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EMERGING TRENDS IN EDUCATIONAL TECHNOLOGY

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ABSTRACT

The COVID-19 pandemic is rapidly showing why online training ought to be an imperative piece of educating and learning. By incorporating innovation into existing educational plans, instead of utilizing it exclusively as an emergency the executives' apparatus, instructors can bridle internet learning as an incredible instructive device. The compelling utilization of advanced learning tools and platforms in homerooms can build understudy commitment, assist instructors with further developing their exercise designs, and work with customized learning. It likewise assists understudies with building fundamental 21st-century abilities. Interactive multimedia applications, expanded reality (AR), video, simulations, virtual classrooms along with other educational technology platforms cannot just make class all the more energetic, they can likewise establish more comprehensive learning conditions that cultivate joint effort and curiosity and empower instructors to gather information on understudy execution. All things considered, note that innovation is an instrument utilized in training and not an end in itself. The guarantee of instructive innovation lies in how teachers manage it and how it is utilized to best help their understudies' necessities.

Keywords: Educational Technology, EduTech, Education, Digital Learning, Online Education.

1.0 INTRODUCTION

Educational technology is the field of education that implements appropriate technological tools, processes, and techniques to facilitate learning. The integration of technology into education reinforces the application of memory, sense, and cognitive ability to facilitate teaching, learning, and overall improvement of learning outcomes. The application of technology in teaching can usually improve the relationship between educators and learners, hence making the tasks of teaching and learning more fun and meaningful to both parties. This is possible when the teachers utilize technology in subject areas. It makes them become more of a coach, content experts, and advisors rather than monitoring and controlling at the same time. The growing interest in education technology in the world has led to the emergence of more advanced and sophisticated technologies that are more efficient, effective, and reliable as far as learning is concerned. They include data privacy, cyber security, assistive technology, virtual reality, block chain technology, big data solutions, learning analytics, STEAM-based programs, and flipped learning.

2.0 OBJECTIVES

The main goal of educational technology is to facilitate the process of learning and to raise the standards of education. In essence, it emphasizes efficiency and effectiveness by enhancing the process of teaching and learning and enable better performance in informative institutions. The current trends in educational technology aim to impart knowledge and skills in planning and evaluation using modern technology in an education setting. The use of learning technology helps elevate learners to human learning and fully introduce them to the third revolution in edification, computer technologies (Lim et al., 2013). It also aims to assist educators in analyzing the various characteristics of learners and effectively evaluate their performances at any given period of earning. The presence of big data technologies backed up with machine learning and analytics aims to provide a wide range of research and provide feedback and other educational components that help modify learners in an appropriate manner. Additionally, some of the emerging technologies like assistive learning and flipped learning aim to organize educational content in a psychological or logical sequence such that it helps the learners to cognitively meditate between content and the presentation resources hence improving their comprehension capability.

3.0 CURRENT TRENDS IN EDUCATIONAL TECHNOLOGY

3.1 Data Privacy

Data privacy is a trending technology in education where it is majorly used when dealing with students' and teachers' personal information. When they interact with school networks and computers for learning, students' information and personal data are often left and exposed to risks of insecurity. Therefore, data privacy initiatives have been adopted to mitigate these risks within the educational systems, even as the learners use digital devices and other tools to enhance their learning experiences. One of the data privacy technologies that have been put in place in recent years is the principle for protecting student privacy (Landau, 2015). This principle is effective across the United States learning institutions. It utilizes the five principles of transparency, security protection, no commercial use, parental rights, and enforcement. In this technology, if a student's data is exposed or leaked to an organization or a person outside



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the school system, the parent is immediately notified for appropriate action. Also, all educational facilities are expected to implement data security protocols that ensure that all personal data is encrypted for maximum security. It takes into consideration the personal data of the students and their access credentials. Additionally, the principle denies the selling and using of student data to make money out of it. Some laws define the kind of fines that should be administered to educational systems that fail to ensure student data privacy in their institutions.

