Investigating the Use of Technology in Education

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Abstract

A variety of methodologies, scenarios, and perspectives have been used to evaluate the use of technology in education. The massive amount of literature on learning technology evaluation makes it difficult to get a sufficient understanding of the numerous components of learning that are investigated and the possible approaches that may be employed to evaluate them. This research undertook a thorough review of how technology has been evaluated in education. Since technology is utilized so frequently compared to past generations in the digital era, today's generation has a high level of technical literacy. Recent technological developments and the rise in literacy have accelerated the adoption of technology in education. Due to the exponential growth of technology use in education today, including tools like distance learning, the scope and significance of study on educational technology have greatly increased with the introduction of the Internet, simulations, and instructional games. With a focus on the function and significance of research findings shaping instructional practices and policies to increase learning in schools, this article examines both past and present research trends. The article explores the relationship between education and technology.

Keywords: *Education, Technology Integration, Nano-Learning, Artificial Intelligence, Chatgpt4, Chabot.*

INTRODUCTION

Education is one of the essential elements of wealth. Education has the power to significantly improve someone's life. Teaching is the process of imparting or gaining knowledge as well as growing students' critical thinking and decision-making abilities. It mentally arranges the course of one's own or other people's lives. Education is a basic need for everyone. For us, having access to food, clothing, and housing is not more important than having an education. Education provides us with knowledge in a wide range of fields and improves our quality of life. A person's success is solely determined by their level of education. The importance of education in one's life is universally acknowledged. A way to acquire new knowledge. Its goal is to improve the person's mental, physical, and emotional well-being by placing them in a better situation than they were in before. People have

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relied on historical instructors to help them survive since the beginning of time. There are numerous people who support a person's education. For a young child, the majority of the knowledge acquired comes from parents and other close family members. As children grow into adolescents, they learn (Cloete, 2017).

From a variety of sources, including instructors, friends, and even their environment. A perfect education encourages learning while combining useful knowledge that can be applied to daily life. For the student's wellbeing, it is equally important that the teacher provide alternate information. The teacher should provide alternate information to ensure the student's wellbeing and make education relevant to daily living, going beyond the content found in books. In school, nutrition is crucial. It is essential for someone to have a good lunch before class in order to be alert and attentive and to remember the material (Williamson, Eynon, & Potter, 2020).

There is no greater value in human existence than education. That is why education is often considered the most valuable possession a person can have. Education endures a lifetime, unlike material possessions which can be lost. Education is what distinguishes humans from other species on Earth. It broadens our thoughts and awakens us. An educated individual is disciplined and courteous. He/she knows right from wrong. It imparts moral values and ethical norms to humans. It cultivates qualities such as intelligence, self-assurance, timeliness, tolerance, and submissive behavior, among others. It teaches us the importance of and regard for other individuals. A person's success is solely determined by their level of education (Scherer, Siddiq, & Tondeur, 2019)

People with little education usually act poorly and are unable to make intelligent decisions in life. In the community, he/she is often ignored. Their manners and virtues are inadequate. Conversely, a person with a good education enjoys a positive reputation in society. He/she gains the respect of all by teaching others manners and discipline. Education can also have an impact on one's job. An educated person with superior technical skills and technological knowledge. He or she will therefore have a better chance of landing a job that pays well. Through education, people can access a multitude of opportunities and enhance their quality of life. It is a strategy for reaching life's financial wealth (Chick, et al., 2020).

Society puts knowledge above everything else, even the value of an individual's life. A society that places a high value on education is high-achieving. These days, people are kind and considerate of one another. The social milieu is one of prosperity, progress, and peace. A culture with a large pool of educated laborers advances faster because it attracts bright minds and individuals with diverse viewpoints. Furthermore, education facilitates socialization. In school, kids learn about moral and social skills, including cooperation, understanding, and honesty. Children pick up social and cultural norms from the information their parents impart to them. Education serves as a vehicle for the dissemination of literature, philosophy, culture, religion, and social viewpoints. Education also benefits the country. The level and quality of education received by its citizens determine the country's progress. Education is the key to creativity and technology. A well-informed citizen is considerate and compassionate. He or she continuously advocates for the peace and prosperity of the nation. A highly educated nation possesses the competent labor force necessary for its advancement. The nation's social, financial, and economic position improves when residents have better career chances thanks to education (Camilleri, & Camilleri, 2017).

