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Curriculum Cum Educational Technology and Emerging Technologies for Achieving the SDGs: Role of Emerging Technologies.

Areji Jonathan Nwagboliwe

Department of Educational Foundations, Faculty of Education, Enugu State University of Science and Technology (ESUT), Enugu.

Email: jonathan.nwagboliwe@esut.edu.ng

ABSTRACT

*The work set to create some clearer understanding of the messages hidden in the topic by analyzing the relationships between curriculums, educational technology and emerging technologies in the enhancement of national development. The procedure deployed was an analytical method. Hence, the key concepts and variables like education, curriculum, educational technology, emerging technologies and its acceptability, development, economics, education in national development, SDGs, were discussed to provide a guide to arriving at a position on the concept of curriculum cum educational technology and emerging technologies for achieving the SDGs. Perspectives from history, education, science and technology, philosophy, economics and other social sciences were integrated to arrive at some clearer dimensions of emerging technologies and its influence on social structures in production, services, sharing of human resources and positions. However, from this forays, dimensions of how societies and institutions are influenced by curriculum, educational technology and emerging technologies factors were brought to bear on education and issues like conditions within which teachers work, acceptability of emerging technologies by teachers, education technology, state of national economy among others, were identified as crucial to the achievement of SDGs in practice and functionality amongst nations. Thus the author concluded that "**it is only until most educational stakeholders at all levels convince and motivate almost all the teachers to accept the emerging technologies and be willing to undergo the required education technology training, will the roles of the emerging technologies impact SDGs in the most effective and efficient manner. It is then the impacts and meaningful use of emerging technologies in serving the society will be clearer. Anything short of this is a lip-service.***

Keywords: Curriculum, Educational technology, Emerging technologies, SDGs

INTRODUCTION

Education is one of the most powerful drivers of development that leads to peace, stability and poverty reduction. It is truism that the economic power house of a nation is the function of her educational system which in turn, reflects the nation's school curriculum. By economics we mean a set of principles and techniques that guide ownership, production and distribution of resources as decided and organized by society. Aaron (2005: 58) marked out a description of meaning and areas in economics as follows: How goods and services get produced and how they are distributed. By goods and services, economics mean everything that can be bought and sold. By produced, they mean the process and making of goods and services. By distribution, they mean the way goods and services are divided among people. The task of education is to perpetuate society's desirable culture and also, to direct its future development. This implies that the process of the curriculum development in the use of emerging technologies must be directed towards the

culture the school has to transmit. The viability of any educational system is tested and measured by the relevance of her curriculum. It is a capital intensive economic venture for managing education. Curriculum is the continuous planning of the science of life whose primary aim is the quality of life of an individual in the society. It is the subject matter of instruction. It is the dynamic, purposeful, organised, planned and sequential set of learning contents that is derived from the environment in other to solve the possible challenges of that environment through instruction. Curriculum as a purposeful, systematic, dynamic, progressive, complex, integrated and planned document is determined to answering the four fundamental questions raised by Ralph Tyler (1949) on the essence of establishing schools as educating agencies. In other words, curriculum's major focus is concerned with attempting to answering the following questions: What educational purposes should the school seek to attain?; What educational experiences can be provided that are likely to attain these purposes?; How can these educational experiences be effectively organized?; and How can we determine whether these purposes are being attained? ''Curriculum is the whole of educational process.'' A good curriculum is the ''total environment in which education takes place, that is the child, the teacher, the subjects, the contents, the methods, the evaluation, the physical and psychological environments'' (Fafunwa, 1991). The pre-colonial curricula though unwritten was functional, geared towards skills acquisition and preparation of a job seeker and not a job provider as it is with the present-day curriculum.