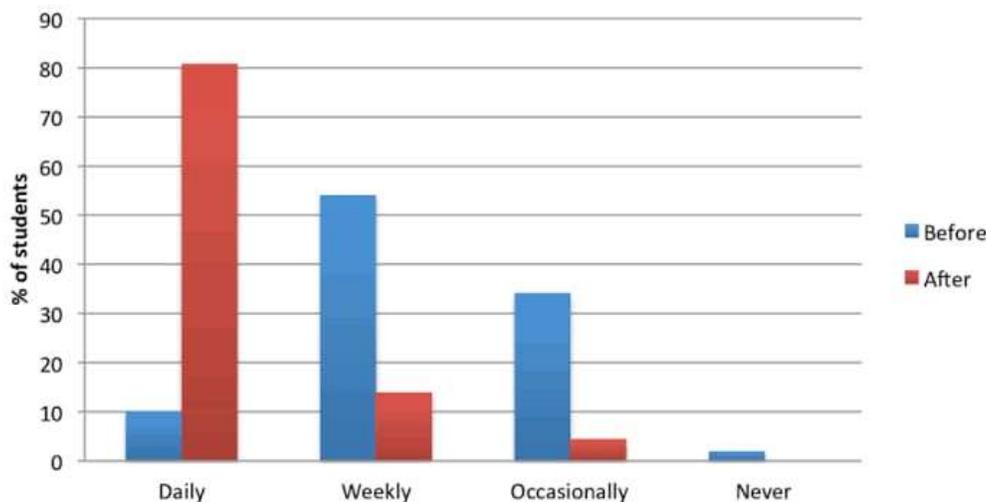
3.2 Cyber Security

Cyber security refers to the technology of protecting networks, systems, and applications from attacks by malicious entities. This technology is a trend in education systems because it has been recently adopted in various learning institutions to prevent unauthorized access, change, and destruction of sensitive information that would disrupt the institution's normal businesses. As technology continues to develop in education systems, there is also a need to advance cyber security (Chapman, 2019). This advancement is essential because of the new cyber threats that emerge every day, affecting our day-to-day activities. Educational institutions attract most criminal activities because of the volumes of data stored in the systems, including student databases, alumni information, research data, and details of various suppliers. The attackers are also aware that the schools implement legacy systems that are usually less equipped for sophisticated and modern security threats. Therefore, the school systems have tried to adopt more effective ways to improve cybersecurity. The IT administrators have improved their skills and strategies to ensure that they are accountable for reviewing and occasionally backing up systems to ensure that they are always up to date and free from threats. There has been strict enactment of reviews that govern the access to the systems and protection of systems' access credentials.

3.3 Assistive Technology

Assistive technology emerges in many forms, including those to do with video-assisted learning and display technologies. Recently, video-assisted learning has developed in the field of education and has gained popular use in classrooms. Classroom sessions such as video day are no longer there since digital devices have become an everyday tool in learning. Assistive technology is also booming currently because of the effects of the COVID 19 Pandemic, which has forced learning to engage in distance learning. Online learning platforms like Microsoft teams, zoom and other recorded instruments using a wide range of digital and media functions improve learning outcomes among students and train employees (Gowda & Sum, 2017). These assistive technology platforms deliver educational content to learners via smartphones, laptops, personal computers, tablets, and other network-enabled devices. Initially, the average number of students who used technology for learning was quite low compared to the current number. This is because of the fast adoption of assistive technology in schools to teach and deliver content by educators.

Frequency of technology use



(Male et. al, 2012)

Therefore, learners using assistive technology can learn more quickly wherever they are through direct interaction with the information on their devices, which also gives them the autonomy to make their own choices on what to learn next. This trend has been beneficial in ensuring interactive learning and saves time taken to access learning materials.



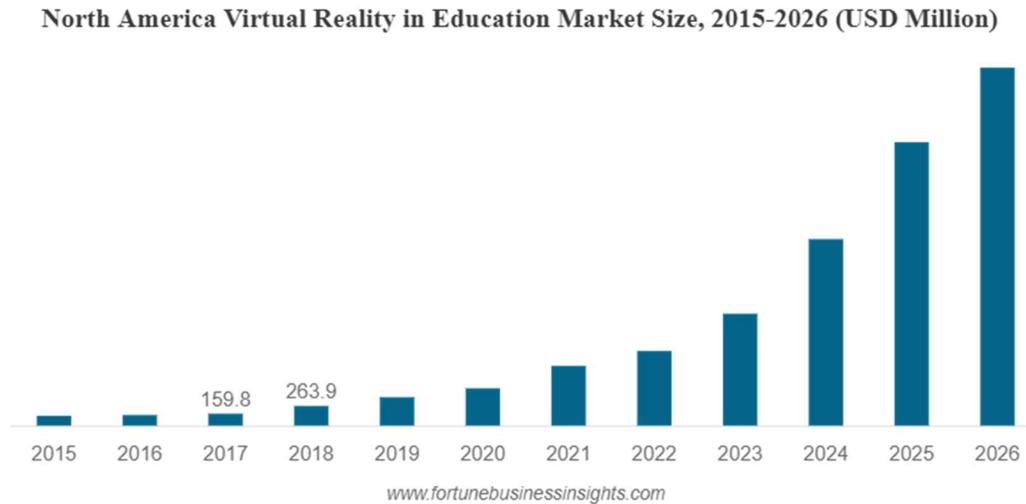
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3.4 Virtual Reality (VR) and Augmented Reality (AR)

