



# Strategic Curriculum Management for National Technological Progress and Self-Reliance in Nigeria

**Stella Chinenyenwa UKONU**

Department of Educational Management  
Faculty of Education  
Ignatius Ajuru University of Education, Nigeria

**Onyinye OJI-EMMA**

Department of Educational Management  
Faculty of Education  
Ignatius Ajuru University of Education, Nigeria

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## Abstract

The study explores the concept of a functional curriculum as a strategic approach to enhancing technological development and fostering self-reliance in Nigeria. It highlights the pressing need for a shift from traditional, theory-based educational frameworks to a more practical, skills-oriented curriculum that addresses the high rates of youth unemployment and dependency on foreign technologies. Emphasizing on experiential learning, critical thinking, and entrepreneurial skills, a functional curriculum is aimed to equip students with competencies essential for navigating the 21st-century labor market. The research identifies significant gaps in the current educational system, which often fails to produce graduates with the necessary practical skills required by employers. It argues that implementing a functional curriculum could bridge this gap, promoting economic independence and technological innovation. The paper also addresses challenges such as inadequate resources, insufficient teacher training, and resistance to change within educational institutions. The paper posits that a well-structured functional curriculum could serve as a catalyst for national development, enabling Nigeria to transition from being a consumer of foreign technology to a producer of local innovations.

**Keywords:** Functional Curriculum, Technological Development, Self-Reliance.

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## INTRODUCTION

The quest for sustained technical advancement and economic self-sufficiency is a paramount objective for emerging countries, especially Nigeria, where young unemployment and reliance

on foreign technology pose considerable obstacles. A transition in the educational paradigm from a primarily theoretical framework to a more practical, skill-oriented curriculum is well acknowledged as crucial to tackle these challenges (Adeniran & Aliu, 2019). Functional education, emphasizing practical, real-world skills, is seen as a catalyst for creativity, entrepreneurship, and self-sufficiency. The incorporation of a functional curriculum is proposed as a means to equip Nigerian students to become proficient, self-sufficient persons who can significantly contribute to national development (Akanbi & Iyabo, 2016). This paper examines the notion of a functional curriculum and its potential as a solution to the technical and economic difficulties confronting Nigeria.

Notwithstanding Nigeria's significant investment in education, the system has faced challenges in producing outputs that correspond with labour market requirements and technological progress. A multitude of Nigerian graduates encounter unemployment owing to an absence of practical skills and competences pertinent to modern companies. A functional curriculum provides a systematic approach to address this disparity by cultivating problem-solving, critical thinking, and entrepreneurial competencies, which are vital for the 21st-century labour market. Olaitan and Aliyu (2019) asserted that the lack of these competences in the conventional curriculum has impeded Nigerian young from attaining economic self-sufficiency, leading to a workforce that is excessively dependent on restricted employment options within a narrow labour market.

A functional curriculum distinguishes itself from traditional educational models by emphasising skill development, experiential learning, and practical applications rather than rote memorisation and theoretical understanding. This methodology strongly corresponds with the educational objectives specified by the Nigerian National Policy on Education, which prioritises the cultivation of self-sufficient individuals capable of societal transformation via practical skills (Federal Republic of Nigeria, 2014). In this context, functional education encompasses not only the utilisation of tools and technologies but also the cultivation of an entrepreneurial mindset and the ability for lifelong learning, which are crucial for adapting to a swiftly evolving technological environment (Ibrahim & Musa, 2018).

Furthermore, several studies have emphasised the correlation between functional education and technological innovation, indicating that nations with skill-oriented educational frameworks are likely to cultivate more adaptive, creative, and technically adept workforces (Asogwa & Dim, 2016). In South Korea, a comparable transition to a skills-oriented curriculum considerably facilitated the nation's evolution from a developing economy to a worldwide technology powerhouse. Nigeria, characterised by its young demographic and abundant natural resources, have the potential to emulate a comparable trajectory provided educational reforms emphasise practical skills and innovation (Ogundele & Ojo, 2020).

Notwithstanding the acknowledged promise of a functional curriculum, its execution in Nigeria has faced several obstacles, such as insufficient money, poor facilities, and opposition from educators familiar with conventional teaching techniques (Okebukola, 2015). A multitude of Nigerian schools continues to be deficient in essential resources for practical education, including well equipped labs, workshops, and technical facilities. Moreover, many educators are ill-equipped to implement a functioning curriculum, lacking the requisite specialised training to successfully instruct vocational and technical topics (Izuagba & Obiefuna, 2021). Implementing a viable curriculum would remain difficult without sufficient support, highlighting the need for a collaborative effort among the government, corporate sector, and educational institutions.

Functional education is essential for mitigating the elevated young unemployment rate in Nigeria, since it cultivates an entrepreneurial attitude that enables students to generate their own possibilities instead of depending on scarce formal jobs. Entrepreneurship education that is integrated into a functional curriculum can enable students to acquire skills essential for identifying market gaps, devising innovative solutions, and establishing sustainable enterprises. This method corresponds with international trends, as nations globally are progressively integrating entrepreneurship into their educational frameworks to equip youth for unpredictable job markets. Implementing a functional curriculum will enable Nigeria to equip its youth with the skills necessary for economic independence, thus alleviating poverty and promoting social stability.

A functional curriculum might be essential in transitioning Nigeria from a consumer of foreign technology to a creator of local ideas. The focus on STEM (Science, Technology, Engineering, and Mathematics) education has demonstrated efficacy in cultivating innovation and technological competencies among students (Adamu & Yakubu, 2021). Countries such as China and India have experienced substantial economic growth propelled by STEM-oriented educational policies, which have developed a highly proficient workforce in technology-centric industries. Adopting a comparable strategy in Nigeria may foster indigenous technology development, diminish import dependence, and enhance the country's technical foundation (Okeke & Onah, 2017).

Nigeria's education system has long been criticized for its emphasis on theoretical knowledge over practical skills, resulting in a workforce that is largely unprepared for the demands of the modern economy. Despite various educational reforms, the country continues to grapple with high unemployment rates, low technological advancement, and a dependency on foreign expertise and products. Many graduates lack the technical and vocational competencies required for self-reliance and national development, thereby contributing to the growing issue of graduate unemployment and underemployment. According to NBS (2020), Nigeria's unemployment rate has been rising, particularly among young graduates who struggle to find jobs due to a mismatch between their academic training and industry requirements. This highlights a fundamental flaw in the curriculum, which prioritizes rote memorization over critical thinking, problem-solving, and skill acquisition.

