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Educational technology in tertiary institutions: panacea for achieving sustainable development goals (SDGs)

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ABSTRACT

Education is universally recognized as the answer to socio-economic problem of the world, Nations and individuals look up to education to provide a cure for poverty, ignorance, climatic change, metal deficiency, Joblessness, hunger, inadequate shelter, poor governance, poor communication system and among others. Technology is the backbone of development and is a gateway to the levels of the progress that we all seek. It is reflected in the evolution of all aspects of human activity and knowledge. This paper focused on educational technology in tertiary institutions: panacea for achieving sustainable development goals (SDGs). It highlighted educational technology and tertiary education, the role of education for sustainable development, funding of tertiary institutions for sustainable development and challenges and opportunities of adopting educational technology. The paper concludes that, technology can be used to enhance education for sustainable development through influencing learners' behavior and also evaluating such behavior change. Recommendations were also made which include: Government should ensure access to technology and digital resources for all students regardless of their background; provide ongoing training and support to teachers to help them effectively integrate technology into their teaching practices and provide adequate and proper funding to educational institutions in Nigeria.

1. Introduction

Education is the greatest force that can be used to bring about change. It is also the greatest investment that a nation can make for the quick development of its economic, political, sociological and human resources. Education is universally recognized as the answer to socio-economic problem of the world, Nations and individuals look up to education to provide a cure for poverty, ignorance, climatic change, metal deficiency, Joblessness, hunger, inadequate shelter, poor governance, poor communication system and among others (Elujekwute, 2019). The important of commodity by any standard to any community is knowledge which in general is called education, which is the cornerstone for sustainable development. Ayodele (2017) affirms that development cannot take place in human society without education and conversely, no lasting peace and security can be accomplished without development. This is to imply that for sustainable development goals to occupy in a society both individuals and the state should have access to quality education. Therefore, education becomes the indices for measuring the development capacity of both the individuals and the country. It becomes an important social commodity that is desired by all but relatively not affordable by all either on account of scarce resources or ill equipped teaching.

Technology is the backbone of development and is a gateway to the levels of the progress that we all seek. It is reflected in the evolution of all aspects of human activity and knowledge. It played over the years a crucial role in the rise of countries and the formulation of the present

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and future trends. The education technology is an integrated educational process based on the delivery of knowledge and science to students and the effective use of technology in education (Lozano, 2018). However, where the problem lies is in the lack of awareness of the importance of sustainable development, the ability of society to sustain continuous self-development through educational technology such as showing educational films or using the computers, also integrating and involving the Internet in academic curricula. In fact, the use of the Internet in the educational process is one of the factors that help to establish students' knowledge and provide them with new skills (Castellanos & Queiruga-Dio, 2021). Educational technology plays a key role in sustainable development in terms of changing behavior of people to achieve the sustainability development goals. However, technology can be used to enhance education for sustainable development through influencing learners' behavior and also evaluating such behavior change.

The philosophy of the tertiary education hinges in part on the idea that Nigerian schools should not only train individuals to be just and competent but to function as contributing and participatory members of a free constitutional democratic nation (Anih, 2017). What this implies is that students must rely on the knowledge, skills and awareness of the rights of minority and majority groups to coexist and worship freely, respect for law and order, respect for public and private property of Nigerians and non-Nigerians. Education is a very important tool for socio-economic development both at National and individual levels (Zaria, 2012). The argument that education is a necessary condition for individual socio-economic development is clearly put forward by some great politicians like, Zik, Awolowo and Ahmadu Bello (Tunji, 2012). Late Awolowo's premise on education is that education prevents individual from remaining poor and part of his argument for right to education is based on the moral imperative of making every one richer than some. Zik on the other hand emphasized the acquisition of skills and willingness to be engaged in useful labour, lead to material and social benefits. However, some politicians are of the view that education is the means for tilting power and redistribution of income. Just as people thought that education is the surest guarantee to improve their economic fortunes in life, which results in the tremendous investment in it by many.

Tertiary education in Nigeria has been interrupted by regime changes since independence. However, the nation has made budgetary commitments and embarked on policies towards sustaining unity, transformation and economic growth. The policies on education since 1970 to date have been very promising (Olaoye, 2018). Educational policies and development can only be sustained in the presence of a stable democratic set-up. It is imperative for government to put frantic effort to ensure that educational policies are implemented to the letter. The United Nations has recommended that African nations should allocate a minimum of about 26% of her national budget to education. With our National Domestic Product (GNP) and the petroleum sector in good shape, Nigeria can sustain a comprehensive educational plan. If this is done correctly, the future of the country will not only be secured, thus, quality education and national development will be enhanced.