The global challenges in this recent time call for innovations in the school curriculum to meet up with the demands of the 21st Century Skills acquisition and the Sustainable Development Goals (SDGs). By innovation in this write up, we mean the crafty integration of emerging technologies into the school curriculum for better economy. What are the Emerging Technologies (ETs)? Technology is the practical application of scientific knowledge, that is, a sum of techniques, skills, methods, and processes used in the production of goods or services and accomplishment of objectives in scientific research. Technology simply defined refers to the application of scientific knowledge to the practical aims of human life (Encyclopaedia Britannica, 2023). In other words, technology is simply the integration of human and non-human resources to solve man's problems physically and psychologically. The idea, Emerging Technologies (ETs) do not simply mean the newly discovered technologies but the combinations of the old and new technologies to solve the problems of the society in the most effective and efficient manner. United Nations ICTs Task Force,(2003) described the 'old' ITCs as radio, television, telephone, and the 'new' ITCs as computers, satellite, mobile phones and wireless technology and internet. The term extended reality, or XR for short, references a group of emerging technologies that includes virtual reality (VR), augmented reality (AR), simulations, holograms, and other digital tools and applications that in some way manipulate our perception of physical reality (Fitzpatrick, C., Hicks, D., Ogle, T., & Friedman, A. 2021).

Some of these emerging technologies are:
i. Artificial Intelligence (AI) and Machine Learning. ii. Virtual Reality(VR). iii. Internet of Things (IoT). iv. Wearable Technologies (WT). v. Gamification. vi. Quantum Computing (QC). vii. Blockchain and Web3. viii. Virtual and Remote Laboratories. ix. Microlearning. x. Mobile Learning. Xi. Cloud Computing. xii. 3D Printing. xiii. Personalized and Adaptive Learning. xiv. Learning Analytics; and xv.

Tablet Computing. According to Rotolo, Hicks, and Martin (2015), there is need to first understand the five key attributes that qualify technology as emerging. These are:

i. radical novelty;
ii. relatively fast growth;
iii. coherence;
iv. prominent impact; and
v. uncertainty and ambiguity.

Following from the above, Rotolo, Hicks, and Martin (2015) defined emerging technology as any technology that is radically novel, with a relatively fast growing popularity, possessing a clear and coherent mode of application, and exerting a measurable scientific impact. In addition, such technology's impact may not yet be fully understood given its novelty. These technologies stimulate our senses of sight, sound, and touch in such a way that we become immersed in digital environments (Stanney, K., Lawson, B. D., Rokers, B., Dennison, M., Fidopiastis, C., Stoffregen, T., Weech, S., & Fulvio, J. M. 2020). In fact, we gain such a feeling of "presence" while immersed in an extended reality (XR) environment that it can deeply impact our sense of time and place (Vasarainen, M., Paavola, S., & Vetoshkina, L. 2021). This feeling of presence is a defining characteristic of immersion, and each type of XR technology generates that feeling in different ways. These emerging technologies can transform a wide range of industries and education, and impact the way we live and work. This is so because it has been generally accepted that emerging technologies possess unimaginable capacities to influence behaviours including the behaviours desirable for the achievement of SDGs (Alexander, J., Chase, J., Newman, N., Porter, A., & Roessner, J. 2012).; Cozens, S.E., Gatchair, S., Kang, J., Kim, K.S., & Porter, A. (2010).Cozens,; Day, G.S. & Schoemaker, P.J.H. 2000). In short, technologies:

- have potential for accelerating progress in achieving SDGs.
- will change and improve the way we learn, teach and research.
- will change how we interact with our students, our superiors and subordinate in workplaces.
- will increase the quality and quantity of institutional data.
- Technologies can enhance each aspect of the SDGs on education.
- Technologies are the tools and devices (medicine) for the unknown eventualities.

Following from the above, we can now attempt to identify how a number of such technologies will play their roles in SDGs realization.

What are the SDGs?

The SDGs was a humble, influential, developmental and universal agenda and call by the United Nation (UN) in 2015 for all human beings living in the world to arise to universal challenges that are threatening our existence. There were and still are 17 common problems each person, each nation, and each continent are facing. They are made up of 17 goals with 169 targets and so many indicators. The goals according to Areji (2022, p. 88) include: no poverty, zero hunger, good health and well-being, quality education, clean water and sanitation, affordable and clean energy, decent work and economic growth, industries, innovation and infrastructure, reduced inequality, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace and justice, strong institutions and partnership to achieve the goals. The 2030 Agenda has the philosophical dictum of a "no one will be left behind". UN calls for a collaborative effort to overcome these challenges and restore the hope of humanity that is almost in despairs. The problems have degenerated to the extent that no one