Furthermore, the country's slow pace of technological innovation and industrialization is directly linked to the inadequacies of the education system. The absence of a functional curriculum that integrates technical education, digital literacy, and entrepreneurial training has left Nigeria lagging behind in global technological advancements. Countries that have adopted functional education systems, such as Germany and China, have successfully bridged the gap between education and industry by emphasizing STEM education, vocational training, and hands-on learning. In contrast, Nigeria's curriculum remains outdated and misaligned with contemporary economic needs, hindering national progress and self-sufficiency.

Another critical challenge is the lack of adequate funding and infrastructural support for technical and vocational education in Nigeria. Many schools lack well-equipped science laboratories, ICT centers, and skilled instructors, making it difficult for students to acquire practical knowledge. As a result, industries often prefer hiring foreign-trained professionals over locally trained graduates, further deepening Nigeria's dependency on external expertise. This trend not only weakens the nation's economic stability but also limits opportunities for local technological innovations and industrial expansion.

Given these pressing issues, there is an urgent need to adopt a functional curriculum that emphasizes technical skills, entrepreneurship, and innovation-driven learning. Such a curriculum would equip students with the necessary competencies to become self-reliant, employable, and contributors to national technological development. This study, therefore, seeks to examine how a functional curriculum can serve as a panacea for Nigeria's technological and economic challenges, ensuring that education becomes a tool for sustainable development and self-sufficiency.

## CONCEPTUAL VERIFICATION

The notion of a functional curriculum prioritises pragmatic, skills-oriented education aimed at providing students with the abilities necessary for success in real-world environments. A functional curriculum, in contrast to traditional curricula that emphasise theoretical knowledge and rote memorisation, incorporates practical applications, experiential learning, and critical thinking exercises to equip students for immediate contributions in their communities and workplaces (Ogunode & Adamu, 2020). This methodology is especially pertinent in developing nations such as Nigeria, where a substantial disparity exists between the skills imparted at educational institutions and those demanded by the labour market. Functional education is seen as a remedy for this disconnection, with the objectives of decreasing unemployment, enhancing self-sufficiency, and advancing technical progress (Adebayo & Nwogu, 2017).

A functional curriculum extends beyond vocational education or manual skills; it includes a wider array of competences such as cognitive, technical, social, and entrepreneurial skills. This comprehensive approach corresponds with the educational objectives specified by the Nigerian National Policy on Education, which promotes a curriculum aimed at cultivating "self-reliant and productive citizens" (Federal Republic of Nigeria, 2014). In this setting, functional education emphasises curriculum material that is directly relevant to students' everyday lives and future professions, facilitating a seamless transfer from the classroom to the workplace (Ajiboye & Adebayo, 2018).

The essence of functional education is in the conviction that education must have a practical purpose beyond mere academic success; it should equip learners to address real-world challenges. This viewpoint corresponds with Dewey's pragmatism, which posits that learning must be experienced and pertinent to societal demands (Adeleke & Omolara, 2019). In Nigeria, where young unemployment remains a chronic problem, an effective curriculum offers pupils the opportunity to develop marketable skills, diminishing reliance on official employment and fostering entrepreneurial endeavours (Okafor & Nwaneri, 2021). Functional education, therefore, emphasises imparting skills in sectors like as agriculture, information technology, and entrepreneurship, all of which have direct relevance to the Nigerian economy.

A functional curriculum fosters critical thinking, creativity, and flexibility, which are vital abilities in the continually expanding global economy. These abilities are especially critical in the technology-driven Fourth Industrial Revolution, where employment needs are always evolving owing to advancements in automation, artificial intelligence, and information technology (Agbo & Igwe, 2020). A curriculum that allows students to use their knowledge flexibly and innovatively is essential for cultivating self-sufficient people capable of contributing to technological advancement. This is particularly important for Nigeria, as the country attempts to cultivate a workforce capable of propelling its technological progress (Onyeike & Amadi, 2021).

A functional curriculum coincides with the objectives of lifelong learning, promoting the constant acquisition of new skills and information throughout one's life. Lifelong learning is especially significant in Nigeria, enabling people to adjust to changes in the labour market and economic environment. The conventional curriculum, mostly focused on test success, insufficiently equips students for continuous skill enhancement and adaptability. A functional approach promotes ongoing learning and enhancement, cultivating a workforce that is adaptable and sensitive to market requirements (Usman & Yakubu, 2016).

Moreover, functional education prioritises cooperation and teamwork, competencies vital in contemporary businesses that increasingly depend on team-oriented initiatives and problem-solving. Studies indicate that students participating in collaborative learning via a functional curriculum acquire technical skills while also enhancing their communication, leadership, and interpersonal abilities (Olaitan & Aliyu, 2019). These competencies are essential for self-sufficiency, as they empower people to collaborate efficiently, allocate resources judiciously, and spearhead activities that benefit their communities. In a varied and populous nation such as Nigeria, these competences may markedly improve social cohesion and economic productivity.

A major obstacle to the implementation of a functional curriculum in Nigeria is the lack of facilities and resources essential for practical learning. Numerous educational institutions are deficient in labs, workshops, and technological resources essential for a practical, skills-oriented curriculum (Ogunode & Adamu, 2020). Moreover, there exists a deficiency of qualified educators proficient in providing practical education. Nwagwu (2018) asserted that educators in Nigeria often lack the requisite expertise to successfully teach technical and vocational topics, hence compromising the objectives of functional education. Resolving these infrastructural and human resource difficulties is crucial for the effective execution of a viable program.

A functional curriculum encompasses disciplines such as STEM (Science, Technology, Engineering, and Mathematics), vocational training, and entrepreneurship. These topics are particularly relevant to Nigeria's developmental requirements, since they correspond with critical industries like agriculture, industry, and information technology (Okoye & Ojo, 2017). A functional curriculum that equips students with industry-relevant skills may facilitate economic diversification, reduce reliance on oil income, and promote sustainable economic development. A STEM-oriented curriculum may cultivate a workforce that supports local industries, while entrepreneurship education equips students to establish and run their own enterprises, so fostering self-sufficiency.

