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Navigating Curriculum Challenges in the Digital Era: Strategies and Solutions

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Abstract: *Implementing a curriculum is a time-consuming process that involves active participation from key players in the education sector. The curriculum comprises all formal and informal learning events that a student participates in while at school. However, the process of providing the curriculum is not always easy. This article investigates the concept of curriculum in the digital age, as well as the challenges encountered in implementing basic education curriculum across input, process, and output dimensions. It dives into the use of multimedia technology in curriculum delivery, particularly in the digital age and considers the future of teaching and learning using digital tools such as e-portfolios, flipped classrooms, personal learning networks, and virtual learning environments. The study identifies associated hazards and recommends remedies, such as proper funding, teacher training, and the availability of learning tools, notably digital technologies.*

Keywords: *Curriculum, Digital era, Strategies, and challenges*

Introduction

The essential education curriculum proposes substantial reforms for pre-primary, primary, secondary, and inclusive education. It is based on a nine-year Basic Education Curriculum designed to provide young Nigerians with critical practical knowledge and skills This strategy is based on the premise that education remains the most powerful catalyst for positive change and national progress (Federal Republic of Education,2008).

Education is both a social activity and a conduit for gaining the relevant knowledge, abilities, and adaptable attitudes required for thriving in our rapidly changing technological context, particularly in the digital age.

In the twenty-first century, technological improvements have considerably increased global access to basic functional education and skills, especially in Nigeria. The indisputable truth is that enhanced quality of life, adherence to the rule of law, protection of human rights, and peaceful cohabitation within communities and nations are all dependent on the quantity and quality of education that puts people on the correct track (Federal Ministry of Education,2008). It is critical to acknowledge that a lack of essential information leads to ignorance and superficial understanding, which can be even more harmful than pure ignorance. As a result, pursuing all possible routes for providing high-quality education becomes critical. Achieving this goal requires effective and successful use of teaching tools and approaches, especially those available in multimedia learning programs

Multimedia technology combines many media forms, video, sound, graphics, and animation—in an educational setting, resulting in a powerful and innovative tool. These media provide a foundation for digitizing and digitalizing education. According to Asthana (2008), the world in which we live is constantly changing, and the field of education has accelerated in recent years and appears to be more promising and set for continuing increase with time.

Teachers primarily need access to learning tools that may help students develop concepts in a number of ways to fit their specific learning needs. The advancement of multimedia technology for learning, particularly in the digital age, has opened new avenues for learning in classrooms and at home. This study addresses basic education curriculum difficulties and potential in the digital age against this backdrop. As a result, the purpose of this paper is to investigate:

- Definition of curriculum
- Concept of digital age
- Basic education curriculum
- Issues basic education curriculum in the digital age
- Prospects of teaching basic education curriculum in the digital age
- Suggestions on the way forward

Curriculum Essentials

A curriculum is a structured or informal educational program that students are expected to complete or go through. Kelly (2004) defines curriculum as an educational institution's entire program. This implies that curriculum encompasses all of the school's planned experiences as part of its educational responsibilities. It's important to remember that curriculum includes both planned and spontaneous events.

Curriculum is defined as the tools and materials with which students will interact to achieve predetermined educational outcomes (Edward, 2013). This viewpoint asserts that curriculum encompasses all scheduled activities that students must do to meet specific objectives. The following activities are included in this list: aims, content, techniques, and materials. Pinar (2004) defines curriculum as a comprehensive process that includes not only official policy, prescribed textbooks, and standardized assessments, but also the complex conversation between participants. Similarly, Kelly (2004) defines curriculum as an educational institution's entire program. Given the above definitions of curriculum, it is evident that curriculum encompasses all scheduled and unplanned school activities. As a result, curriculum can be defined as all of the experiences that a kid or an individual is intended to have, both formally and informally, while attending school. As a result, curriculum comprises of both planned (formal or official) and unplanned (unofficial, concealed, or informal) learning activities.

Concept of Digital Age

The digital age is defined as a transitional period from the traditional to the industrial or technology eras. It is the transition from analog to digital via digitization and digitalization. E-learning practices that are assisted by multimedia technology are referred to as the digital age in teaching and learning. According to Asthana (2009), a multimedia learning

environment is one that consists of a variety of components or features that enable learning to occur. Only a portion of the required is hardware and software. Multimedia is a concept that combines five types of media to give students more flexibility in expressing their creativity and exchanging ideas: text, graphics, sound, and video.

Victoria (2017) defines the digital age as a period in which people learn in a variety of ways, including blended and digital learning, game-based learning, and a variety of other platforms. The transition from analog to digital or discrete systems is represented as the digital age or era.