individual, nation, tool among others can solve them alone, hence the title: Curriculum cum Educational Technology and Emerging Technologies for achieving the SDGs. This implies how the collaborative forces of Curriculum, Educational Technology and Emerging Technologies (ETs) could be organized, integrated and synthesized into a synergy that could be used to revive, revitalize, restore and transform our polluted resources among which are air, water, land, space, trees, animals, insects, men, machines, monies, markets, materials, methods etc. There is none of these few polluted resources mentioned that has not gotten fake ones in this our 21st century. How do we mix, rationalize these tripartite forces to be able to do the miracles needed in the 17 problems whose ligaments have entered all the crannies of our individual, national and continental lives in 15 years, 2015-2030? This is a big question and herculean tasks.

The spirit of sustainability in SDGs entails a sustainable development that represents a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987; Gladwin, T.N., Kennelly, J.J., & Krause, T.S. 1995). In other words, the 17 SDGs represent 17 expected global developments that will in no way jeopardize the chances of future generations to develop further. They represent actions that are expected to push forward the frontiers of societal improvement through behavior and actions that neither destroy the ecosystem nor weaken the capacity of the society to make further positive advancements in the future. For more insights, an abridge version of the seventeen SDGs as captured by the National Geographic (2023) are as Follows:

Goal 1: End poverty in all its forms everywhere.

Goal 2: End hunger, achieve food security and improve nutrition and promote sustainable agriculture.

Goal 3: Ensure healthy lives and promote well-being for all at all ages.

Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Goal 5: Achieve gender equality and empower all women and girls.

Goal 6: Ensure availability and sustainable management of water and sanitation for all.

Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all.

Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.

Goal 10: Reduce inequality within and among countries.

Goal 11: Make cities and human settlements inclusive, safe, resilient, and sustainable.

Goal 12: Ensure sustainable consumption and production patterns.

Goal 13: Take urgent action to combat climate change and its impact.

Goal 14: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.

Goal 15: Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat

desertification, and halt and reverse land degradation and halt biodiversity loss.

Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels.

Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development.

What roles do we think Emerging Technologies (ETs) will play in the realization of the SDGs goals enumerated above?

Emerging technologies (ETs) will absolutely play no meaningful roles if they do not have pedestals. There are three major pedestals that must be adequately addressed before emerging technologies will be able to perform. They are the giants upon whose shoulders emerging technologies will stand to see far. They are:

- Teachers acceptance of emerging technologies into the classrooms.
- Curriculum innovations
- Educational Technology.

Teachers acceptance of emerging technologies into the classrooms:

Experts in management information systems or anyone who has been associated with major organizational change appreciates that no single factor, such as a particular type or brand of technology, will bring about sustained change. Rather, a host of interrelated variables need to be addressed. The first and clearly the most important was the gaining of teacher acceptance to use the technology (Lee & Winzenried, 2005). Time and time again throughout the twentieth century no apparent effort was made to understand why the vast majority of teachers were not prepared to use the emerging technologies in their teaching despite the facts Cuban revealed. Cuban, (1986, pp. 66, 70-71) in Lee & Winzenried, 2009 said that teachers were – and still are – the gatekeepers to what technology is used in the classroom. When teachers close their classroom doors, they are in control of what happens. That basic fact would appear not only to have been forgotten; one notes the concerted efforts made by the ‘ scientific’ educators in the middle decades of the twentieth century to decide what was best for teacher productivity, and indeed to ‘teacher proof’ of the use of the new technologies? What will become evident as one examines the technology introduced in the twentieth century was that virtually all of it obliged the teachers to dramatically change their style of teaching if they were to make extensive use of the technology. Rather than teachers being provided with tools that would assist their teaching, teachers were obliged to change their ways to suit the tools on offer. All the stakeholders in education should articulate incentives, motivations and adequate teachers training that must be consciously aimed at providing technology that would assist the existing teaching, and ensured that they secured teacher acceptance of the new technologies. Unless the teachers believe the technology will enhance the students’ education, feel comfortable using the technology and are able to use the technology as an integral part of their everyday teaching, they will generally not use it. What the case studies of Lee & Boyle, 2003, 2004 and Lee & Winzenried, 2005 highlight is the relative ease of achieving total teacher usage of instructional technology in everyday teaching, provided the school pays due regard to a few key variables. A school needs to be well led, focus on enhancing the teaching, choose appropriate technology that can be readily integrated into the teaching, pay due regard to the school-wide implementation of the technology, and provide ongoing professional learning and development to all the teachers. Training a hungry teacher for