## **Nigerian Curriculum and its Shortcomings**

The Nigerian education system has undergone various transformations over the years, each aimed at aligning the curriculum with the nation's social, economic, and technological needs. Nigeria's formal education traces its roots to the colonial period when British missionaries established schools that primarily focused on religious and literary education. This early curriculum emphasized literacy, numeracy, and Christian religious studies, with minimal emphasis on technical or vocational training. Consequently, the colonial curriculum served the needs of the British administration, preparing students for clerical jobs rather than equipping them with skills for industrial or economic development. This legacy of a theory-based, non-functional curriculum set the tone for Nigeria's education system, a structure that would prove inadequate for the nation's evolving demands in the post-independence era.

After gaining independence in 1960, Nigeria recognized the need to develop an indigenous curriculum that could support national development. The government sought to design an education system that would address the skills gap in the workforce and reduce reliance on foreign-trained personnel. The 1969 National Curriculum Conference marked a critical turning point, where educators, policymakers, and stakeholders gathered to deliberate on transforming Nigeria's curriculum to include more technical, vocational, and science-oriented subjects (Federal Ministry of Education, 2014). This led to the formulation of the National Policy on Education in 1977, which emphasized self-reliance, practical skills, and nation-building. Although this policy represented a shift from the colonial curriculum, it struggled to achieve its goals due to various challenges, including poor implementation, lack of resources, and limited teacher training.

One of the primary shortcomings of the Nigerian curriculum has been its inadequate focus on practical skills. Historically, the curriculum has remained largely theoretical, focusing on examinations and rote learning rather than skills acquisition and application. This traditional model has led to a high rate of unemployment among graduates, who often lack the competencies required by the labor market (Adeyemi & Akinbola, 2020). For instance, the secondary school curriculum, which still centers on academic subjects, has not adequately prepared students for technical or vocational careers. As a result, the education system has continued to produce graduates who are ill-equipped for self-employment or entrepreneurship, thereby exacerbating the problem of youth unemployment in Nigeria.

Another significant shortcoming is the curriculum's limited alignment with Nigeria's socio-economic realities. Although the country has undergone substantial economic, technological, and demographic changes, the curriculum has struggled to keep pace. For example, as Nigeria's economy diversified into sectors such as information technology and agriculture, the curriculum did not evolve accordingly, leaving students without the skills to participate effectively in these industries (Olawale & Yusuf, 2021). In addition, subjects like entrepreneurship and digital literacy were only recently introduced into the curriculum, resulting in a mismatch between educational outcomes and labor market needs. This misalignment has hindered the country's efforts to foster self-reliance and economic growth through education.

Moreover, inadequate teacher preparation has impeded the effective delivery of the curriculum. Many teachers in Nigeria are trained in traditional, lecture-based methods and lack the skills to teach technical and vocational subjects effectively. As Okebukola (2015) points out, the absence of teacher training programs focused on functional and skills-based teaching methods has made it difficult for educators to implement a curriculum aimed at practical learning. Consequently, even when vocational subjects are included in the curriculum, they are often taught in a theoretical manner, further limiting students' ability to gain practical skills (Usman & Yakubu, 2016).

In addition, Nigeria's curriculum has suffered from poor funding and resource allocation. Schools often lack the infrastructure, tools, and facilities required to support hands-on learning, especially in rural and under-resourced areas. Laboratories, workshops, and technology equipment, essential for practical learning, are frequently unavailable, leaving students to learn technical subjects through lectures rather than practical experiences. This shortage of resources reflects broader issues within the education sector, where budget allocations are insufficient to meet the growing demand for a functional curriculum that emphasizes STEM (Science, Technology, Engineering, and Mathematics) education (Ibrahim & Musa, 2018). The absence of

such facilities has prevented students from acquiring relevant skills, particularly in fields like engineering, agriculture, and technology.

Furthermore, the Nigerian curriculum has been criticized for lacking cultural relevance and contextualization. While education should ideally incorporate elements of local culture, language, and indigenous knowledge, the Nigerian curriculum has often neglected these components, adhering instead to foreign models that do not reflect the unique needs and values of Nigerian society (Adeleke & Omolara, 2019). This lack of cultural relevance has contributed to the disconnection between students and their communities, as many students are taught content that feels removed from their daily experiences and societal challenges. For example, the neglect of indigenous knowledge in agriculture and environmental management means that students are often unaware of sustainable practices that have been effective in local contexts for generations.

The Nigerian curriculum has struggled with policy inconsistencies, which have hindered long-term educational reform. Changes in government and frequent policy shifts have led to instability in the education system, as each administration introduces new policies without adequately following through on existing reforms. This lack of continuity has created a fragmented curriculum framework that fails to build on previous policies. As a result, even promising initiatives aimed at implementing a functional curriculum are often abandoned midway, with each new policy cycle restarting the process of educational reform rather than building a cohesive, long-term strategy.

## **TECHNOLOGICAL DEVELOPMENT AND SELF-RELIANCE**

### **Role of Technological Development in Economic Growth**

Technological development is a powerful catalyst for economic growth. In a globalized economy, nations that lead in technological innovation tend to experience higher rates of growth, reduced poverty, and improved standards of living. In the context of Nigeria, the country's heavy reliance on oil as a primary source of revenue has made it vulnerable to global price fluctuations and external economic shocks. For Nigeria to achieve sustainable growth, there is an urgent need to shift focus toward technological advancement as a driver of economic diversification. The adoption of advanced technologies in agriculture, healthcare, education, manufacturing, and energy sectors can enhance productivity, reduce costs, and open up new market opportunities.

In recent years, Nigeria has seen an increase in the adoption of technology in sectors such as mobile banking, fintech, and agritech, which have become important contributors to economic growth. According to a report by the Nigerian Communications Commission (2020), the country's tech industry grew by over 15% annually, contributing significantly to the GDP. The rise of startups, particularly in Lagos, which has been dubbed "the Silicon Valley of Africa," reflects the increasing potential for technology-driven growth. However, for this progress to be sustained and expanded, it is critical to have a skilled workforce capable of understanding and applying cutting-edge technologies. This is where a functional curriculum comes into play, providing the necessary foundation for students to excel in technology-related fields.