The educational trend is characterized by increased connectivity and technological applications in learning environments, which place EdTech at the center of innovation. Following the COVID-19

instances, several nations decided to alter how students are instructed. Instead of going to school and sitting in a physical classroom, many teachers and students now have to participate in virtual environments using online meeting platforms like Zoom, Google Meets, Microsoft Team, and others. The new normal that has emerged two years after the pandemic breakout has caused a substantial disturbance that the education sector must address. The present and future of educational technology are virtual or distant learning. As a result, the industry as a whole prefers to go forward with education software development. The current study will provide with a detailed illustration of how technology will impact schooling through the year 2022 and beyond (Sun, & Chen, 2016).

THE FUTURE OF EDUCATION TECHNOLOGY

In reality, virtual learning had enormous development potential as the foundation for upcoming educational technologies even before the COVID-19 pandemic. The introduction of online course delivery systems like EdX and Coursera in western nations has brought the idea of distant learning closer to students all around the world. Due to the success of such platforms, edtech has evolved, placing technology at the forefront of the modern development age. Therefore, software-integrated education and electric connectivity would be the two main focuses of future educational technology (Sun, & Chen, 2016).

HOW WILL TECHNOLOGY CHANGE THE EDUCATION SYSTEM IN THE FUTURE

Students often have a flawless learning experience thanks to education technology, even if they are unable to attend class. When all schools closed during COVID-19 to stop the virus from spreading, it was logical. In this instance, there was a large increase in demand for online education, which benefited market leaders greatly. A classic example is Zooming, a videoconferencing communication tool. By 2020, there had been a significant rise in the number of users using the app, with over 480 million additional downloads. By the year 2020, they were hosting daily internet conferences for more than 45 billion minutes. The yearly meeting minutes held on Zoom increased by more than 260 times, from 100 billion minutes to 1 trillion minutes, starting in Quarter 2 of 2020, when schools and offices were closed. While supporting business conferences was part of Zoon's original plan, they also made a transition to better assist students and instructors. For students in a few chosen countries, Zoom has recently introduced a new group video chat feature. The three test markets were the USA, Japan, and Italy. That approach appears to be Zoom's first move toward dominating the online education market (Savelyeva, & Park, 2022).

The fact that COVID-19 is not the only aspect affecting how education is digitalized. Professors and instructors have been experiencing the disruption caused by that technological application to the way they manage a class for a while. As a result, the influence of smartphones on education has altered the notion that smart gadgets will have a negative impact on the learning process. The use of online learning applications is widespread at the moment (Davronovich,& Mansurjonovich, 2023).

WHAT IS EDTECH?

Education technology, also known as EdTech, utilizes computers, computer programmers, and educational systems to provide instruction and training to users, employees, and students. Using computers, computer programmers, and educational systems, it offers instruction and training

to users, employees, and students. The broad field of education technology encompasses learning theories and growing research into the most effective ways to teach people new skills and knowledge, in addition to the hardware and software utilized in online education, distance learning, or remote learning. One of the first EdTech companies, CFI offers training and certification to current and future professionals in the global financial services sector. The Function of Technology in Education Students may now have a visual and conceptual knowledge of what they are studying with the aid of technology (Donahoe, et al., 2019)

Technology and Education: Their Role A visual and conceptual comprehension of what they are studying is now possible for pupils thanks to technology. This generation has a greater understanding of technology thanks to the advancements it has brought about and the eminent scientists who have altered our understanding of the universe. Technology plays a significant role in our lives nowadays, as we all know. In order for us to communicate with others throughout the world, technology is a must wherever we go. Did everyone agree that our dependency on technology has negative effects? The internet, which has spread up-to-date knowledge worldwide, serves as both a definition and an example of technology in this context. The technique can occasionally be provided, and the internet, which has facilitated the dissemination of current knowledge globally, serves as both the definition and an example of technology in this context. We can benefit from technology on occasion. Having said that, the majority of us do not value contemporary technology or its careless use of time. For instance, students might research topics online to expand their expertise and enhance their essays. However, the majority of students simply use technology to copy and paste their assignments rather than try to think for themselves. Additionally, this negatively affects the pupils (Williamson, 2021).

