



REPOSITIONING CURRICULUM EDUCATION FOR GLOBAL COMPETITIVENESS IN A DIGITAL WORLD

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Abstract

The rapid advancement of digital technologies and the emergence of the Fourth Industrial Revolution (4IR) have fundamentally transformed global economies, societies, and education systems. However, Nigeria's education sector continues to lag behind in adapting its curriculum to meet the demands of an increasingly digital and competitive global environment. This paper examines the imperative of repositioning curriculum education in Nigeria to foster global competitiveness in a digital world. It explores the conceptual foundations of the digital revolution and global education, highlighting the integration of basic, intermediate, and advanced digital skills as essential components of curriculum reform. The study identifies key justifications for curriculum repositioning, including accelerated technological change, evolving labor market demands, automation, and the widening skills gap. It further discusses the major challenges confronting curriculum development, such as inadequate digital infrastructure, limited access to technology, poor foundational skills, shortage of trained teachers, and insufficient learning resources. Despite these constraints, significant opportunities exist in leveraging technology for interactive learning, promoting project-based learning, fostering global collaboration, and developing 21st-century competencies. The paper concludes that a comprehensive, adaptive, and inclusive curriculum reform supported by strategic investment in infrastructure, teacher training, and digital capacity building is essential for equipping Nigerian learners with the competencies required to thrive in the global digital economy.

Keywords: Curriculum Education, Global Competitiveness & Digital World

Introduction

Many African countries including Nigeria have leapfrogged into the mediated world of smartphones and apps without passing through the stage of wired telephone use. Through smartphone technology, the internet is more easily and flexibly accessible to more and more Nigerians. Global service providers

of digital technologies stretch their business interests into formerly remote and difficult to access markets such as Nigeria. Given the political, societal and economic impact of the digital revolution in the northern hemisphere, the opportunities and challenges emerging around the increasing implementation of Information and



Communication Technology (I.C.T) in the African education system should be explored and discussed. On the one hand, Bai, Pan, Hirumi, and Kebritchi, (2018) note that digital technology perse has been criticized as a form of cultural imperialism because implementing I.C.T in Africa (created predominantly in Western societies) implicitly imposes non-Nigeria cultural codes, norms and standards such as copyright and English as the dominant language.

On the other hand, I.C.T bear the potential to encourage Nigerians to actively engage in expressing their points of view in cultural production rather than copying international codes and standards. In the view of Udemmm (2018), as technological change continues to accelerate, the digital economy is rapidly permeating the whole of the world knowledge economy, making digital skills key for almost everyone. The Fourth Industrial Revolution (4IR) characterized by the fusion of the digital, biological, and physical worlds, as well as the growing utilization of new technologies such as artificial intelligence, clouds computing, robotics, 3D printing, the internet of things, and advanced wireless technologies, among others—has ushered in a new era of educational expansion with monumental socioeconomic consequences for Africa. However, Africa has been left behind during the past industrial revolutions.

The scenario depicted above seems to be different in Nigeria. Debjani (2018) notes that so far, it does not appear that Africa has yet claimed the 21st century, as it still lags behind in several indicators essential for a successful digital revolution. Improvements in Africa's I.C.T sector have been largely driven by expanding mobile digital financial services. The region had a large chunk of the global mobile lines in 2018 and will see the fastest growth in mobile line technology by

2025. But artificial intelligence (AI) and block chain are also attracting interest in Africa, as they have the potential to successfully address educational, social and economic challenges there. Interestingly, there are so many other areas in which 4IR technology can be transformational.

Sow (2017) reflects the results of an initiative of the World Economic Forum, which globally assesses education systems. Regarding mathematics and science education, essential for many jobs in the digital economy, Nigeria ranked 139 out of 151 countries, receiving the lowest global score. I.C.T solutions for the support of students have been successfully launched in recent years in many first-world economies, but, unfortunately, students in Nigeria still struggle to find solutions catering for the multi-lingual and multi-cultural challenges in I.C.T. The innovative I.C.T platforms will help to match Nigeria students in need of support with relevantly educated and experienced senior student tutors. Nigeria students from various backgrounds will therefore be supported in reaching their academic goals and finding jobs that reflect their talents which can be accentuated by the digitization prowess.