## **The Role of a Functional Curriculum in Technological Development**

A functional curriculum is one that is relevant, responsive, and adaptable to the current and future needs of the labor market. In the case of technological development, a functional curriculum should emphasize Science, Technology, Engineering, and Mathematics (STEM) education, as well as foster practical, hands-on learning. STEM education has been recognized globally as a key pathway to technological innovation and economic competitiveness (Zhou & Zhang, 2020). In Nigeria, however, the education system has traditionally focused on theoretical knowledge, leaving students ill-prepared to apply their learning in real-world contexts. The gap between theoretical education and practical skills has hindered the country's progress toward becoming a technologically advanced nation.

Through the integration of more practical elements into the curriculum, such as coding, robotics, artificial intelligence, and biotechnology, students would be better equipped to contribute to technological advancements. Furthermore, the introduction of technology-focused vocational training programs can address the shortage of skilled labor in fields such as software development, electronics, and automation. A study by Akinmoladun and Olatunji (2019) highlights the importance of aligning educational programs with technological trends in order to produce graduates who are ready to meet the demands of a rapidly changing job market. For example, graduates trained in advanced technologies are more likely to be employable in industries like telecommunications, energy, and manufacturing, which are central to Nigeria's economic diversification agenda.

## **Self-Reliance and Economic Empowerment**

Self-reliance is a concept that emphasizes the ability of individuals to generate income, create employment, and contribute to national development without excessive dependence on government or external support. In the context of education, self-reliance can be promoted through entrepreneurship education, which empowers individuals to start and sustain businesses, thereby contributing to job creation and poverty reduction. A functional curriculum that includes entrepreneurship education as a core component can enable students to develop the skills needed to identify business opportunities, manage resources, and navigate the complexities of the modern business environment.

Entrepreneurship education provides students with the tools to become independent and self-sufficient, encouraging them to innovate and create solutions to societal problems. For Nigeria, which faces high levels of youth unemployment, entrepreneurship can offer an alternative pathway to economic prosperity. According to a report by the National Bureau of Statistics (2020), the youth unemployment rate in Nigeria stood at 33%, underscoring the urgent need for alternative solutions to job creation. Entrepreneurship education can help mitigate this crisis by equipping young people with the skills to start businesses, especially in emerging sectors like technology, agriculture, and renewable energy.

Furthermore, a functional curriculum can incorporate local economic realities and challenges into the learning process, allowing students to develop solutions tailored to their specific communities. For instance, students could engage in projects that address local issues, such as creating agricultural technologies that improve food production or developing mobile apps that provide access to essential services in rural areas.



## **Addressing Unemployment and Promoting Economic Stability**

The relationship between technological development, self-reliance, and unemployment is clear: by equipping the workforce with the skills needed to innovate, produce, and create, a functional curriculum can contribute to lowering unemployment rates. When individuals are trained in technological skills, they are more likely to secure employment in high-demand sectors, thus reducing the strain on the government to provide jobs. Additionally, the promotion of entrepreneurship through education empowers individuals to become job creators rather than job seekers, further alleviating unemployment.

Entrepreneurship education also enhances economic stability by fostering a culture of innovation and problem-solving. As individuals create businesses that solve local and national challenges, they contribute to the diversification of the economy, reducing the country's reliance on a few sectors like oil. For instance, Nigeria's booming tech industry, driven by entrepreneurs and skilled professionals, has contributed to the country's economic growth and resilience, even in the face of global economic challenges. According to the World Bank (2021), Nigeria's tech sector was one of the fastest-growing sectors in the country, demonstrating the potential of technology and entrepreneurship to drive economic diversification and self-reliance.

## **THE RELATIONSHIP BETWEEN FUNCTIONAL CURRICULUM AND TECHNOLOGICAL DEVELOPMENT**

### **Providing Students with Practical Competencies for Technology-Driven Sectors**

A primary purpose of a functional curriculum is to cultivate graduates who are both informed and adept at applying their knowledge in practical, real-world contexts. This is especially vital for technology-driven sectors, where practical skills, analytical reasoning, and creativity are required (Onyeike & Amadi, 2021). A curriculum that incorporates science, technology, engineering, and mathematics (STEM) disciplines, with practical abilities in information technology and digital literacy, guarantees that students acquire the competences required in contemporary sectors.

A functional curriculum in Nigeria may mitigate skill deficiencies in fields such as information technology, telecommunications, and engineering. Research indicates that integrating project-based learning, simulations, and technical training into the curriculum fosters a problem-solving attitude crucial for technological advancement (Okebukola & Kola, 2019). A functional curriculum prioritising practical skills above academic knowledge will directly facilitate Nigeria's economic and technical progress.

### **Promotion of Innovation and Entrepreneurship via Education**

Technological advancement is often propelled by creativity and entrepreneurship, and an effective curriculum may foster these qualities by promoting creative and independent thinking among students. Functional education fosters competencies such as creativity, critical thinking, and flexibility, which are essential for cultivating a workforce capable of adapting to and propelling technological advancements (Adeleke & Omolara, 2019). Integrating entrepreneurship education into the curriculum provides students with the information and skills necessary to establish and run enterprises, particularly technology startups. In nations with

elevated young unemployment, like Nigeria, cultivating entrepreneurial skills via education might stimulate self-employment and diminish reliance on conventional labour markets. A functional curriculum promotes student engagement in technology-driven entrepreneurship, facilitating the development of localised tech solutions that address specific community needs (Agbo & Igwe, 2020). This method fosters economic diversity and enhances technical growth by cultivating future innovators and corporate leaders.

### **Closing the Divide between Educational Standards and Industry Demands**

A functional curriculum links educational material with industry standards, helping students develop skills immediately transferable in the labour market. This connection is especially crucial in disciplines like ICT, robotics, and engineering, where the fast progression of technological innovation necessitates a perpetually revised curriculum. In Nigeria, a notable difficulty has been the disparity between the skills imparted at educational institutions and those demanded by employers, particularly in technical sectors. Through collaborations with industry stakeholders, educational institutions may create curriculum that include new technology, therefore closing the skills gap. Students in technology programs may engage in projects related to coding, software development, or hardware repair, which are vital competencies in Nigeria's expanding tech industry (Usman & Yakubu, 2016). This pragmatic strategy guarantees that graduates are prepared for employment, minimising the need for further training by businesses and expediting the nation's technical advancement.