effective and efficient performance in classroom activities with emerging technologies is a lip service. And no nation or organization which merely pays lip services to the education of its teachers on whom the immediate task of nation building depends on, can expect its education to be excellent, its economy to be virile, its politics to be stable, its citizens, particularly the learners to be law abiding, its industries and agriculture to be productive and its homes to be happy.

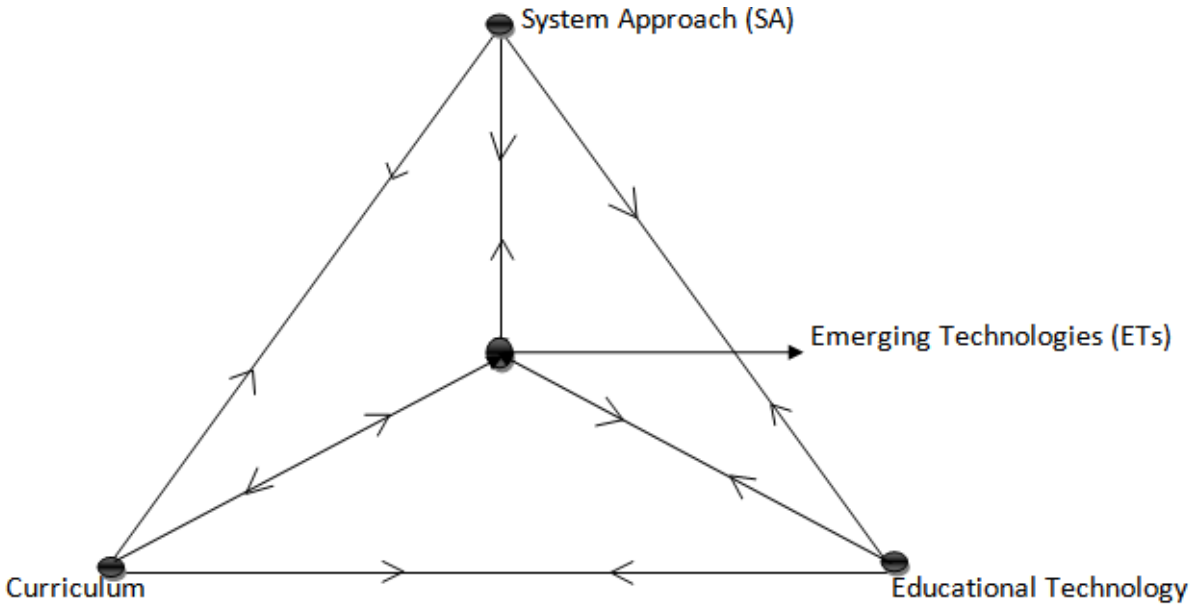
Curriculum:

Curriculum has to be planned, designed, developed, implemented and innovated. All these activities are being directed by the national philosophy or rather the educational objectives of a nation. Curriculum designs are like building designs whereby a house is designed with its purpose borne in mind. This is the same with curriculum designs or patterns, which reflects the purpose of that curriculum or the objectives of the education. So the society's educational ideology, culture and goals determine the type, shape, pattern, framework, or design of curriculum that suit them. Therefore, curriculum design is the pattern or the framework or the structural organization used in selecting, planning and presenting educational experiences for schools (Offorma, 2002). To organize means to arrange in working order, to constitute in part, each having a special function, i.e. to strategize. Design is therefore the articulated plan the teacher follows in providing learning activities for her learners. Just like a builder following a building plan to erect a house. To incorporate emerging technologies into curriculum designs calls for curriculum innovation. To innovate means to make changes, modify or introduce new things in the curriculum. According to Okeke (1985) in Akubilo (2014), curriculum revision and renewal leads to innovations in the curriculum and such innovations when appropriately planned and implemented gives rise to progress and dynamic achievements in education. The reason for curriculum innovation is to update the curriculum to enable it to meet the demands of the changing society as well as the social needs and aspirations. Therefore, emerging technologies should be seen as parts of social forces (educational media) on curriculum.

