goal 9 on industry, innovation, and infrastructure. Scientific knowledge equips citizens with the ability to develop innovative solutions to persistent national challenges such as inadequate electricity supply, poor healthcare systems, unemployment, food insecurity, and environmental degradation. Tijani and Adeduyigbe observed that science education enhances workforce readiness, technological transformation, and economic



diversification in developing economies like Nigeria. Therefore, science education remains a critical instrument for industrial growth, technological self-reliance, and sustainable national development.

ii. Enhancement of Environmental Awareness and Conservation

Science education increases public understanding of environmental issues such as climate change, pollution, desertification, flooding, erosion, biodiversity loss, and deforestation. Environmental sustainability is one of the major pillars of sustainable development, and science education equips individuals with the knowledge and skills needed to protect and manage the environment responsibly. Through subjects such as biology, chemistry, geography, agricultural science, and environmental education, learners gain scientific understanding of ecosystems, environmental degradation, and conservation strategies (Bello, 2021). In Nigeria, environmental challenges remain serious threats to sustainable development. Oil spillage and gas flaring in the Niger Delta have destroyed aquatic ecosystems and agricultural lands, while erosion in southeastern Nigeria has displaced communities and damaged infrastructure. Northern Nigeria continues to experience desert encroachment and drought resulting from climate change and poor environmental management. Science education equips learners and citizens with the ability to understand these environmental problems scientifically and develop appropriate solutions. Students learn about waste management, pollution control, renewable energy, afforestation, water conservation, and climate adaptation strategies that can improve environmental sustainability. Schools also contribute to environmental conservation through practical activities such as tree planting campaigns, sanitation exercises, recycling projects, environmental clubs, and conservation programmes. These activities help learners develop positive attitudes toward environmental stewardship and responsible use of natural resources. Scientific literacy also encourages citizens to support government policies aimed at environmental protection and sustainable resource utilization. For example, science education can help communities understand the dangers of indiscriminate waste disposal, bush burning, illegal mining, and deforestation. Science education promotes research and innovation in environmental management. Nigerian scientists trained through science education conduct studies on climate change adaptation, renewable energy, erosion control, and pollution management. Such research findings assist policymakers in designing effective environmental policies and sustainable development programmes. Babalola and Olawuyi emphasized that environmental education is a major tool for advancing sustainable development goals in Nigeria because it promotes environmental responsibility, ecological balance, and sustainable use of natural resources. Thus, science education remains essential for environmental conservation and sustainable living in Nigeria.

iii. Improvement of Health Care and Human Well-being

Science education contributes significantly to the improvement of public health and human welfare in Nigeria. Through subjects such as biology, chemistry, health science, microbiology, nursing, medicine, and pharmaceutical studies, individuals gain knowledge about disease



prevention, hygiene, nutrition, sanitation, reproductive health, and healthy living. Scientific understanding enables people to make informed decisions concerning their health and well-being, thereby improving the quality of life in society (Danjuma & Ikpe, 2019). Science education also supports the training of healthcare professionals such as doctors, pharmacists, nurses, laboratory technologists, radiographers, and public health officers who strengthen the Nigerian healthcare system. These professionals apply scientific knowledge in diagnosing diseases, conducting medical research, producing drugs, and improving healthcare delivery. Scientific research and innovations have contributed greatly to the control and management of infectious diseases such as malaria, tuberculosis, cholera, HIV/AIDS, and COVID-19 in Nigeria. During the COVID-19 pandemic, scientific literacy helped many Nigerians understand preventive measures such as vaccination, handwashing, social distancing, and use of face masks. In rural communities, science education promotes awareness campaigns on immunization, maternal healthcare, nutrition, family planning, water purification, and environmental sanitation. Such awareness programmes reduce infant mortality, improve maternal health, and increase life expectancy. Science education also contributes to the development of medical technologies, vaccines, diagnostic equipment, and modern treatment methods that improve healthcare outcomes. Nigerian universities and medical research institutes continue to engage in scientific investigations aimed at addressing emerging health challenges and improving public health policies. Science education supports sustainable development by improving human capital and productivity. Healthy citizens are more productive and capable of contributing meaningfully to economic and national development. Poor health conditions reduce labour productivity, increase poverty, and hinder national progress. Therefore, investment in science education strengthens healthcare systems and promotes sustainable human development. Obodo, Nweze, and Ani (2018) noted that science education is essential for achieving health-related sustainable development goals through medical innovation, scientific research, and improved public health awareness.