Shepherd (2004) defines the digital era as a period marked by technological advancements that boost the speed and breadth of knowledge exchange within the economy and society. It is a form of sustainability that is based on the exchange of knowledge. According to Shepherd, it is viewed as new knowledge that is produced more frequently, enabling for adaptation to the changing environment. The concept of the digital era is defined in this context as the mixing and matching of rates of knowledge turnover, resulting in a dynamic and perpetual universe. As a result, the digital era can be understood as the emergence of an evolutionary system in which knowledge turnover is not only extremely high, but also increasingly out of humans, making life more difficult to govern. Despite its complexities, ambiguities, and nuances, the digital era aids in the development of a sustainable socio-economic relationship, both in terms of technology and the enhanced knowledge that technology aids in the creation by humans (Shepherd 2004, Lai and Hong, 2014). In general, the term "digital age" refers to the transition from analogue to digital, which includes all multimedia technologies and their digitization and digitization processes.

Concept of Basic Education

In Nigeria, basic education refers to the education that a child receives during his or her first nine (9) years in school. It makes a comparison between pre-primary and primary education. Primary school and junior secondary school are two types of schooling (JSS). It is a 9-year formal education program designed to eliminate illiteracy, ignorance, and poverty while also stimulating and accelerating national development, political consciousness, and national integration. It was launched and implemented by the government and people of the Federal Republic of Nigeria to eradicate illiteracy, ignorance, and poverty while also stimulating and accelerating national development, political consciousness, and national integration (Universal Basic Education Commission, 2013). In this regard, the Federal Republic of Nigeria (FRN, 2013) stipulates that basic education should last nine years, with six years of primary school and three years of junior secondary school. It will be both free and obligatory. It will also feature adult and non-formal education programs for adults and out-of-school kids at the primary and junior secondary levels. Basic education's specific aims must be the same as the goals of the levels of education to which it pertains (i.e. primary education, junior secondary education and adult and non-formal education). Pre-primary education and inclusive education were also highlighted in this policy (early children education, almajiri children, street children and physically challenged among others)

The following are reflected in the basic education curriculum's framework:

• The curriculum is tailored to the needs and interests of students in order to provide adequate core and elective subjects for a well-rounded education at various age levels.

• By 2014, the Lower and Middle Basic Education Curriculum for primary schools (grades 1-6) will be fully implemented, and the Upper Basic Education Curriculum (for JSS 1-3) will be completed by 2011.

• Before being placed in Junior Secondary, every child is obliged to complete elementary 6. (JSS).

Given the foregoing framework, it is evident that curriculum implementation at the primary level is strategically ambitious, requiring both human and non-human resources. This, of course, touches on curriculum concerns that must be investigated, particularly as they pertain to teaching and learning in the digital age.

Basic Education Curriculum Issues and Digital Age

Education changes around the world are becoming more curriculum-based as pressures increase for education to satisfy societal demands, which tend to target and focus on school curriculum material. Basically, each of the basic subjects has its own set of prerequisites. The input, process, and output curriculum difficulties are made up of these requirements. The importance of digital era multimedia technologies is considered when examining these curriculum difficulties.

Input Issues

The items that must be in place for the education system to work or function are known as input issues. In general, curriculum input concerns refer to the items that a school need to function as a social system, such as student enrollment, teachers, infrastructure, materials, academic programs, money, and regulation (Muhammed, Abdu & Waziri, 2010). These concerns with input are critical to the school's operation. Similarly, information and communication technology (ICT) gadgets, particularly digital tools or devices such as computers, iPads, laptops, smart phones, and other digital resources, must be prioritized.

Student Pupils Enrolment in Basic Education

According to Juliana and Clinton (2014), roughly 45 percent of Nigeria's population is made up of youngsters, many of whom are in the primary education age range. They claimed that this statistic represented the 20 million Nigerian students that are in primary school. Due to a lack of statistical data on children in the school age group, the enrolment may not be known. This, of course, makes budgeting for other resource inputs, particularly multimedia technology, a difficult task. The question of enrolment must be determined in light of statistical data and other basic learning criteria.

Infrastructure Issue

Physical amenities are crucial in teaching and learning, particularly in primary school. This is the period of development when the sense of imagination is still developing. The availability and adequacy of teaching resources, such as school buildings, classrooms, furniture, equipment, and other facilities, are critical to an educational system's

achievement of its goals. However, a growth in basic education enrolment does not equal to an increase in basic education infrastructure development. Most schools in the basic education environment have half-finished, abandoned, or decaying structures and packed classrooms with inadequate equipment and amenities, as well as unattractive and unsanitary bathrooms. Internet resources and multimedia technologies must be incorporated into the infrastructure issues for teaching and learning to be meaningful and effective.