The last two decades have experienced the explosive global growth of powerful digital technologies that have invaded all parts of the human experience, with profound implications for citizens, societies, economies and science. Bojanova (2020), reports that this digital revolution and technological capacities that generate its dynamic, form the bedrock on which the globally pervasive fourth industrial revolution (4IR) is built, disrupting existing norms and unleashing an unprecedented new era of innovation. Education systems in Africa, as worldwide, must adapt their working practices to these challenges, create



knowledge that can be drawn upon by public and private sectors, and develop individuals with the high-level skills and competencies to develop the entrepreneurial agents that all dynamic societies need.

Conceptual Definitions

Digital Revolution

Digital revolution as a relatively novel technological discourse may not be very strange to many people in this computer age. According to Krauß (2018), the Digital Revolution (also known as the Fourth Industrial Revolution) is the shift from mechanical and analogue electronic technology to digital electronics which began in the latter half of the 20th century, with the adoption and proliferation of digital computers and digital record-keeping, that continues to the present day. Implicitly, the term also refers to the sweeping changes brought about by digital computing and communication technology during this period. Central to this revolution is the mass production and widespread use of digital logic, MOSFETs (MOS transistors), and integrated circuit (IC) chips, and their derived technologies, including computers, microprocessors, digital cellular phones, and the Internet. These technological innovations have transformed traditional production and business techniques.

Educational Curriculum in the Global Era

The Educational curriculum is not just a list of subjects (like "Math," "History," "Science"). It is an entire **framework** or **blueprint** designed by educational experts (teachers, government bodies, university professors) that dictates the educational journey. Education is an approach to geographical, cultural and political boundaries (Scoffham, 2018). It is an attempt to integrate global values, cross-cultural understanding, and perspectives that support a broader understanding of the challenges and

opportunities in a global context. The goal of global education is to prepare young people to become global citizens who are knowledgeable, open-minded and able to contribute to solving global problems (Gibson et al., 2018). It helps students to develop a deeper understanding of the inter connectivity of the world and their responsibilities as global citizens in addressing global challenges and opportunities. The characteristics of global education are firstly openness and inclusiveness. Educational Curriculum emphasizes inclusion, taking into account the diversity of cultures, languages and values around the world (Vulliamy & Webb, 2020). It promotes diversity and appreciation of differences as a source of wealth.

Educational curriculum incorporates a global dimension in its curriculum. This includes studying global issues such as peace, sustainability, human rights, as well as understanding different cultural perspectives. It focuses on developing skills relevant to the global era, such as critical thinking, creativity, cross-cultural communication skills, and the ability to adapt and work in diverse environments. Educational Curriculum uses technology to facilitate access to global educational resources (Hicks, 2021), connect students and educators from around the world, and enable collaborative learning across borders (Marshall, 2016). Educational Curriculum teaches students to understand and address global challenges such as climate change, poverty, inequality, conflict and other global issues.

There are several previous research opinions regarding curriculum management. The first research is according to Ansori, (2021), with the research title Madrasah Curriculum Development in Islamic Boarding Schools. The results of his research stated that the