In other words, a person's creative ability may be impacted by technology. The benefits that Ed Tech Technology offers to education are numerous and significant. Instructors believe that different students learn in different ways and at varying rates. For example, while some students learn best through reading, others discover that knowledge presented graphically helps them retain it better. Thanks to EdTech, students can choose to learn from the sources that they believe will be most beneficial and productive. One of the key benefits mentioned by students using online learning is the opportunity to receive training and teaching at their own pace and convenience. Everyone has much easier access to education and ongoing professional development because of the flexibility of online learning. It is especially helpful for people who have a full-time job and would find it difficult to attend university classes on a regular basis. One glaring and significant benefit of EdTech is the massive potential cost savings in education. Attending an online education is significantly cheaper than attending a large university or even a small community college. Thanks to the decreased cost of online learning, obtaining a degree or other professional qualification will be considerably more affordable for anyone looking to expand their knowledge and skill set (Williamson, 2019).

EDTECH TREND

It goes without saying that every innovation in the education sector supports a human-centered approach. The EdTech trend discusses how students, instructors, schools, and other players profit from emerging technological breakthroughs rather than future educational technologies (Li, & Wong, 2021).

CLASSROOM EVOLUTION 4.0

Classroom 4.0 self-paced learning, which is gaining popularity these days and empowers students with greater decision-making authority over their own learning process, is built on the idea of personal learning. With Classroom 4.0, students are given the option to customize their course load depending on their interests and skill levels.

Technology integration in Classroom 4.0 enhances skill development even outside of the classroom. Around 60% of teachers and students, according to McKinsey insight, are familiar with at least one automated, self-paced teaching or learning method. Analytics and automated insights also refer to the widely used implementation of Classroom 4.0. Each student would be the focal point of the models, embracing the potential of future educational technologies and discouraging anyone from falling behind. With Classroom 4.0's high degree of personalization in learning, students may design their own education and take on greater responsibility (Brahma, Tripathi, & Sahay, 2021).

APPLYING MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE

AI in education is one of the main drivers of the Classroom 4.0 movement. Many individuals believe it is a genuine possibility to design learning structures when it comes to creating a unique curriculum for each learner. It goes without saying that the previous approach required a lot of time and money to develop a standard curriculum. So how can we get customization that is appropriate for each person? AI, or artificial intelligence, is the solution. AI-driven technology saves a significant amount of time and effort by automatically tailoring the curriculum to each student's talents and interests. Conventional education is being harmed, as illustrated by Duolingo. According to some research, children may learn all they would study in a semester of school by using Duolingo for about 35 hours without a doubt, online learning, or self-learning (Gebremariam, Usman, & Qaraqe, 2019; Lo Piano, 2020).

CHATBOTS

Chabot technologies are becoming more common in assisting learning, not just in e-commerce. Catboats foster communication between pupils and computers by preventing human connectivity delays. In essence, the prolonged disruption caused by this kind of contact enhanced the user experience. Schools might easily expand their teaching services beyond their physical capacity with chatbot technology. It might, in a sense, guarantee educational parity between industrialized and developing nations. As a result, catboats produce feedback instantly and reduce the amount of paperwork involved in grading. According to certain research, it executed tasks 90% more accurately than teachers did by hand. The chatbot facilitates self-paced learning, which automatically gathers and monitors student performance, and it also supports Classroom 4.0. As a result, it would produce an extensive manual and assistance based on those findings (Kuhail, et al., 2023).

VIRTUAL LEARNING OR VIDEO LEARNING PLATFORMS

1 Virtual classroom apps and e-learning portals are at the core of the idea that video learning will soon take over the way we study, according to current and future educational technology. In 2020, a poll revealed that video-based learning served as the

foundational element of the educational path for 98% of US students. In addition, virtually all colleges and universities acknowledged employing video in a variety of ways to enhance their curricula.

2 According to other studies, video-based learning may increase student success and satisfaction by 90% and 80%, respectively.

3 Utilizing study resources for lectures and tasks

4 Flipped instruction is used as a model for how courses should be taught. Thorough feedback is given along with a video recording.

5 Balancing the processes of online and offline learning (Scavarelli, Arya, & Teather, 2021; Wang, et al., 2021).

CLASSROOM OF THE FUTURE

This might be similar to how the classroom of the future in some science fiction films liked how technological advancements gave the human hand greater power, Virtual reality in education refers to the high level of support for classroom simulations. An ideal classroom would be created by future educational technologies in high-tech classrooms.