Teaching Personnel Issue

The availability of teachers in terms of quantity and quality is a problem for teaching professionals. Despite the fact that the National Policy on Education (NPE) (FRN, 2013) places a high value on teachers, it has been noticed that basic education teachers in Nigeria, particularly in primary schools, are inadequate, under-equipped, and under-motivated. Teachers, according to Chimombo (2008), need to be equipped with information and abilities (administrative and pedagogical) that will enable them to detect and solve problems. Teachers will need this knowledge and skill set to operate and apply multimedia technology in their teaching, research, and publications. With ICT facilities and interest resources, this results in a better teaching and learning environment.

Academic Programmes at the Basic Education Level

Individual learners' needs, aspirations, and interests, as well as the society in which they live, are addressed through academic programs or subject specialities. Lower Basic Education (primary 1–3), Middle Basic Education (primary 4–6), and Upper Basic Education (junior secondary school) are the three levels of basic education (JSS). These programs are designed to provide individuals with learning opportunities that will prepare them for a lifetime of knowledge and skills. Access to the levels is hampered by the effective implementation of basic education curriculum for the achievement of desired objectives. For all disciplines, adequate and competent professional teachers are necessary. Teachers must be knowledgeable and skilled in the use of instructional strategies to improve material delivery. Techniques, skills, and resources are required to teach an effective curriculum. Teachers and students should have access to digital age learning resources for each subject in this direction. Subject coverage in basic education programs should be based on scope and sequence to syndicate learning experiences across levels.

National Policy on Education

As an input issue, the government creates a policy paper that lays out policies, guidelines, and benchmarks or minimum standards for achieving the desired objectives. According to FRN (2013), Nigerian education should pursue the following national goals:

- A free and democratic society;
- A just and equalitarian society;
- A united, strong and self-reliant nation;
- A great dynamic economy; and
- A land full of bright opportunities for all citizens.

Qualified instruction at the basic education level must be ensured utilizing new teaching approaches and tactics created in the digital age to fulfill the following goals (Lai and Hong, 2014). This means that effective training in diverse subject areas should be created and geared toward values derived from national education goals while utilizing new technologies in teaching and learning.

Funding of Basic Education

In Nigeria, funding basic education has been a severe concern for many years. Low funding for basic education has a variety of consequences, including poor infrastructure, decaying structures, non-payment of salaries, lack of teacher training and retraining, and an ill-equipped learning environment, among others.

Process Issue

Effective curriculum delivery, research and publication, quality control mechanism management, and community service are all part of the process. The interplay of forces of inputs throughout process activities is thought to produce a desirable result in the educational system. Curriculum as a process difficulties in basic education necessitate technologically mixed approaches, methods, media, strategies, skills, and new teaching tools. In this regard, effective integration of digital technologies into the teaching of individual learning processes is required. Hong (2014) is a writer who lives in Hong Kong. Similarly, teaching and learning should be accomplished through practicals, tutorials, scientific experiments, workshops, projects, and general academic instructions using digital technology such as computers, iPads, smart phones, interactive boards, and other similar devices (Osokoya, 2012).

Research and publication, as a process issue at the elementary school level, symbolizes research, reading, and study using e-learning facilities to develop knowledge and skills that lead to effective teaching in schools. As a result, the classroom environment must be well-equipped to allow students to investigate and do study.

Through supervision, monitoring, and reporting, a quality control mechanism is in place to ensure that standards are met in schools. When digital tools are applied, this may be much better. This implies that the Ministry of Education, particularly the Inspectorate Division, must be operational. The failure of inspectors and supervisors, as well as the government, may be linked to the deteriorating standard of education at the primary level. The management system at the basic level must display high levels of integrity in order to maintain a proper learning environment, maintenance, supervision, and coordination of activities. This can be accomplished by appointing head teachers based on their qualifications.

Output Issues

At the basic education level, the output curriculum issues reveal quality graduates from primary schools and junior secondary schools who are well prepared for a life-long career. Such a profession could take the shape of continuing schooling, as most parents and

communities expect, or taking up community-based vocational occupations. These are items that are important to them and to the society in which they live.

Prospects of Basic Education Curriculum in the Digital Era

According to FRN (2013), basic education would continue to be the cornerstone of education in Nigeria and will be free and compulsory. The philosophy of the program can be traced back to the prospects of basic education. According to the Nigeria Educational and Development Council, every learner who has completed nine years of basic education should have attained an appropriate level of literacy, numeracy, manipulative, and life-skills, as well as the ethical, moral, and civic values necessary for laying a solid foundation for life-long learning as the basis for scientific and reflective thinking.