Educational Technology:

The current definition of Educational Technology, as defined by the Definition and Terminology Committee of the Association for Educational Communications and Technology (AECT) is "the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (Januszewski & Molenda, 2011, p. 1). Educational technology involves a thoughtful effort to employ the right technologies in the right way to meet learning goals. Education technology is "the study and ethical practice of assisting learning and improving performance by creating, applying, and managing suitable technological processes and resources" (Januszewski & Molenda, 2008, p. 1). A closer examination of educational technology showcases it as a director of education and a manager of teaching and learning processes. The content of the educational technology curriculum is a combination of theories (principles) and practical (practices). The principles deal with the nature, concept, history and development of educational technology, communication and learning process, concept of instructional technology, the principles of designing, selection ,production and evaluation and utilization of educational media. The practices deal with the conduct of microteaching sessions, designing, production, utilization and evaluation of instructional materials. The

content as seen above is aimed at preparing would be teachers to effectively apply the use of instructional materials into their teaching and learning process. Therefore, the roles of educational technology in teaching and learning include individualizing instruction, making teaching and learning more scientific, immediacy in learning, gives equal opportunities to all learners, makes instruction more meaningful among others. How?



A MODEL FOR INTEGRATION OF EMERGING TECHNOLOGIES INTO INSTRCTIONAL TECHNOLOGY BY EDUCATIONAL TECHNOLOGY

The curriculum plans, designs, and develops the philosophy of education, i.e. the educational objectives. Educational technology in all her regalia is out to solve every impediment against the achievement of the educational objectives. In other words, educational objectives are the meeting points of curriculum and educational technology while curriculum innovations are the meeting points of emerging technologies and educational technology. They all interact, but at the implementation point, educational technology becomes the guiding compass as shown in the model above. This is so because in both its contents and practices, educational technology adopts **systems approach** as its methodology or formula for problem solving. Afam (2006) summarized systems approach as the systemic and systematic approach to problems of education which educational technology purses. It could be applied to instructions as well as to the SDGs and emerging technologies if they are made amenable to education. This implies that, as companies produce new products for immersion (emerging technologies), those products still require pedagogical techniques for them to be used purposefully in the classroom. This leads to bridging the technology-to- practice gap in emerging technologies. By that, the challenge is identifying effective strategies that meaningfully leverage ETs to promote and support student learning. According to Fransen (2022), integrating SDGs or ETs into educational curriculum requires considering a number of steps of action.

These include the following:

i. Mapping what is already being done in schools;

ii. Building the needed capacity for integrating integrating and delivering SDG/ETs content in schools;
iii. Identifying priorities, opportunities, and gaps;
iv. Integrating, evaluating, and embedding the SDGs/ETs; and
v. Maintaining the instructional delivery of the curriculum, evaluating the progress and communicating the outcome including further needed actions. Addition of ETs is my emphases.

This implies creating SDGs curriculum which Areji & Onuba (2022, p.96) called "World Developmental Encyclopedia". This document will be the 'Bible' of the schools in the nations, states, local government areas, communities and families. Using educational technology tools (emerging technologies) to teach the contents to the entire world must facilitate the transformation of the world genuinely with time if done religiously and that is the agenda of the SDGs.

Instruction is a human undertaking which essence is to help people learn. It is a teacher-initiated activity designed to facilitate receptibility. It is a set of activities that are carefully and deliberately arranged with the sole objective of facilitating learning. Systematic approach to instruction entails careful and deliberate planning, designing, implementation and evaluation of the activities and experience that will help learners to reach desired objectives of instruction. To Onyejemezi (1990), the systems approach to instruction entails the under-listed step-by-step approach:

I. identify the educational problem to be solved or the educational activity to be undertaken;
II. State the objectives to be achieved in solving the problem or undertaking the educational activity;
III. indicate the conditions necessary for the achievement of the objectives:
IV. map out appropriate methods and material resources to be used in order to achieve the objectives;
V. design the way of knowing whether or not the objectives, have been achieved;
VI. where the objectives are not achieved or the educational activity is not successfully carried out, we examine I - V above, locate the problem, make necessary changes and tackle problem again until the objectives are achieved or the educational activity is successfully completed.