Smart classrooms in the future will utilize both smart hardware and educational software development to offer courses. The classroom is being invaded by technology in education, from prekindergarten to high school. In the future, high-tech classrooms will need to strike a balance between creativity and finances. In other words, the smart classroom may result in greater global inequality. Developed nations easily adopt high-tech classrooms, while emerging and underdeveloped nations struggle to fill the gaps (Elayyan, 2021).

FUTURE EDUCATION SYSTEM – INNOVATION OF EDUCATION SOFTWARE DEVELOPMENT ON THE GO

A few prestigious colleges have launched a cutting-edge educational initiative to advance digitalization technology by enhancing the abilities of educators. Thus, the goal of this program is to assist teachers in developing their leadership, communication, and curriculum design skills. It recommends integrating technology into instructional activities. Another feasible initiative, "Passport to Education," provided funding for the tuition system that today aids students in paying off their educational debt. To keep study costs down, this program uses a subscription-based tuition model. Education is more affordable when alternatives to online courses are combined with monthly payment plans. In terms of learning architecture, future educational systems may facilitate self-learning or flip classrooms. With next-generation education, students would be able to independently research material rather than relying exclusively on instructors. In the future, homework will be assigned prior to class. In addition to employing the most recent advancements in educational technology to prepare students for the best learning environment possible in the future, they may also use databases, online resources, and other tools to expand their knowledge. It is obvious that education 4.0 cannot completely replace traditional teaching techniques. Blended learning, according to experts, will integrate two distinct teaching philosophies. Thus, the focus of education in the future would be on creating a technologically advanced environment that preserves all the advantages of a robust student-teacher relationship. The human aspect of the education sector cannot be replaced, regardless of how innovative the technology becomes (Halili, 2019).

EDUCATIONAL TECHNOLOGY TRENDS IN 2023

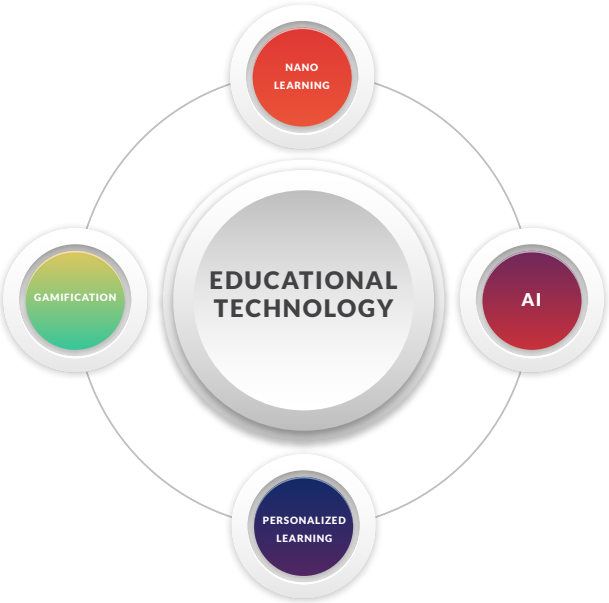

Figure 1: *Trends in Educational Technology in 2023*

NANO-LEARNING

Students that get training in this manner are provided with easily understood and retained material. Its teaching resources, which address the issue of a condensed time frame, include texts, quick films, and sound bites. This approach to learning is designed to be easily digested by younger people, particularly Gen Z. Their short attention spans, which are common in the digital age, are the cause of this. Typically, nano-learning programmers are one-off programs that run for two to 10 minutes. Given that nano-learning is irreplaceable, more people ought to prefer it in 2023. Globally, there are more digital tools and knowledge sources available. In addition, as technology advances, the average human attention span is getting shorter and shorter every day. Studies indicate that it is currently 8 seconds, although that figure may drop soon. The most likely educational approach to be useful under the current conditions is nano-learning (Lo Piano, 2020).

AI (ARTIFICIAL INTELLIGENCE)

The e-learning sector has benefited significantly from artificial intelligence (AI) technologies. It offers a setting that encourages pupils to benefit from individualized learning opportunities. With the use of these tools, students may create learning habits that fit them. Additionally, it offers Chabot help that is available around-the-clock, providing quick feedback (Kuhail, et al., 2023; Scavarelli, Arya, & Teather, 2021).

The growing popularity of self-education increases their motivation to achieve better. According to studies, 52% of US graduates prefer online higher education to traditional classroom instruction. This demonstrates that pupils favor the ability to self-study that AI provides. Grammar, Duolingo,

and Hankster are just a few examples of these AI products. In 2023, we can expect to see an increase in the number of online learners benefiting from AI, thanks to this advancement.