first curriculum at Madrasah Aliyah Al-Hikmah Sumobito was an integrity curriculum, meaning a combination of K-13 with the Islamic boarding school curriculum. Both forms of curriculum development at MA Al-Hikmah Sumobito Madrasah Aliyah Al-Hikmah Sumobito have implemented K-13 maximally, implemented credits, met Content Standards and S.K.L. The third impact of curriculum development is that students have scientific integrity, science and technology and IMTAQ. The second research is according to Ramadhan et al, (2021), with the research title Islamic Education Curriculum Development in the New Normal Era. The results of his research state that there are two important component elements in the implementation of learning process activities; namely, students and educators must be given training related to technological media to know the direction of learning in order to avoid mistakes that will become problems. The third research according to Hasbi & Mahmudah, (2020), with the research title development of an enterprise based school curriculum. The results of his research stated that first learning for entrepreneurship-based curriculum begins by determining the curriculum structure that will become planning, after the formation of the structure, the concept of structure which consists of the background, objectives, scope, competency standards, and basic competencies needed is considered. The implementation of the entrepreneurship-based curriculum must regulate the stages in each class of students by the curriculum documents that have been prepared, each learning process is always integrated with aspects of entrepreneurship and some that produce products as learning outcomes. Evaluation is carried out based on school quality objectives and taking into account the dimensions of the program and implementation.

Challenges and Opportunities in the Era of Global Education. The results showed that curriculum development management requires a more adaptive and inclusive approach, considering global skills needs, technology integration, and active participation of all educational stakeholders. Opportunities were identified in the ability to increase access to global education through technology, curriculum integration relevant to future needs, and cross-border collaboration in developing a holistic curriculum.

Areas of Digitization

According to Heywang and Zaininger, (2018), the following are the areas of digitization which provides necessary skills for survival.

Basic Skills: Basic Digital Skills are “entry-level functional skills required to make rudimentary use of digital devices and applications. With basic digital skills, users are typically able to operate devices like computers and smartphones, access and store information from online resources, and set up online accounts and profiles. Ability to access and use digital technologies to perform basic tasks such as: Functional use of digital devices, online communication via emails and finding, managing and storing digital information and content.

Intermediate Digital Skills: Intermediate digital skills enable individuals to use digital tools for more significant task-oriented purposes. Intermediate skills are the skills that enable an individual to make substantive and beneficial use of online applications and services, while Yamakin (2019) defines them as a set of generic information and communication technology skills that can be utilized to complete tasks. They are often required for professional growth and are applicable to a range of job profile requirements. Ability to use technology to perform work-related tasks such as using



professional software for presentations, analytics, accounting, project management, digital marketing, social media analytics and web design as well as graphic design

Advanced Digital Skills: Advanced Digital Skills allow people to use technology in Transformative ways. UNESCO defines these as “the group of skills that form the basis of specialist [information and communication technology] occupations and professions.” These occupations include, but are not limited to, computer programmers, artificial intelligence experts, and data scientists. Ability to perform specialist tasks in professions in the information and communication technology industry such as computer language programming, cloud computing, network management, artificial intelligence, data science, big data analytics, Cyber security and web development as well as search engine development.

Justification for Repositioning the Curriculum in Nigeria

Owing to the global impact of digitization, there is a dire need for rethinking the African educational curriculum so as to catch with the rapid pace development occasioned by the fourth industrial revolution brought about by digitization.

First and foremost, the pace of technological change is faster than ever. It took ten years for Thomas Newcomen to improve his engine before he showed it to the world in 1712 and its impact on the hand industries was not felt for another sixty years. Heywang & Zaininger (2018) observed that today change can come in ten months, ten weeks and even ten days – a three year old iPhone is obsolete. The rate of change in education is also accelerating. It has been estimated that nearly 50% of subject knowledge acquired during the first year of a four year technical degree is outdated by the time the student graduate.

Again, the agents of the Digital Revolution are proliferating. According to cthe list is long, and already includes artificial intelligence (AI); Big Data; mobile internet; cloud technology; robots in industry and the home; the internet of things; driver less cars, lorries and taxis; drones; 3D printers; nanotechnology; virtual reality, software-based digital therapies and machine learning. The implication is that by next year – maybe next month – the list will be longer still.

Furthermore, millions of people across the globe have access to huge databases and so experimentation and innovation are not only made in research centers. Significant changes can be made by talented individuals in their homes, offices and factories. Yamakin (2019) notes that the ability of small teams of people to devise new uses, new products and new services has never been greater in the world’s history than now. In the same vein, very large investments, amounting to billions of dollars, are being made by companies in Europe, Asia and America to develop and implement these agents of change. There is no shortage of capital for this industrial revolution, and one consequence will be a massive reduction in the need for labor.