iv. Promotion of Agricultural Development and Food Security

Agriculture remains a major sector of the Nigerian economy, employing millions of people and contributing significantly to national food supply. Science education contributes immensely to agricultural modernization, food security, and rural development. Through agricultural science, biology, chemistry, soil science, and biotechnology, learners acquire scientific knowledge and technical skills required for modern farming practices. Science education enables farmers and agricultural experts to adopt improved farming techniques, irrigation systems, pest control methods, mechanized farming, and soil conservation strategies (Babalola & Olawuyi, 2021). Science education has encouraged the use of biotechnology, improved seedlings, fertilizers, climate-smart agriculture, and modern livestock management practices in many parts of Nigeria. Agricultural scientists trained through universities and research institutes conduct studies aimed at improving crop yield, livestock production, disease resistance, and food preservation techniques. Such scientific innovations increase agricultural productivity and help address food shortages in the country. For example, improved rice varieties, drought-resistant



crops, and advanced poultry management systems introduced through scientific research have improved food production in Nigeria. Science education also promotes sustainable use of agricultural resources by teaching farmers the importance of soil conservation, water management, organic farming, and environmental protection. Unsustainable farming practices such as excessive bush burning, overgrazing, and indiscriminate use of chemicals can degrade the environment and reduce agricultural productivity. Scientific knowledge helps farmers understand the long-term effects of these practices and adopt environmentally friendly agricultural methods. Science education contributes to poverty reduction and economic empowerment in rural communities. Increased agricultural productivity generates income, creates employment opportunities, and improves living standards. Nigeria's capacity to achieve food security and reduce hunger depends largely on scientific research and innovation in agriculture. Christine and Hayatu (2014) argued that science education strengthens national capacity for agricultural transformation and sustainable food production through scientific farming practices and technological innovation. Therefore, science education remains a major instrument for agricultural sustainability and national food security in Nigeria.

v. Development of Skilled Manpower for National Growth

One of the most important contributions of science education to sustainable development is the production of skilled manpower needed for national growth and modernization. Sustainable development requires competent scientists, engineers, teachers, technologists, researchers, and skilled professionals capable of driving economic, technological, and industrial transformation (Adeyegbo, 2004). Science education develops technical competencies, analytical abilities, and practical skills required in industries, healthcare institutions, construction sectors, energy industries, aviation, telecommunications, and research organizations. In Nigeria, many sectors of the economy rely heavily on scientifically trained personnel. The oil and gas industry requires petroleum engineers, geologists, and chemical engineers; the healthcare sector depends on doctors, nurses, pharmacists, and laboratory scientists; while the ICT sector requires computer scientists, software engineers, and network specialists. Without effective science education, Nigeria may continue to depend excessively on foreign expertise and imported technologies. Science education therefore promotes self-reliance and national competitiveness by developing indigenous human resources capable of supporting national development. Science education also promotes entrepreneurship and vocational skills acquisition. Learners acquire practical knowledge in electronics, renewable energy technology, fabrication, information technology, and scientific problem-solving that can enable them to become self-employed and job creators rather than job seekers. This is particularly important in addressing youth unemployment and poverty in Nigeria. Technical and vocational science-based programmes in polytechnics and colleges of education help students develop employable skills relevant to the labour market. Science education strengthens research and innovation capacity in higher institutions. Universities and research institutes serve as centres for scientific discoveries that contribute to industrial development, healthcare advancement, and technological progress. Scholars have argued that science education is a pathway to skill



acquisition, productivity, and economic empowerment in Nigeria (Ajemba, Ahmed, Ogunode, & Olatunde-Aiyedun, 2021). Thus, science education remains a vital instrument for developing skilled manpower and promoting sustainable national growth.