In light of the foregoing, Asthanasius (2017) suggests that basic education is the bedrock of all education and should be seen as essential to life success. It is at this level that a child's basic education is espoused. In this setting, teaching and learning strategies should include all types of multimedia technology to enable the kid to gain not just machine-operational abilities but also subject-matter knowledge.

To ensure efficiency and effectiveness of content distribution, curriculum implementation at various levels and stages should be marked by the usage of multimedia technologies. The use of multimedia equipment and software to deal with curriculum inputs, processes, and outputs improves the interplay of the processes. This necessitates the use of digital technology by important players in curriculum implementation, such as teachers and students. In this context, instances of digital application in curriculum delivery can be defined as digital processing systems that encourage learners to engage in active learning, knowledge production, inquiry, and exploration. This enables professors and students in different physical classroom locations to communicate and share data over the internet. This is a technologically advanced nation that recognizes their evolution from simple information transmission systems and clarifies their role in the classroom, as opposed to their widespread use in schools and learning centers. The following are some of the digital technologies that have a lot of potential in the teaching and learning process:

• **BYOD (Bring Your Own Device):** This is a learning opportunity in which students are actively involved in system ownership and proper use in learning.

• **E-portfolios:** This is a method in which teachers and students collaborate to develop an electronic portfolio of work that documents their learning journey. In collaborative or team work, the e-portfolio is more effective in group teaching, demonstration, or project techniques. Every student can use the e-portfolio to drop off any e-materials or scan anything for others to see. Scans of sketches, photo displays, gallery visits, textual reflections, artist-narrated movies, and an audio log book can all be included in the e-portfolio. Despite the inherent concerns of data security and lack of anonymity, it gives learning possibilities in a variety of ways.

• **Flipped Classroom:** It allows students to discover new subject prior to a session through online videos or resources and then apply it in a more personalized way in class. It has the ability to engage students in real-time films at home while also allowing them to collaborate in schools to debate such movies and other topics. This encourages a greater

grasp of the material as well as perspectives on the lessons learnt. The teacher's responsibility is to guide students to avoid being mislead by machines, especially when watching films at home.

• **Personal Learning Network (PLN):** A PLN is a loose collection of linkages to other people or resources maintained by a person. It fosters the exchange of knowledge and ideas that enhance learning among online interest groups via Twitter or other social media platforms. It offers a broader selection of learning possibilities at low or no cost, allowing you to broaden your knowledge base.

• **Virtual Learning Environment (VLE):** It is a web-based e-learning education system modeled after traditional face-to-face education. It allows students to enroll in classes. Course content, examinations, assignments, and external resource connections are just a few examples. However, it comes with a number of hazards, including a high likelihood that the software would limit course structure and a high level of maintenance demand.

• **Technical Support for Students (Digital Literacy):** This refers to the knowledge and abilities required of both teachers and students in order to run the systems and maximize the benefits derived from the e-learning system.

• **Interactive Whiteboards:** An interactive whiteboard is a digital device that allows images from a computer to be projected onto a screen using a digital projector. Users can use their fingers or a pen to interact with the content on the board (Lai and Hong, 2014).

• **Edu-Application:** These are specialized educational software applications that may be installed on mobile devices such as smart phones and tablet computers to help students learn more effectively.

Conclusion

At the elementary school level, curriculum concerns were examined in terms of the inputs, processes, and outputs activities that interact to produce the desired learning outcomes. The article looked at the future of curriculum delivery in the digital age, highlighting some of the advantages that digital or multimedia technology can provide in the teaching and learning process. Similarly, some of the dangers linked with the use of mobile devices were brought to light. The document advocated for proper funding of basic education as well as teacher training to improve their ability to deliver curriculum.

Suggestions

To improve the use of digital technologies in the teaching and learning process, the following suggestions were made:

• The government, private sector, and key stakeholders in education should ensure that a large and heavy investment is made in the provision and development of multimedia technologies in the school system.

• Curriculum planners and developers should make sure that digital technologies are incorporated into the plan.

• Schools/institutions should encourage students to switch from traditional libraries to e-libraries by creating a welcoming and conducive learning and research environment.

• The government should ensure that teachers are properly taught and retrained to keep up with changes in the digital age.

• Both the public and commercial sectors should ensure that adequate teaching and learning facilities and resources are available for successful teaching and learning.

• The government should also ensure that basic education is adequately funded.

• Head teachers and the basic education management system should work effectively to ensure proper supervision and monitoring of curriculum implementation in order to ensure quality control and standard in schools. • The government and private sector should ensure that head teacher appointments are made not only on merit but also in accordance with formal school orientation.

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