Similarly, a transition in the global economy is underway that will disrupt the landscape for jobs and work. According to Bai, Pan, Hirumi, and Kebritchi (2018), about 65 percent of children entering primary school today, according to one estimate, will end up working in a job that doesn’t yet exist. The World Bank Group’s Human Capital Project emphasizes the need for economies to invest in human capital particularly digital skills or risk falling behind in the rapidly changing landscape for jobs and skills. Automation is challenging the traditional boundaries of firms and expanding global supply chains, which may enable rural clusters to emerge that connect small and medium-sized



enterprises to opportunities worldwide. Online platforms are enabling entirely new industries and redefining interactions with customers and employees. Automation is changing the demand for labor as technological advancement makes it possible for machines to do the jobs once performed by people.

It is unarguable that, digitization makes learning new skills imperative. Different skill sets are needed for the future, with sociol-behavioral skills and digital skills the most critical for success. Employers anticipate more than 40 percent of skills required for the workforce will change before 2022, with more than half of employees needing to learn different or more advanced skills. This will include shifts in the types of skills valued and the emergence of new skills sets, as well as a greater focus on existing skills sets that increase in importance.

Focus of Educational Curriculum Change for the Incorporation of Digital Revolution

The focus of African educational curriculum should be its reinvigoration to incorporate digitization to fast track educational development and be in line with global technological advancements. The aims of inclusion of digital knowledge into African education as:

- a) to adopt common policies for access and use of data;
- b) to create data repositories, as well as research data management and software services, to enable scientists and other stakeholders to utilize modern data resources in innovative and creative ways;
- c) to improve infrastructure and communication networks, together with high performance computing centers and cloud computing capacities that enable stakeholders to

undertake state of the art data analyses;

- d) to improve the circulation of educational knowledge through open access publishing that serves Africa's needs, best done by working in collaboration with the international scientific community, for which the current dysfunctional model of scientific publishing is a major concern;
- e) to create programs of research on major issues of specific relevance for Africa that will drive the use of these infrastructures and stimulate scientists and other stakeholders to create economic and societal benefits;
- f) f) to create state-of-the-art capacity in artificial intelligence, particularly in machine learning, in ways that are able to inspire and support data-intensive science and innovation;
- g) to develop the individual skills and competencies required to progress data-intensive science and to realize its potential for socioeconomic benefit, Yusuf (2020)

Challenges and Opportunities in Curriculum Development for Global Competitiveness in a Digital World

Challenges in curriculum development. First, rapid changes in the digital era. Technology continues to evolve rapidly. The main challenge is to ensure that the curriculum keeps up with technological developments so that students are prepared for an increasingly connected and digitalized world (Edwards, 2017). Second is the skills gap. Another challenge is the gap between the skills taught and the skills needed in the real world. The curriculum must be able to prepare students with skills that are relevant and in line with the needs of the job market. Third, student diversity. The diverse needs



and backgrounds of students are a challenge. Curriculum development that can accommodate the needs of students from different cultures, backgrounds and ability levels is important. Fourth, proper evaluation. Evaluating the effectiveness of the curriculum is a challenge (Zinser, 2018). Finding a comprehensive evaluation method to measure student achievement, responses to the curriculum, and the relevance of the curriculum to educational goals is important.

In addition to the challenges that arise in developing the curriculum, of course there are also great opportunities that can be obtained for the world of education in the current era. Opportunities in curriculum development can be in the form of technology as a learning tool (Heitmann, 2016). Technology provides great opportunities in curriculum development. By utilizing digital tools, the curriculum can be presented in a more interesting and interactive way.