### **Developing a Workforce Competent in Maintaining Technological Infrastructure**

A functional curriculum facilitates technology advancement by cultivating a workforce adept at managing and maintaining technical infrastructure. A significant barrier to technology advancement in underdeveloped nations is the scarcity of trained workers to sustain and enhance technical systems (Olawale & Yusuf, 2021). A functional curriculum, via practical and technical training, guarantees that students possess the skills necessary to operate and troubleshoot equipment in sectors such as telecommunications, energy, and manufacturing. Nigerian educational institutions that emphasise technical education and vocational training cultivate a workforce of trained labourers capable of supporting sectors that need specialised technical competence. A functioning curriculum facilitates the initial uptake of new technologies and guarantees their sustained use, hence promoting ongoing technological growth (Adebayo & Nwogu, 2017).

### **Promoting Digital Literacy and Technological Adoption**

Digital literacy is fundamental to effective education, equipping students to interact with technology in their everyday lives and professional endeavours. In a progressively digital society, a practical curriculum that incorporates digital competencies empowers students to use technology proficiently, hence enhancing technological adoption across all societal strata (Okafor & Nwaneri, 2021). Educational institutions prepare students for engagement in a technology-driven economy by imparting skills such as data analysis, digital communication, and internet navigation.

Furthermore, digital literacy among the populace may foster more knowledgeable and digitally engaged individuals capable of contributing to and benefiting from national technology projects. This participation significantly influences technical growth by fostering a culture that appreciates and pursues technological developments (Ogunode & Adamu, 2020).

### **Promoting Research and Development via Functional Education**

A functional curriculum also encourages research and development (R&D) by cultivating an exploratory learning methodology. Research and innovation are crucial catalysts of technological advancement, and a curriculum that promotes student involvement in research projects establishes the groundwork for scientific exploration and creativity (Obioma & Eze, 2019). Through the incorporation of research approaches and problem-solving initiatives into the curriculum, functional education will be able to prepare students with the competencies required for contributions to R&D in sectors such as agriculture, engineering, and medicine. Investment in research-oriented functional education in Nigeria may provide indigenous answers to critical issues in health, energy, and food security. A functional curriculum including agricultural technology may provide students with the expertise to create more effective farming methods, essential for food security and economic sustainability in the nation (Ogunniyi & Agbaje, 2020).

## **SELF-RELIANCE AND FUNCTIONAL EDUCATION**

### **The Role of Functional Education in Promoting Self-Reliance**

Functional education prepares individuals with hands-on skills and practical knowledge, which are essential for self-reliance. This type of education goes beyond theoretical learning, focusing on providing students with the tools they need to solve everyday problems and create economic value. By emphasizing skills in areas like agriculture, craftsmanship, entrepreneurship, and information technology, functional education can enable graduates to generate income independently rather than relying solely on formal employment (Adedoyin & Olaniyi, 2021). For instance, in Nigeria, a functional curriculum that includes vocational training has been shown to increase graduates' employability and ability to start small businesses, particularly in fields like agriculture and commerce (Okeke & Eme, 2015).

One of the key components of functional education is vocational training, which prepares students for specific careers by providing the skills needed to succeed in various trades. Vocational education allows students to learn practical skills such as plumbing, welding, and electrical work, which can be monetized immediately upon graduation. Studies have shown that vocational training can significantly contribute to self-reliance by reducing youth unemployment and enabling individuals to support themselves and their families (Eze & Onuoha, 2016). Furthermore, vocational education fosters a sense of self-worth and independence, as individuals are able to create their own jobs and contribute to their communities.

### **Entrepreneurship Education and Economic Independence**

Entrepreneurship education is a crucial element of functional education that supports self-reliance by encouraging individuals to pursue self-employment and business opportunities. Entrepreneurship training provides students with the skills necessary to identify market needs,

develop business ideas, manage resources, and operate successful enterprises. In a country like Nigeria, where unemployment is high, entrepreneurship education can serve as a powerful tool for empowering young people to establish their own businesses rather than relying on limited job opportunities (Okafor & Okeke, 2020). Entrepreneurship education not only enables individuals to become self-reliant but also stimulates economic growth by creating jobs and fostering innovation (Agboola & Adeniyi, 2021).

Incorporating entrepreneurship into the school curriculum encourages students to think creatively and take risks, which are critical skills for successful entrepreneurship. When learning teaches how to navigate business challenges, students gain confidence in their ability to make decisions and manage their resources effectively. Research has shown that students who receive entrepreneurship education are more likely to start their own businesses and pursue self-employment, contributing to a culture of economic independence (Odeyemo & Kolawole, 2018). For example, graduates who have acquired entrepreneurial skills in agriculture or small-scale manufacturing are more likely to start businesses in these fields, providing products and services that are essential to their local economies.

### **Reducing Dependency on Government and Foreign Aid**

Functional education fosters self-reliance by reducing dependency on government and foreign assistance. In many developing nations, including Nigeria, a significant portion of the population relies on government programs and foreign aid for financial support. Promoting skills that enable individuals to create their own livelihoods, functional education can reduce this dependency and promote a culture of self-sufficiency (Afolabi & Ajayi, 2019). As individuals become more economically independent, they are better positioned to contribute to the development of their communities and the economy as a whole.

Moreover, a self-reliant workforce driven by functional education can reduce brain drain, where educated individuals leave their country to seek better opportunities abroad. When individuals are empowered with the skills needed to succeed within their local environment, they are less likely to emigrate in search of better economic opportunities. This retention of skilled individuals not only supports national development but also reduces the reliance on foreign expertise to fill critical roles (Ademola & Olabisi, 2017). For Nigeria, retaining skilled workers through functional education can significantly contribute to building a strong, sustainable economy and reducing the need for foreign labor and technical assistance.

### **Preparing Graduates for the Informal Sector**

A large portion of the Nigerian economy operates within the informal sector, which includes small-scale businesses, street vendors, artisans, and traders. Functional education aligns well with the needs of the informal sector by equipping students with practical skills that can be applied in various small business ventures. Studies have shown that many young Nigerians find employment in the informal sector after graduation, as the formal job market is often saturated and highly competitive. Additionally, functional education provides individuals with basic financial literacy, enabling them to manage their finances, budget effectively, and save for the future. Financial literacy is an essential aspect of self-reliance, as it allows individuals to make informed financial decisions and avoid debt. When graduates are equipped with financial

management skills, they are better prepared to sustain their businesses in the informal sector, contributing to their long-term self-reliance and stability (Chukwu & Okonkwo, 2020).