PERSONALIZED LEARNING

This kind of education adapts instruction and its resources to meet the needs and capacities of each learner. Based on their areas of strength and weakness, each student can choose their own course of study. This will improve their learning process and help them retain more information. A website like Quorum provides individualized science, art, and other tuition classes. More pupils may now shift their studies online because to the epidemic. This implies that they have a better chance of having a tailored learning experience. In 2023, it will be one of the eLearning trends that is most widely used (Wang, et al., 2021).

GAMIFICATION

According to Taylor and Francis, 67% of students like gamified courses because they perceive them to be more stimulating. Additionally, game-based learning is more interesting to 80% of US workers. This demonstrates how the gamification learning approach is entertaining and instructive. According to a different study, gamification and reading together can boost results by 45.5% and 60.67%, respectively. This demonstrates that this method of learning is not only pleasant and instructive, but also successful. In order to make learning more engaging, this method of learning employs game mechanics in non-gaming settings. It frequently boosts user retention and engagement. These platforms include Khan Academy, Duolingo, Solo Learn, and others. The global eLearning industry is expected to reach $325 billion in 2025, making EdTech the most widely used educational technology ever (Elayyan, 2021; Halili, 2019) .

RELATED WORK

Zhai, et al. (2021) analyzed studies to identify the utilization of artificial intelligence (AI) in the field of education and explore potential areas of future research and challenges associated with AI in education. We selected 100 publications from the Social Sciences Citation Index database's education and educational research category between 2010 and 2020. These publications comprised 37 analytical and 63 empirical pieces, totaling 74 studies. The content analysis revealed three categories into which the research questions could be subdivided: application (reasoning, feedback, and adaptive learning), integration (gamification, role-playing, affection computing, and immersive learning), and development (classification, matching, recommendation, and deep learning).

Surden (2019) provided a high-level overview of artificial intelligence and its uses in law. This article allays those worries. The goal of the discussion is to be both advanced and accessible to those without a technical background. For that reason, the researcher started by discussing AI in general. Next, it was explored how government authorities who enforce the law, individuals and companies under legal control, and attorneys in the profession of law apply artificial intelligence. One of the main reasons for publishing this article is to offer a practical, demystified understanding of AI that is based on its genuine capabilities. This is meant to offer a counterpoint to discussions about AI and law that lean heavily toward the future.

According to Vaishya, et al. (2020), healthcare institutions desperately need decision-making

systems to deal with this virus and help them get the right advice in real time to stop it from spreading. Artificial intelligence works well to mimic human intelligence. It might also be crucial in comprehending and recommending the development of a COVID-19 vaccine. This results-driven technology appropriately evaluates, analyzes, predicts, and monitors current and prospective patients. The important apps monitor data from instances that have been confirmed, recovered, or died.

According to Baidoo-Anu and Ansah (2023), the benefits of ChatGPT include, but are not limited to, fostering interactive and individualized learning, generating suggestions for formative assessment tasks that offer ongoing feedback to guide instruction, and more. The study also points out a number of ChatGPT's intrinsic flaws, including inaccurate information production, biases in data training that could exacerbate preexisting prejudices, privacy issues, and more. The study offers suggestions for enhancing teaching and learning with ChatGPT. To improve education and help kids, policymakers, researchers, educators, and technology experts may work together to start conversations on how to use these emerging generative AI tools securely and productively.

Noordt and Misuraca (2022) examined how these fundamental governance responsibilities are impacted by AI deployment in the public sector. Results from an analysis of 250 cases around the EU show that artificial intelligence (AI) is most often used to support better internal management and public service delivery. Policy decision-making is supported by AI only rarely, either directly or indirectly. According to the report, a wide range of governance activities utilize various AI applications and technologies, highlighting the necessity for further in-depth study to fully understand the function and implications of using AI in governance "of, with, and by AI."

CONCLUSION

In the realm of education, artificial intelligence (AI) is essential. With the rise in popularity of remote learning, its significance is growing. Even though many educators find remote learning difficult, everyone is overcoming obstacles and interacting with students. With the help of these ideas and techniques, you may make better use of AI so that you can engage your pupils right away and maintain their interest. Educational technology helps to make education more global. It guarantees that children everywhere get a good education free from discrimination and division and helps to expand education throughout the world. Additionally, it makes navigating the educational system easier. Technology is here to stay in education since it is a more productive and efficient way to learn.

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