Some aspects of the SDGs on education are:

- Teaching and learning processes at all levels of education.
- Production of qualified teachers at all levels of education.
- Inclusive education.
- Lifelong education.
- Safe school and non-violent environment.
- Gender equity.
- Infrastructure.
- Philosophy of no one will be left behind.

Some aspects like the first six are to be infused with the **21st Century Teaching Skills.** These skills refer to the knowledge, life skills, career skills, habits and traits that are critically important to students' success in today's world particularly as students move from secondary schools to tertiary institutions, the workforce and adult life. These cannot be easily done in the whole world within 15 years (2015-2030) without the applications of ETs.

The roles of emerging technologies are as follows:
All the itemized emerging technologies above and even the ones to be discovered in the future have one role or the other to play in each of the 17 SDGs directly or indirectly when they are combined. For the sake of time and space, few of them are going to be discussed since we have laid the background for their individual and collaborative integration with curriculum, education and educational technologies through instructional technology in system approach. Their major role is to facilitate the scientific and technological application of systems approach to instruction through education and educational technologies. All emerging technologies and would-be-emerging technologies are fitted here and are only meant to extend human capabilities in life endeavors.

Artificial Intelligence (AI) and Machine Learning (ML): These are electronic machines that behave like man but do not have genuine human feelings. According to Burns, Lawkoski and Tucci (2023), artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Robeiro (2021) also defines AI as the field of computer science that enables machines to perform tasks requiring human-like intelligence. It involves creating intelligent agents that can sense, comprehend, learn, and act in a way that extends human capabilities. It is a computer's ability to imitate human being behavior and machine learning is a subset of AI that improves the accuracy of predictions. They are used in health care, finance and transportation. (Jason, 2023). In education, they can be used to automate tasks, make predictions, and analyze data. These can be applied in instructional technologies.

Gamification: It is another emerging technology capable of turning around our fortunes with regard to the achievement of SDGs through education. This involves the use of various digital games to teach concepts that would have ordinarily been very abstract if taught using the traditional method. Huber and Hilty (2015) confirmed the efficacy of digital games in transforming the learner's behaviours. In the light of this, digital games can be used in our classrooms to address almost every aspect of the 17 SDGs.

Blockchain and Web3
It is a decentralized, secure way of storing and processing data that are being increasingly adopted. It can be used to track the movement of goods through supply chain, improving transparency and accountability. In education, it can be used for identity verification. Decentralized identity system can be used to verify the identity of staff and students, and organizations in a secure and decentralized manner. It enables online transactions on identity verification in rural areas. (Jason, 2023).

Intelligent Automation and Robotic Process Automation
Intelligent automation and robotic process automation (RPA) are used to schedule interviews, process employee and on boarding documents. They are generally used in human resources, financial services and healthcare (Jason, 2023).

Classroom Response System (Clickers)
Classroom response systems or clickers are instructional technologies that enable teachers to rapidly collect and analyze students' responses to multiple-choice and free-response questions during testing or classroom activities.

Internet
This is a world-wide collection of computers. It is computers connected to form giant networks of computers. Through

the internet, teachers, students and institution can connect with the outside world, download information, and disseminate information.

Mobile Learning

Mobile learning commonly refers to any type of learning that takes place with the support of easily portable and wireless electronic devices (El-Husseni &Cronje, 2010, p.12). M-learning could also be learning across multiple contexts through social and content interactions using personal electronic devices. As a form of distance education, m-learners use mobile device educational technology at their convenient time. M-learning technologies include handheld computers, MP3 players, notebooks, mobile phones and tablets.

Video Conferencing

This is a digital technology tool which makes it possible to have a live coverage of events using video technology. Streaming Technology is accessed through a variety of devices such as computers, television, smart phones and so on. Video conferencing is used a lot of educational activities, particularly involving large number of participants.

Tablet Computing

This is a form of using fingers and swipe action, or by use of a special purpose pen to write on a type of notebook computer that has an LCD screen. The touch screen display is operated by gestures executed by finger or digital pen instead of the mouse, keyboard, etc.