### **Challenges and Opportunities for Functional Education in Nigeria**

While functional education holds great promise for fostering self-reliance, several challenges remain in its implementation in Nigeria. These challenges include inadequate funding, a lack of trained educators, and limited infrastructure to support hands-on learning (Alade & Ogunleye, 2019). Many schools lack the resources needed to establish vocational programs, which limits the opportunities for students to acquire practical skills. Additionally, the educational curriculum in Nigeria has historically been focused on theoretical knowledge rather than practical applications, making it challenging to shift towards a more functional approach (Adewumi & Adigun, 2016).

Despite these challenges, opportunities exist for improving the implementation of functional education. Public-private partnerships can play a crucial role in bridging the resource gap by investing in vocational training programs and providing technical expertise. Furthermore, international organizations can contribute to the development of functional education in Nigeria by supporting curriculum reforms and capacity-building initiatives for teachers (Aina & Olugbenga, 2019). With the right investment and support, functional education can become a powerful force for promoting self-reliance, economic development, and a more resilient Nigerian society.

### **CHALLENGES OF IMPLEMENTING A FUNCTIONAL CURRICULUM IN NIGERIA**

#### **Inadequate Funding**

One of the most significant challenges to implementing a functional curriculum in Nigeria is the lack of adequate funding. Education funding in Nigeria has historically been low, which directly affects the resources available for curriculum development, instructional materials, and facilities (Akinfolarin & Rufai, 2017). Implementing a functional curriculum requires investments in vocational training equipment, laboratories, technology, and learning resources that support practical skill acquisition. Unfortunately, most Nigerian schools lack the funds to provide these essential tools, limiting the potential for hands-on learning (Okeke & Anya, 2019). Without adequate financial resources, schools struggle to implement experiential learning activities, making it difficult to shift away from a predominantly theoretical curriculum.

#### **Infrastructure Deficiencies**

Related to funding challenges is the lack of adequate infrastructure necessary to support a functional curriculum. Many Nigerian schools lack facilities such as well-equipped laboratories, workshops, and vocational training centers that are essential for practical learning (Ogunyemi & Adeola, 2020). This is particularly problematic in rural areas, where schools often operate without basic amenities such as electricity and water, let alone specialized infrastructure. Additionally, the absence of technology and internet connectivity in many schools prevents the integration of digital literacy and ICT skills into the curriculum, which are crucial for

technological development (Eze & Nwankwo, 2018). Consequently, students miss out on hands-on experiences that would prepare them for technical fields.

### **Lack of Trained Educators**

The successful implementation of a functional curriculum requires skilled educators who can teach practical and vocational subjects effectively. However, there is a shortage of trained teachers in Nigeria who possess both theoretical knowledge and practical expertise in areas like technical education, information technology, and entrepreneurship (Onyeike & Amadi, 2021). Most teacher training programs in Nigeria still emphasize traditional, theoretical instruction rather than experiential learning methods. As a result, many teachers lack the skills needed to deliver a functional curriculum effectively. Furthermore, without ongoing professional development, teachers may struggle to keep up with industry advancements, which can lead to outdated curriculum content that does not meet the demands of modern employers (Afolabi & Ajayi, 2019).

### **Curriculum Misalignment with Industry Needs**

Another challenge is the misalignment between the curriculum and the skills demanded by industry. In Nigeria, the educational curriculum has often been criticized for not addressing the practical skills required by employers, particularly in technical and vocational fields (Okoye & Ofoegbu, 2018). A functional curriculum requires close collaboration between educational institutions and industry stakeholders to ensure that students are learning relevant skills. However, the lack of effective partnerships between these sectors means that graduates are often ill-prepared for the workforce, leading to high unemployment rates among youth. Industry stakeholders frequently report that Nigerian graduates lack skills in problem-solving, technical expertise, and digital literacy, which are essential for productivity in today's economy (Chukwu & Okoro, 2020).

### **Socio-Cultural Constraints**

Socio-cultural factors also present a significant barrier to the implementation of a functional curriculum. In Nigeria, there is a longstanding preference for white-collar jobs, and vocational or technical careers are often stigmatized (Aminu & Amodu, 2017). This cultural bias against vocational training discourages students from pursuing skills-based education, which is essential for self-reliance and economic empowerment. Many parents and students prioritize academic degrees over vocational training, viewing them as a more prestigious route to success. This mindset undermines efforts to implement a functional curriculum, as there is a limited demand for vocational programs. Additionally, young people may lack interest in acquiring practical skills, opting instead for conventional academic paths that are often poorly aligned with labor market demands.

### **Policy Inconsistencies and Lack of Political Will**

Policy inconsistency and a lack of political commitment further hinder the effective implementation of a functional curriculum in Nigeria. Over the years, there have been numerous

educational policies aimed at improving the relevance of the curriculum, but these policies are often inconsistently applied or abandoned due to changes in political leadership (Uche & Anayo, 2018). Moreover, there is limited accountability and monitoring to ensure that schools adhere to curriculum reforms. Without strong political will and consistent policy implementation, efforts to promote a functional curriculum remain ineffective. Education reforms require sustained government commitment, strategic planning, and support from relevant stakeholders, which are often lacking in the Nigerian context (Ojo & Egbujie, 2020).

### **Resistance to Change within the Educational System**

Resistance to change is another obstacle, as both educators and administrators may be reluctant to embrace a new curriculum that diverges from traditional teaching methods. A functional curriculum requires a shift from rote learning to experiential learning, which may be unfamiliar to educators who are accustomed to lecture-based instruction (Uche & Anayo, 2018). This resistance is often compounded by a lack of training on the benefits and methods of delivering a functional curriculum, as well as a shortage of incentives for educators who take on the additional responsibilities of practical instruction. Consequently, the resistance to change hinders the adoption of new teaching methodologies and maintains the status quo, limiting students' exposure to practical skills.

### **Inadequate Evaluation and Assessment Systems**

Implementing a functional curriculum also requires an assessment system that evaluates practical skills, yet Nigeria's examination-oriented system remains focused on theoretical knowledge. Current assessment models primarily rely on written exams, which do not effectively measure students' hands-on competencies and critical thinking abilities (Uche & Anayo, 2018). To fully implement a functional curriculum, Nigeria needs to adopt assessment methods that reflect students' practical skills, such as project-based assessments, internships, and skill-based tests. The lack of an appropriate evaluation system that values hands-on skills undermines the effectiveness of a functional curriculum and reinforces the focus on rote memorization.