vi. Promotion of Rational Thinking and Problem-solving Abilities

Science education promotes logical reasoning, critical thinking, creativity, and evidence-based decision-making. One of the central objectives of science education is to train learners to observe carefully, investigate systematically, analyze data objectively, test hypotheses, and draw conclusions based on evidence. These intellectual skills are essential for solving social, economic, political, and environmental problems facing Nigeria (Abubakar, Ogunseye, & Ogunode, 2021). Scientific thinking helps individuals develop a questioning attitude and discourages blind acceptance of superstition, misinformation, and irrational beliefs. In many societies, ignorance and lack of scientific literacy contribute to the spread of false information, harmful cultural practices, and resistance to scientific innovations. Science education empowers citizens to evaluate information critically and make informed decisions. For example, scientific literacy played an important role in helping Nigerians understand disease prevention measures, vaccination campaigns, and public health regulations during outbreaks of Ebola and COVID-19. Science education also enhances creativity and innovation because learners are encouraged to identify problems and search for practical solutions through experimentation and inquiry. These problem-solving abilities are necessary for national development because sustainable development challenges require scientific and innovative approaches. Issues such as unemployment, energy crises, insecurity, environmental pollution, and poor infrastructure demand rational planning and scientific solutions. Science education strengthens democratic participation and responsible citizenship. Citizens who possess scientific literacy are more likely to participate meaningfully in national discussions, public policy debates, and community development programmes. They are able to evaluate government policies critically and support programmes that promote social welfare and sustainable development. Okoli and colleagues emphasized that science education develops inquiry skills, logical reasoning, and rational minds necessary for sustainable national progress. Therefore, science education remains an indispensable tool for promoting critical thinking, responsible citizenship, and sustainable societal transformation in Nigeria.

Conclusion and Recommendations

Science education remains one of the most powerful instruments for achieving sustainable development in Nigeria. The study revealed that science education contributes significantly to technological advancement, healthcare improvement, environmental sustainability, agricultural productivity, manpower development, innovation, and rational decision-making. In a developing country like Nigeria where poverty, unemployment, environmental degradation, insecurity, and technological dependence persist, the importance of science education cannot be overemphasized.



The chapter further established that nations that prioritize science education often experience rapid industrialization, economic growth, and improved living standards. For Nigeria to achieve meaningful national transformation and compete effectively in the global economy, greater attention must be given to science education at all levels of the educational system. Unfortunately, inadequate funding, poor infrastructure, shortage of qualified science teachers, weak policy implementation, and limited support for scientific research continue to undermine the effectiveness of science education in Nigeria. Based on the findings, the chapter recommend the following:

- The Federal and State Governments should increase budgetary allocation to science education in order to provide functional laboratories, modern instructional materials, and conducive learning environments in schools.
- Qualified science teachers should be recruited, trained, and adequately motivated through improved salaries, professional development programmes, and incentives to enhance effective science teaching and learning.
- Nigerian schools and tertiary institutions should strengthen practical-oriented science education to promote innovation, creativity, entrepreneurship, and problem-solving skills among learners.
- Government should provide adequate funding for scientific research and technological innovation in universities, polytechnics, and research institutes across the country.
- Science curricula at all levels of education should be regularly reviewed to reflect current technological trends, environmental challenges, and national developmental needs.
- Public-private partnerships should be encouraged to support science education through scholarships, research grants, provision of laboratory equipment, and industrial training opportunities for students.
- Awareness campaigns should be intensified to encourage students' interest and participation in science-related subjects and careers, especially among female learners and rural communities.
- The government should strengthen policies that promote the integration of science, technology, engineering, and mathematics (STEM) education into national development programmes for sustainable economic growth.

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Concluding Synthesis

This volume on *Sustainable Education in Nigeria* contributes significantly to contemporary discourse on educational transformation by examining the policies, practices, innovations, and challenges shaping the Nigerian educational landscape. The chapters collectively demonstrate that sustainable education extends beyond improving access to schooling; it encompasses the creation of resilient, inclusive, equitable, and future-oriented learning systems capable of responding effectively to socio-economic, technological, and environmental changes.

A synthesis of the contributions reveals that sustainable education in Nigeria requires a holistic approach that integrates governance reforms, technological advancement, infrastructure development, teacher capacity building, curriculum modernization, and stakeholder engagement. The studies presented in this volume underscore the importance of aligning educational policies with national development priorities while ensuring responsiveness to global educational trends and Sustainable Development Goal 4 (SDG 4).

The volume highlights the transformative potential of digital technologies in expanding educational opportunities, particularly in underserved and rural communities. Emerging technologies, including artificial intelligence, learning management systems, educational data analytics, and digital content delivery platforms, present opportunities to improve teaching effectiveness, learner engagement, and administrative efficiency. However, their successful implementation depends on reliable infrastructure, adequate funding, digital literacy, and supportive policy frameworks.

The contributions further identify persistent challenges confronting the Nigerian education sector, including inadequate funding, infrastructure deficits, teacher shortages, policy discontinuity, regional disparities, insecurity, and socio-economic inequalities. These interconnected challenges continue to undermine educational quality and limit the realization of sustainable development objectives.