Massive Open Online Course (MOOC)

This is an online course aimed at unlimited participation and open access via the web. It offers free education in an online environment, with no limit on class size. MOOCs are relatively new development in education, representing a trend towards affordable education, which is available to the masses, in a collaborative, connected space, with traditional educational materials, like lecture slides and videos, supplemented with interactive elements.

Internet of Things (IoT)

The IoT is the network of connected devices that can communicate with each other and exchange data. This technology is being used to improve efficiency, automation, and decision-making in many industries. Use to build smart cities, predictive maintenance, environmental mentoring and health (Jason, 2023).

Learning Analytics

Learning analytics is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and its environment. Some of the techniques include machine learning, data mining, visualization, social network, gamification (Sclater, 2017; Nistor & Hernandez, 2018).

Mixed Reality (MR)

This is the merging of real and virtual worlds to produce new environments and visualizations, where physical and digital objects co-exist and interact in real time.

Virtual Reality (VR)

This is a simulated experience that can be similar to or completely different from the real world. Application of virtual reality can include entertainment (i.e. video games) and educational purposes.

Augmented Reality (AR)

This is an interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information, sometimes across multiple sensory modalities.

Video-Based Computer-Assisted Test (VBCAT)

This is also known as video computerized-assessment or video computer-administered testing is a method of administering tests in which the responses are electronically recorded, assessed, or both. As the name implies, it makes use of a video, computer or an equivalent electronic device such as a cell phone or PDA. VBCAT systems enable educators and trainers to schedule, deliver, and report on surveys, quizzes, tests and exams with the aid of a video.

Quantum Computing: Quantum Computing is a type of computing that uses quantum-mechanical phenomena to carry out operations on data that are currently too complex for a classical computer to perform (Juliano, 2023). The QC can be taught in our schools as a means of building the capacity of the pupils and students of today to handle the data needed in the future for resolving many issues in our environment militating against the attainment of most SDGs. It is used to perform simulations of chemical reactions and protein folding which are critical for drug discovering, machine learning, cyber security, securing data against attacks from quantum computers.

Conclusion

The core message of this paper is that curriculum, educational technology, teacher acceptances are the functions of emerging technologies and our national economy is their function. It is true that emerging technologies possess unimaginable capacities to influence behaviors including the behaviors desirable for the achievement of SDGs, but they must stand on the shoulders of curriculum, educational technology and teacher acceptance to operate in the most effective and efficient manners. Until they harness and guide emerging technologies into education, the miracles of emerging technologies will not be activated. Emerging technologies are educational technology tools in instructional technology. To this end therefore, one should not look at emerging technologies in isolation.

Recommendations

For the fact that SDGs are a near perfect projects but capital intensive with clear cut targets and monitors, let it be a lifelong projects as suggested by Areji & Onuba (2022). This should be so because the world cannot ameliorate destructions that took billions and millions years to perpetrate within a space of fifteen years (2015-2030) unless we want to pay a lip service to such noble projects.

In today's world our schools should be preparing students for works that might not yet exist and even on how to solve unknown problems. Careers readiness means equipping students with numerous sets of skills that can prepare them for the unknown.

Social media has change human interaction and created new challenges in navigating social situations. Children must not be allowed to use them without checks and balances.

The **age of the internet** has dramatically increased access to knowledge. Students need to know how to access and process large amounts of information.

Content knowledge from core subjects cannot go so far, therefore, students need to be taught how to apply facts and ideas towards complex problems (critical thinking).

These skills and literacy are essential for everybody in the world of now and the one to come to achieve the SDGs.

Learning Skills: These skills teach students mental processes required to adapt and improve upon modern work environment.

Literacy Skills: These skills focus on how students can discern facts, publishing outlet and the technology behind them. Determining trustworthy and factual information and separating them from misinformation that floods the internet.

Life Skills: These skills focus on the intangible elements of a student's everyday life, these intangibles focus on students' personal and professional qualities.

Information Literacy: The ability to identify, find, evaluate and use information effectively.

Media Literacy: The ability to identify different types of media and evaluate and understand the messages received through each.

Technology literacy: The ability to use, manage, evaluate and understand technology.

Connectivity Literacy: The ability to relate friutfully with all creations.

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