In order to effectively apply technology to support sustainable development goals (SDGs), a strong partnership between educators and technologists is needed in order to unlock the potential of both sides and to create synergies through specialization. Partnership with technologists can benefit educators in several ways, such as speeding up innovation process in education, stimulating fresh teaching ideas, improving learners' experience, widening access to skills and resources. According to Brundtland (2017), the core of sustainable development is to meet the needs of the present without compromising the ability of future generations to meet their own needs. We can also consider that today's behavior will affect whether the needs in future can be met or not. For example, when a resource is used up by humans because of overconsumption (i.e., behavior), the need of the resource will not be able to be met in the future. On the other hand, human's behavior can also be considered as the result of learning. Sustainable development goals can be achieved through education which plays a major role in

changing the behaviour of people positively. In this case, technology comes to aid in developing the education system by implementing technological devices and other sources.

Educational Technology and tertiary education

Educational technology refers to the use of technology to support teaching and learning. It includes a wide range of tools and resources, such as online courses, educational software, and mobile apps, as well as more traditional technologies like educational videos and interactive whiteboards. In recent years, educational technology has grown significantly, with the proliferation of digital devices and the increasing availability of online educational resources. This has led to a shift towards more personalized and flexible forms of learning and has opened up new opportunities for learners to access education from anywhere at any time. Educational technology also has the potential to transform education by improving its quality and effectiveness. For example, it can support the use of data-driven decision making, personalized learning and collaborative learning as well as facilitate the integration of technology skills into the curriculum. However, it is important to recognize that the effective use of educational technology requires investment in infrastructure and training, as well as careful consideration of how it can be integrated into existing teaching and learning practices in a way that enhances, rather than replaces, traditional methods of instruction. It is also important to address the digital divide and ensure that all students have access to technology and digital resources, as well as the necessary digital literacy skills to make use of them.

Technology has become an inseparable part of today's lifestyle of people all over the world, where it is seen to influence tertiary education as well. The concept of digital literacy helps in coping with the education system even during global crises. According to Malik (2018), an adaptation of technology has been seen to be easier in terms of its implication in education. People are prone to develop technological skills faster to evolve in this digital era. However, as argued by O'Flaherty and Liddy (2018), technological advancement in education can be problematic sometimes as it can create barriers for some students to access. It has been reported that there are approximately 37% of students in rural areas as of 2021 who do not attend school at all. Thus, the education system should be careful to generate education among all to emphasize the importance of education. On the other hand, education through digital technology is an overwhelming idea as it helps the students to access higher resources in a short time. Hence, government schools should also come forward in advancing with technology that will enable them to have better functional tools in education.

The role of education for sustainable development

The role of education in achieving sustainability is regarded to be crucial as the academic skills development is related to this. The understanding of values can be gained through sustainability goals that also promote social and environmental development. According to Mohanty and Dash (2018), technological advancement increases academic knowledge along with professional skill improvement that can be achieved through certain changes. Hence, it can be said that technical education has turned out to be a challenging concept in terms of adaptation and utilization. On the other hand, resources can also be managed that increase the understanding capabilities of the students. According to Ogbu and Igu (2019), the critical thinking of the students can also be developed by using this method that encourages communication, among others. Hence, the academic process can be changed that is predominant in achieving sustainable goals. In this context, it can also be mentioned that educational institutions can have an effective structure that becomes sustainable in the long run.

Good quality education is an essential tool for achieving a more sustainable world. This was emphasized at the UN World Summit in Johannesburg in 2002 where the reorientation of current education systems was outlined as key to sustainable development. Education for sustainable development (ESD) promotes the development of the knowledge, skills, understanding, values and actions required for creating a sustainable world, which ensures

environmental protection and conservation, promotes social equity and encourages economic sustainability (Brundtland, 2017). The concept of ESD developed largely from environmental education, which has sought to develop the knowledge, skills, values, attitudes and behaviours in people to care for their environment. The aim of ESD is to enable people to make decisions and carry out actions to improve our quality of life without compromising the planet. It also aims to integrate the values inherent in sustainable development into all aspects and levels of learning.

There are a number of key themes in ESD and while the dominant focus is on environmental concerns. It also addresses themes such as poverty alleviation, citizenship, peace, ethics, responsibility in local and global contexts, democracy and governance, justice, human rights, gender equality, corporate responsibility, natural resource management and biological diversity (Law, Woo, Torre & Wong (2018). It is generally accepted that certain characteristics are important for the successful implementation of ESD, reflecting the equal importance of both the learning process and the outcomes of the education process (Patru & Balaji, 2016). According to (Patru and Balaji, 2016) ESD should:

- Be embedded in the curriculum in an interdisciplinary and holistic manner, allowing for a whole-institution approach to policy making.
- Share the values and principles that underpin sustainable development.
- Promote critical thinking, problem solving and action, all of which develop confidence in addressing the challenges to sustainable development.
- Employ a variety of educational methods, such as literature, art, drama and debate to illustrate the processes.
- Allow learners to participate in decision-making on the design and content of educational programmes.
- Address local as well as global issues, and avoid jargon-ridden language and terms.
- Look to the future, ensuring that the content has a long-term perspective and uses medium and long-term planning.