Importantly, the volume repositions education as a strategic instrument for national development, social mobility, economic competitiveness, innovation, and nation-building. Sustainable education is presented not merely as a sectoral concern but as a foundational pillar for achieving broader national aspirations, including poverty reduction, employment generation, social cohesion, and environmental sustainability.

Ultimately, this volume advances scholarly understanding and policy discussions by offering multidisciplinary perspectives and evidence-based insights into the future of education in Nigeria. It serves as a valuable resource for policymakers, researchers, educational leaders, development

practitioners, and other stakeholders committed to fostering educational systems that are resilient, inclusive, innovative, and sustainable.

Implications for Practice

Drawing from the collective findings and recommendations presented throughout this volume, the following strategic implications are proposed for policymakers, educational administrators, practitioners, researchers, and development partners:

Policy Reform and Strategic Governance

Governments at federal, state, and local levels should strengthen educational governance through evidence-based policymaking, institutional accountability, policy continuity, and effective monitoring and evaluation mechanisms. Sustainable educational development requires long-term planning that transcends political transitions and administrative changes.

Digital Transformation and Technology Integration

There is an urgent need to expand investments in educational technology infrastructure, internet connectivity, digital learning resources, and teacher digital competencies. Schools and higher education institutions should leverage emerging technologies to improve access, instructional quality, learner engagement, and administrative efficiency.

Sustainable Education Financing

Alternative and innovative funding mechanisms should complement public expenditure on education. Public-private partnerships, donor-supported initiatives, educational endowments, corporate social responsibility investments, and community participation can contribute to sustainable financing and improved educational outcomes.

Teacher Development and Professional Capacity Building

Continuous professional development should become an integral component of educational reform. Teachers must be equipped with contemporary pedagogical skills, technological competencies, research capabilities, and learner-centered instructional approaches necessary for twenty-first-century education.

Equity, Inclusion, and Access

Educational policies and interventions should prioritize disadvantaged populations, including learners in rural communities, girls, persons with disabilities, internally displaced persons, and

economically vulnerable groups. Sustainable education requires ensuring that no learner is excluded from quality educational opportunities.

Research, Innovation, and Data-Driven Decision Making

Educational institutions should strengthen research culture and promote evidence-based decision-making. Reliable educational data systems are essential for planning, resource allocation, performance assessment, and policy evaluation.

Infrastructure Development and Learning Environment Improvement

Governments and stakeholders should prioritize investments in school infrastructure, including classrooms, laboratories, libraries, digital facilities, sanitation systems, and renewable energy solutions. Safe and conducive learning environments are critical for educational sustainability.

Institutional Resilience and Crisis Preparedness

Educational systems should develop adaptive capacities to withstand disruptions arising from pandemics, economic crises, natural disasters, and security challenges. Flexible learning models, blended education approaches, and emergency response frameworks should be integrated into educational planning.

Multi-Stakeholder Collaboration

The sustainable transformation of education in Nigeria requires collaborative engagement among government agencies, educational institutions, private sector organizations, civil society groups, communities, and international development partners. Effective partnerships can mobilize resources, expertise, and innovation necessary for long-term educational advancement.

Editors' Note

The editors are pleased to present this volume on *Sustainable Education in Nigeria*, a scholarly contribution designed to address critical issues shaping the future of education within the country.

We express our sincere gratitude to the contributing authors whose research and professional insights have enriched this publication. Their diverse perspectives provide valuable understanding of the opportunities, challenges, and emerging trends influencing educational development in Nigeria.

We also acknowledge the dedicated efforts of peer reviewers, editorial board members, and institutional partners whose commitment to academic excellence has enhanced the quality, credibility, and relevance of this volume. Their contributions have ensured that the publication meets the highest standards of scholarly rigor and professional integrity.

This volume is intended to serve not only as an academic resource but also as a practical guide for policymakers, educational leaders, practitioners, researchers, and development organizations seeking innovative solutions to contemporary educational challenges.

It is our hope that the ideas, findings, and recommendations presented herein will stimulate further research, inform policy formulation, encourage collaboration, and inspire transformative action toward building an educational system that is equitable, innovative, resilient, and sustainable.

Chief-Editor

Chinyere Otuu UGUBA

*Department of Educational management and Administration, Faculty of Education
Educational management and Administration
Alex Ekwueme Federal University Ndufu Nlike Ebonyi state Nigeria.*

Series Editor

Niyi Jacob Ogunode - PhD

Department. Of educational management, faculty of education. University of Abuja, Nigeria