Virtual reality (VR) is an emerging technology that has been set to change how we learn and teach in schools. It is used to enhance the ability of the student to engage and learn in a classroom setting. This technology improves how content is delivered where the learners and the teachers can create a virtual world out of a subject, either imagined or real. When they use virtual reality technology, they can see all the dimensions of an object and interact with it accordingly to make new knowledge out of it. There is immense growth in the Virtual reality market size in all education levels, including k-12, vocational learning and higher learning systems. A representation of North American statistics is shown below, as recorded by the fortune BI report.



In 2018, the global virtual reality in the education industry was worth USD 656.6 million. By 2026, it is expected to have grown by 42.9 percent annually to 13,098.2 million USD ("Virtual Reality (VR) in Education Market Size, Research, and Growth Report 2026", 2021).

Similarly, Augmented Technology (AT) technology is a feature of education used to enhance learners' learning of various abilities. They include learning abilities to collaborate, solve problems, and prepare learners better for the future. Augmented reality has been adopted to help teachers and tutors to improve their learning outcomes via increased interactivity and engagement s with the learners.

3.5 Big Data, Machine Learning, and the Internet of Things (IoT)

Big data technology is utilized in schools in various forms because of its important learning and teaching experiences. Big data helps facilitate institutions, educators, management, and learners that amounts to the optimization of education intelligence. It is known to have recently transformed education by enabling teachers and tutors to make personalized lesson plans and predict their potential learning outcomes. Through big data, students can find advanced learning institutions that adequately fit their majors, skills, and interests.

Similarly, Machine Learning technology has contributed to the total transformation of education. It has changed how educators and learners conduct their teaching, learning, and conduct research. Machine learning helps tutors identify students struggling more than others to take proper actions to improve the learner's retention and overall success. Researchers also make new insights and discoveries through the providence of machine learning.

Internet of things is another emerging technology that works to ensure the interconnection of devices and appliances across the school setting. The application of IoT in schools means more collaboration and connectedness among the educators, learners, and the educational devices used in classrooms. The teachers can then measure the learning process of students in real-time through improved communication channels in schools.

3.6 Blockchain technology is used in Massive Open Online Courses (MOOCs)

The trending Distributed Ledger Technology from blockchain offers a slew of advantages to education, particularly in storing data. According to Lim et al. (2013), "Technology enhances access and processes, and mediates the storage of information and



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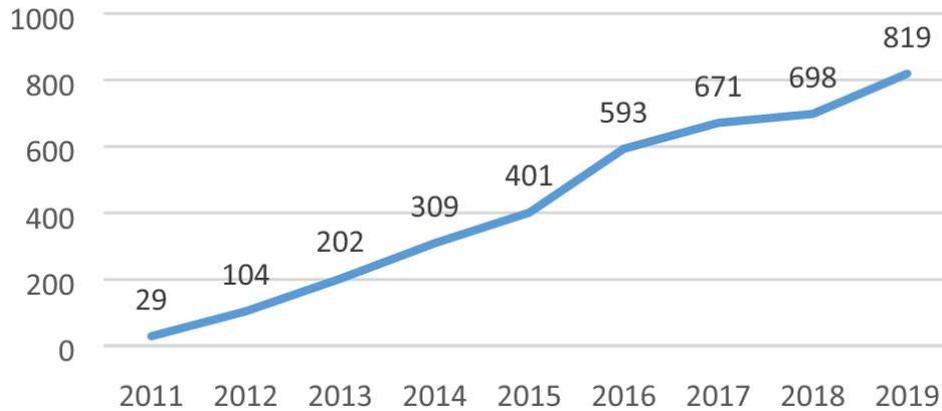


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communication with others without differentiating their quality." This statement is evident in this trending technology. In Blockchain technology, each new piece of data adds to the blocks to the system, making the system's loading capacity theoretically endless. This technology enables the data to be encrypted and disseminated to multiple devices in the system at the same time. It decentralizes and makes data transactions more transparent. It is also applied in the selection center to verify the knowledge and skills of an individual. In essence, blockchain technology is used in Massive Open Online Courses (MOOCs) and ePortfolios to determine students' performances regarding their abilities and knowledge consumption. For eLearning agencies, the DLT systems will solve authentication, cost, and scale of learners. Furthermore, it assists student candidates in publicizing achievements in the process of job-search.