To promote ESD, the United Nations Decade of Education for Sustainable Development, 2005-2014, (DESD) was adopted by the UN General Assembly with the United Nations Educational, Scientific and Cultural Organisation (UNESCO) designated as the lead agency for promotion throughout the decade. The decade pursues a global vision 'of a world where everyone has the opportunity to benefit from quality education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation (UNESCO, 2016).

Funding of tertiary institutions for sustainable development

Education is an expressive commodity and with limitless resources endless educational expansion would be possible. However, one thing is certain, there are basic requirements for the achievement of the goals in education which include infrastructure, equipment, instructional materials and personnel to implement educational programmes. The achievement of educational goals is dependent on adequate funding. The Nigerian government accepts that education is no longer a private enterprise but a huge government venture that demands her wholehearted intervention and active participation (Amaechina, 2011). There have been on-going debates in both developed and developing countries as to whether the educational sector is grossly underfunded, over-funded or if it has been having its fair share of financial resources from the government. The amount allocated to the education sector has been on the increase over the years but the percentage allocated to enrolment, dilapidated school buildings and the vital need to uphold standards among other variables has really been insufficient.

In the face of dwindling resources and rising costs, the large number of tertiary institutions exclusively financed by the federal government has adverse implications for adequate financing when viewed against the background that the federal government also shares the responsibility of financing primary and secondary education with other tiers of government as well as providing other social services. The cost of funding these institutions has been increasing every

year and the federal government is finding it difficult to meet up with the demand (Okorosaye-Orubite, 2013). Closely connected with the issue of expansion is the demand for better funding. The financing of tertiary institutions had been relatively haphazard in relation to the country's state of economy. Although the tertiary education funding had not been too bad on the average, this does not suggest that the funds made available to these institutions are enough for their commitments.

The budgetary allocation to education has been on the decline. In 1999, 11.2% of annual budget was allocated to education but was drastically reduced to 5.9% to 1.83% between 2012 and 2019 (Agburuga, 2021). The minimum standard set for developing countries is allocation of 26% of her national budget to education. Instead of moving towards this minimum standard, the experience is a decrease, therefore making expansion to be difficult if not impossible. Poor funding also denied many university courses from being accredited by National University Commission (NUC) thereby reducing the access of many who could have been admitted. The obvious is that universities in Nigeria need to be better funded. The Education Tax Fund (ETF) is a welcome development and many infrastructural developments are carried out with the Education Tax Fund (Ochuba, 2019). The instability in financing these institutions had made meaningful planning very difficult in the system. This has negative implications for the quality of teaching and research going on in these institutions. The government should on their own part increase the budgetary allocation to meet the recommendation for developing countries.

Challenges and opportunities of adopting educational technology

The adoption of educational technology comes with a range of challenges and opportunities. One of the main challenges is the digital divide, which refers to the gap in access to technology between different groups of people (Bomah, 2014). This can include differences in access to the internet, digital devices, and digital literacy skills. The digital divide is a significant challenge in promoting the effective use of educational technology. It is important to ensure that all students have equal access to technology and digital resources, as well as the necessary digital literacy skills to make use of them. One way to address the digital divide is through targeted investment in technology infrastructure and resources, such as providing access to computers and the internet in schools and other learning environments. It is also important to provide ongoing training and support to teachers and students to help them develop the necessary digital literacy skills.

Another approach is to adopt flexible and inclusive teaching and learning approaches that take into account the diverse needs and circumstances of students, and that use a range of technologies and resources to support learning. This can include the use of offline resources and technologies, as well as online resources, to ensure that all students have access to the materials and support they need to learn. Ultimately, addressing the digital divide requires a comprehensive and coordinated approach that involves policymakers, educators, and other stakeholders working together to ensure that all students have access to the technology and resources they need to succeed. To address this challenge, it is important to ensure that all learners have equal access to educational technology, including through the provision of necessary infrastructure and resources. It is also important to provide training and support for educators to ensure that they are able to effectively incorporate technology into their teaching practices.

Conclusion

Education is universally recognized as the answer to socio-economic problem of the world, Nations and individuals look up to education to provide a cure for poverty, ignorance, climatic change, mental deficiency, Joblessness, hunger, inadequate shelter, poor governance, poor communication system and among others. Technology is the backbone of development and is a gateway to the levels of the progress that we all seek. It is reflected in the evolution of all aspects of human activity and knowledge. It played over the years a crucial role in the rise of

countries and the formulation of the present and future trends. However, technology can be used to enhance education for sustainable development through influencing learners' behavior and also evaluating such behavior change. The adoption of educational technology comes with a range of challenges and opportunities which include differences in access to the internet, digital devices, and digital literacy skills.

Recommendations

1. Government should ensure access to technology and digital resources for all students regardless of their background or circumstances.
2. Government should provide ongoing training and support to teachers to help them effectively integrate technology into their teaching practices.
3. Policymakers should support research and development of new and innovative technologies that can support teaching and learning.
4. Government should adequately and properly fund educational institutions in Nigeria so as to meet expectations of the society.

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