## **IMPACT OF FUNCTIONAL CURRICULUM ON TECHNOLOGICAL SKILLS**

### **Enhancing Digital Literacy and ICT Skills**

One of the most direct impacts of a functional curriculum on technological skills is the enhancement of digital literacy and information and communication technology (ICT) skills among students. In a functional curriculum, digital literacy is integrated as a fundamental component, preparing students to interact with technology in meaningful ways. By including courses that cover basic to advanced computer skills, coding, data analysis, and digital tools, students gain familiarity with technology from an early age (Eze & Nwankwo, 2018). These foundational skills are essential in today's digital economy, where almost every field requires a certain level of proficiency with computers and digital applications.

Furthermore, as ICT becomes a more integral part of work and communication, equipping students with these skills also helps them keep pace with global technological advancements. For example, through practical courses in digital media, cybersecurity, and

network management, students learn how to utilize and secure digital resources. In Nigeria, where there is an increasing demand for digitally competent workers, a functional curriculum that prioritizes ICT training can be instrumental in building a workforce capable of meeting these demands (Akinmoladun & Olatunji, 2019).

### **Promoting Innovation and Creativity**

A functional curriculum also supports the development of technological skills by fostering innovation and creativity. Rather than limiting students to rote memorization and theoretical knowledge, a functional approach encourages them to experiment, create, and apply their knowledge to real-world problems.

Innovation is critical in Nigeria's quest to build a technology-based economy, and a functional curriculum can support this by providing students with opportunities to work with emerging technologies. Through project-based learning, students can explore areas like artificial intelligence (AI), machine learning, and mobile app development. This approach not only strengthens students' technological skills but also cultivates an entrepreneurial mindset, as they are encouraged to think of practical applications for their ideas.

### **Preparing Students for Technical Careers**

Incorporating technology-focused subjects into the curriculum also directly prepares students for careers in technical fields, addressing Nigeria's growing demand for skilled professionals in areas like engineering, information technology, and manufacturing. A functional curriculum that emphasizes practical skill acquisition helps students gain hands-on experience in operating technical equipment, understanding software applications, and troubleshooting technological issues.

Moreover, vocational and technical training as part of a functional curriculum prepares students for the workforce by teaching them specific skills needed in technology-related jobs. This is particularly beneficial in Nigeria, where industries such as telecommunications, oil and gas, and ICT are among the most prominent employers. Students who are trained in fields like computer engineering, telecommunications, and software development are more likely to find employment opportunities in these sectors, reducing the skills mismatch that often leads to unemployment. This alignment of curriculum with industry needs can make Nigeria's workforce more competitive globally and contribute to the country's economic growth (Afolabi, A. M., & Ajayi, 2019).

### **Encouraging Problem-Solving and Critical Thinking**

A functional curriculum that incorporates technology-oriented learning also strengthens students' problem-solving and critical thinking skills, which are essential for navigating complex technological environments. Rather than teaching students to memorize facts, a functional curriculum emphasizes understanding processes, diagnosing issues, and applying knowledge to solve problems. For example, students might learn coding not only by writing lines of code but by debugging errors and optimizing their programs, which requires a deep understanding of the underlying technology (Okoye & Obiechina, 2019).



Problem-solving and critical thinking are particularly valuable in technology careers, where issues are often complex and require creative solutions. Students trained in these skills can adapt to rapidly evolving technologies and are better equipped to contribute to technological advancements in fields such as software development, data analysis, and network administration. By nurturing these competencies, a functional curriculum prepares students to excel in technology-driven roles and enables them to adapt to new challenges as the tech landscape evolves.

### **Supporting Entrepreneurship in Technology**

In addition to preparing students for employment, a functional curriculum that emphasizes technological skills also supports entrepreneurship in technology. Functional education enables students to start their own businesses when students are taught how to create, manage, and scale technology-based products and services. This is crucial in Nigeria, where youth unemployment remains high, and entrepreneurship is a vital alternative to traditional employment (Adeyinka & Oluwafemi, 2021). With skills in areas like mobile app development, web design, and digital marketing, students can leverage technology to create startups that cater to local and global markets.

Functional education encourages students to view technology as a tool for innovation and economic empowerment. Additionally, the curriculum can include entrepreneurship training that covers business management, marketing strategies, and financial planning, which are critical for successful entrepreneurship. Through this approach, a functional curriculum helps create a generation of tech-savvy entrepreneurs who can drive economic development and job creation in Nigeria.

### **Bridging the Global Digital Divide**

Implementing a functional curriculum focused on technology also helps bridge the global digital divide, enabling Nigerian students to compete globally. Many developing countries lag in digital literacy and technological adoption, which can limit economic progress and create disparities in access to information and resources. As students develop technological skills through a functional curriculum, they gain the ability to participate in digital platforms, access global markets, and collaborate with international partners. This global integration is essential for Nigeria's economic development, as it opens up new opportunities in industries such as e-commerce, software development, and digital marketing. Moreover, as Nigeria's tech sector grows, students with these skills will be able to contribute to addressing the digital divide domestically by creating solutions that make technology more accessible to all Nigerians.

## **ROLE OF FUNCTIONAL CURRICULUM IN PROMOTING SELF-RELIANCE**

### **Fostering Entrepreneurial Mindsets**

One of the primary ways a functional curriculum promotes self-reliance is through the cultivation of entrepreneurial mindsets. Traditional curricula often focus on preparing students for white-collar jobs, which are increasingly scarce in Nigeria. However, a functional curriculum emphasizes entrepreneurship, encouraging students to think innovatively, identify gaps in the

market, and develop businesses that provide goods or services (Adebayo & Adedoyin, 2016). Entrepreneurship training equips students with skills such as business planning, market analysis, financial literacy, and marketing, which are essential for starting and sustaining a business.

Functional curriculum encourages students to view self-employment as a viable career option. As young people become skilled in identifying business opportunities and managing enterprises, they can contribute to job creation and economic growth. In Nigeria, where the economy depends significantly on small and medium-sized enterprises (SMEs), entrepreneurship-driven self-reliance is essential for sustainable development (Ogundele & Olajide, 2017). Graduates who leave school with an entrepreneurial skillset are better prepared to enter the workforce independently, reducing their dependence on limited formal employment opportunities.