Educational curriculum opens the door for collaboration between educational institutions from different countries. This provides an opportunity to integrate global perspectives into the curriculum, enriching students' learning experiences. Fourth, 21st century skills. The curriculum can focus on developing 21st century skills such as critical thinking, creativity, communication skills and collaboration, which are important aspects in preparing students for the future. In facing these challenges and capitalizing on these opportunities, curriculum development requires an approach that is flexible, responsive to change, and continuously dynamic (Boranbayev et al., 2021). Adapting the curriculum to the needs of students and the needs of the future is key in creating relevant and effective education in a changing era. While, the curriculum development in a

globalized era has a lot of potential, some challenges need to be overcome (Guerin, 2018). One of them is the digital divide that affects students' technology access and skills. In addition, creating a curriculum that embraces diversity without compromising local needs is also a challenge (Alammery et al., 2014). In response to global dynamics, curriculum management in the global era needs to continue to evolve to ensure that education can prepare students to become open-minded, adaptive and competitive global citizens in an increasingly connected global context.

The following are the other areas in the inclusion of digitization in the African educational system.

i. Limited access to digitally shared information: The digital divide describes “unequal patterns of material access to, usage capabilities of, benefits from computer-based information and communication technologies that are caused by society. It is still more accentuated in African countries as they lack a broad access to information distribution systems.

New “digital” practices are also onerous, including provision of IT infrastructure, policies, incentives, methods and standards for data sharing, security against malign interventions, policing of ethical standards, and systems and software needed by high-level analytic and AI procedures; such that no individual and few organizations or states in Africa could hope to provide them alone.

ii. Poor development of foundational skills: skills acquired early in life to cement the foundation for learning that occurs into adulthood; skills beget skills. The provision of such skills to learners is a position that Nigeria education is grossly lacking.

iii. Unavailability and quality of resources in the education system:

This include teacher training, ongoing support and professional development, the resources teachers can access, and the materials students use to learn—are collectively referred to as “structured pedagogy.” Educational success rests on the ability to supply classrooms with high quality teachers and learning resources. Unfortunately for the African education, this ability is in short supply as government seems unconcerned about the quality of education provided to the citizenry.

iv. Short supply of trained teachers:

Teachers have an outsized influence on education outcomes. However, Africa struggles to source teachers who meet even minimum teaching standards, and qualified candidates are in short supply. Africa is the only region globally where student-teacher ratios in primary schools have worsened since 1970. This is a minus for digitization.

v. Shortage of Quality Learning Resources:

Many students in Africa lack access to basic learning materials. The current pupil-to-textbook ratio is about 20:1 with a target of 1:1. Digital skills improvement relies on students’ access to both these basic and additional technology-based learning materials which are unavoidably inadequate in Africa (Abraham, 2018).

Conclusion

It is unarguably true that the Nigeria education system is lagging behind in catching up with the ever metamorphosing technological and educational scenario as a result of low level of digitization in the educational system. This calls for concerted efforts to re-engineer Nigerian educational

curriculum so that recipients of the educational services will be adequately groomed to compete favorably in the fast changing digital world.

Recommendations

To achieve full digitization of the Nigerian educational curriculum, the following recommendations are made to be put in place by the management of educational institutions as well as other agencies to facilitate digitization of Nigerian education:

1. Nigerian government should synergize with management of educational institutions and embark on rapid provision of digital infrastructure in the educational system.
2. At the institutional management, national and international level in Nigeria, there should be scaling up the effort to develop well-managed, integrated digital services and open, sharing practices in the educational system.
3. Non-governmental organizations can act as powerful and persuasive collective force in unity with the management of educational institutions in developing an Nigerian open education area with a platform of potential synergies with the African Continental at large.
4. The management of educational institutions should encourage the adoption of I.C.T by businesses and S.M.E in particular, with a focus on key sectors such as healthcare, transportation and education.
5. Management of educational institutions should alter educator training—Rather than teachers distilling information to students that they then memorize, teachers should be trained to become guides to help students facilitate their own learning



and lines of inquiry through digital infrastructure.

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