3.7 Learning Analytics

The technology of educational analytics has exploded in recent years, particularly in higher learning. Educators have rapidly adopted it across the world for better analysis and representation of learners. Tutors and teachers can use learning analytics to quantify and evaluate student learning using only the internet. They will be able to better optimize and understand concepts as a result of this. Teachers can increase their students' skills and knowledge acquisition by reading facts from their students' educational process. Teachers, for example, can see which types of content in forms of text, photographs, infographics, or films students prefer and use more than others in their subsequent sessions, hence, creates a personalized learning process (Siemens, 2013). The graph below indicates the development of the number of studies on learning analytics between 2011 and 2019, as published in the SCOPUS database (Lee & Cheung, 2020).



Furthermore, teachers can identify which elements of knowledge were not taught properly and improve them for the subsequent sessions. It is also important to note that learning analytics assists educators in identifying groups of learners who may be experiencing behavioral or academic difficulties so that they may be able to devise a strategy to assist this group in realizing their full potential. These outcomes are only possible, fast, and effective through learning analytics.

3.8 STEAM-based programs

STEAM-based programming is an emerging technology in education that has brought a new meaning to education worldwide. The STEAM-based curricula have been set to replace the initial STEM-based programs as the new education technology standard for educators and learners. This new technology trend uses hands-on learning activities and creative design to tackle real-world problems using significant Science, Engineering, Technology, and Math material and learning content (Bati et al., 2018). Arts is also the new element introduced to this kind of education technology. In terms of the benefits of STEAM-based learning program, the first is that it encourages children to become more anxious to learn about the world and the various elements existing around them. Furthermore, it provides a safe atmosphere for students to think outside the ordinary through better communication and experimentation of their ideas while they are learning. It also ensures hands-on learning, making it easier for pupils to collaborate with others within a learning environment.

3.9 Flipped learning

Flipped learning is another technology that educators mainly use to enhance learning and improve learning outcomes among learners. It is a teaching style that encourages teachers to emphasize active learning by giving students lecture materials and presentations to watch outside of class or at home to supplement what they learned in class. Through flipped learning, the teachers can use video or presentation software with narrations to demonstrate a subject to learners. Also, it is beneficial to learners since they can access the content and prepare for the next day's events before a class session. It is an electronic platform that assists teachers in switching from



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conventional teaching lecturing to the flipped classroom model, which provides them with the control over when, how, and where they learn at their convenience (Siemens 2013). It allows them to connect with the media content in the way that best suits them.

3.10 Products of Education technology companies

Education technology companies have introduced products that have enhanced learning among learners and provide entertainment during leisure. An example of products by education technology companies is gamification. This product involves an engaging and amusing way of learning using platforms in digital devices. Through gamification, learners become more involved in education and getting high scores is equivalent to learners attain excellence in their studies. Gamification is not limited to learners of lower stages but can also be applied in higher education and the corporate scene to reduce autonomy and increase attention levels.

Additionally, many application and software programs are developed by educational technology companies to align with the increased use of technology in learning. Products of educational technology companies include; digital textbooks and storytelling, authoring tools, and student study tools available offline and online. Educators continue to use products of educational technology companies to increase efficiency in teaching skills and concepts, and therefore, this emerging trend is becoming a common tool in the curriculum.

4.0 CONCLUSION

Education has been transformed into a big ranger over the past few years. This is because of the emergence of better technological abilities that have helped promote and facilitate learning in learning institutions. Following the ever-advancing technology in various sectors of the economic world, the field of education has not been left behind. The emergence of the trending technologies discussed above has boosted the teaching and learning capabilities and equipped the learners and educators with better skills to integrate, interact, and use technology in various aspects of their lives. Therefore, there is a need to embrace and uphold technology in education.

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