### **Developing Vocational and Technical Skills**

Vocational and technical skills training are key component of a functional curriculum that directly supports self-reliance. Unlike general academic education, vocational training equips students with skills that are immediately applicable in various trades and industries, such as carpentry, plumbing, mechanics, tailoring, and ICT. In Nigeria, where formal employment opportunities are limited, possessing these skills allows individuals to engage in income-generating activities without waiting for government or corporate employment (Eze & Onuoha, 2016).

Through hands-on experience and industry-based training, students gain practical expertise that can lead to direct employment or self-employment. For instance, technical training in fields like automotive repair, welding, or computer programming not only opens up job opportunities but also enables individuals to start small businesses in these areas. Furthermore, vocational education addresses the skills gap in Nigeria's workforce by preparing graduates who can contribute to local industries and reduce reliance on foreign expertise (Onwuka & Ifediora, 2020).

### **Cultivating Problem-Solving and Critical Thinking Skills**

A functional curriculum also emphasizes problem-solving and critical thinking skills, which are essential for self-reliance. In a rapidly changing economy, individuals need to be able to adapt to new challenges, find innovative solutions to problems, and work autonomously. Traditional curricula often focus on rote memorization, which does not encourage students to think independently or tackle real-world issues. In contrast, a functional curriculum trains students to analyze situations critically, assess multiple options, and develop practical solutions to problems (Okoye & Obiechina, 2019).

For example, in agricultural education, students may learn to apply scientific knowledge to increase crop yields, conserve resources, or develop sustainable farming practices. This not only enhances their problem-solving skills but also enables them to apply these solutions to local agricultural challenges, potentially creating food security and income opportunities. Problem-solving skills enable individuals to handle the complexities of entrepreneurship and self-employment, as they are equipped to navigate challenges that arise in running a business.

## **Preparing for Digital and Technological Self-Sufficiency**

In today's digital age, self-reliance also involves the ability to use and adapt to new technologies. A functional curriculum that includes digital literacy and technological training prepares students for self-sufficiency in a technology-driven economy. Courses in ICT, coding, data management, and other digital skills enable students to access a wider range of economic opportunities, including freelance work, remote employment, and tech-based entrepreneurship (Adeyemi & Akinbola, 2020).

For instance, with skills in web development or digital marketing, individuals can offer their services to clients globally, thereby increasing their income potential. Additionally, technological literacy allows individuals to leverage digital tools for managing businesses, from bookkeeping and customer service to online sales and marketing. In Nigeria, where the digital economy is rapidly growing, possessing technological skills enhances self-reliance by enabling individuals to work independently and participate in the global economy. This digital self-sufficiency is especially valuable in rural areas, where traditional job opportunities may be scarce but digital platforms can provide alternative income sources.

## **Building Life Skills for Sustainable Livelihoods**

Life skills such as financial literacy, communication, time management, and resource management are integral to a functional curriculum and are essential for self-reliance. Unlike academic knowledge, these skills directly influence an individual's ability to manage their finances, plan for the future, and navigate the challenges of self-employment (Okafor & Nwachukwu, 2018). Financial literacy, for example, empowers students to budget effectively, save, and invest, while resource management skills enable them to use resources efficiently, which is crucial for sustaining a business or livelihood.

Furthermore, communication skills allow individuals to negotiate, collaborate, and network, which are important for building client relationships and accessing markets. Time management and organizational skills help individuals work efficiently, ensuring they meet deadlines and fulfill commitments. These life skills are especially valuable for self-employed individuals, who must manage multiple aspects of their work independently.

## **Reducing Youth Unemployment and Socioeconomic Dependency**

The role of a functional curriculum in promoting self-reliance is especially critical in addressing Nigeria's high youth unemployment rate. With self-sustaining skills, young people can enter the workforce with confidence and pursue independent careers, reducing socioeconomic dependency (Oladipo & Adebayo, 2019). Self-reliance reduces the pressure on government resources and allows young people to contribute productively to the economy. The emphasis on self-reliance is essential for Nigeria's economic stability, as it creates a population that is less vulnerable to unemployment and more capable of driving local and national development.

## **CONCLUSION**

This study has explored the significance of a functional curriculum in driving technological development and fostering self-reliance in Nigeria. It is evident that for Nigeria to transition

from its current economic challenges towards a more sustainable and diversified economy, the education system must align more closely with the demands of a technology-driven global economy. A functional curriculum that incorporates STEM education, vocational training, and entrepreneurship is essential in equipping students with the skills and knowledge needed to meet the evolving needs of the labor market.

Technological development is an important factor in economic growth and competitiveness, and a functional curriculum can serve as a critical pathway for Nigeria to harness the potential of its youth in this regard. Furthermore, the promotion of self-reliance through entrepreneurship education can empower individuals to create their own job opportunities, reducing reliance on the government for employment and contributing to the overall stability of the economy.

However, the successful implementation of a functional curriculum in Nigeria requires overcoming several challenges, including inadequate funding, a shortage of trained teachers, insufficient infrastructure, and resistance to change. To address these barriers, comprehensive policy reforms, increased investment in education, and strong industry partnerships are necessary. Moreover, there must be a shift in societal attitudes towards vocational and technical education, recognizing the immense value that practical, skills-based training can offer in preparing students for future challenges. Thus, the integration of a functional curriculum is not just a theoretical ideal but a practical necessity for Nigeria's development.

## **Suggestions**

- Government should allocate more resources to the education sector, focusing on infrastructure, teacher training, and the development of STEM and vocational education and enforce policies that encourage the integration of technology and entrepreneurship education across all levels of education.
- Educational Institutions should update the curriculum to emphasize STEM education, coding, robotics, and entrepreneurship training that aligns with market demands and promote vocational education: Offer more vocational and technical training programs to equip students with industry-specific skills.
- Teachers and Educators should participate in continuous training programs to stay updated with the latest technological advancements and teaching methods and adopt innovative teaching methods: Incorporate active learning strategies, project-based learning, and hands-on experiences to engage students and build practical skills..
- Private Sector (Industry and Businesses) should invest in educational programs, provide scholarships, internships, and sponsorships for students pursuing STEM and technical courses and collaborate with universities: Partner with universities and technical institutions to shape the curriculum based on the skills needed in the industry.
- Students should take advantage of extra-curricular activities, internships, and online courses to develop practical skills in technology and entrepreneurship.

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