Information and Digital Technology in the process of learning

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Abstract

The integration of digital and information technology has marked a turning point in the education field. It altered and replaced conventional teaching approaches, strengthening and enhancing the way learning was conducted in various educational settings. This article discusses the capabilities and difficulties associated with digital technologies. It concentrates attention on digital tools, learning platforms, learning management systems, educational applications, virtual classrooms, the availability and enhancement of personalized learning, together with the effectiveness of student interaction. In addition, it addresses the digital divide and the need for equitable access to mitigate the effects of educational inequality. Besides that, the article informs us about best practices for integrating technology into the teaching and learning process, suggests ways for educators to maximize the use of digital resources, and highlights the potential of technology. It also considers the difficulties that must be overcome to provide an effective and inclusive learning environment and raise the standard of education.

Introduction. Today, digital and information technologies are of utmost importance in the progress of global civilization, significantly impacting every field, including education, to a higher degree than ever before. The technological improvements have greatly influenced and brought about substantial changes in modern education. These technologies have not only altered how knowledge is spread but have also generated fresh prospects for individuals involved in the educational process. An extensive range of digital tools is currently accessible to learners, educators, and lecturers, enabling enhanced interaction, broadening online learning possibilities, and improving access to resources.

Discussion. In parallel with technological advancements, educational institutions are increasingly integrating these technologies into the teaching and learning processes, thereby facilitating the experience for both teachers and students. While the integration of technology offers numerous benefits, it also presents certain drawbacks. On one hand, technology enhances human learning in innovative and creative ways, making the educational process more engaging and entertaining.

However, there may be disparities in access to technology, and its utilization may occasionally divert attention from the main educational goals.

There are several factors to consider when integrating technology into the learning process, and each institution should assess which approach aligns most effectively with its unique requirements and circumstances.

The use of digital technology allows students to participate in learning activities in innovative and creative ways, enhancing the interactive nature of the educational process when compared to traditional methods. For instance, students have the opportunity to acquire knowledge in disciplines such as mathematics and physics using interactive games, so enhancing the level of engagement in the learning process. In addition, digital technology enables students to collaborate by sharing information and experiences through online platforms[1-3].

Students find learning to be much more enjoyable thanks to digital tools, which also increase student engagement and interest. Audio, video, and gamified quizzes and competitions enhance the learning process and make it more fun and engaging overall, improving the quality of education. Digital technologies make it easier for students to access learning materials, such as online courses and videos, which enable them to make up for missing class time and enhance their comprehension and retention of new knowledge. This option may be beneficial for students residing in rural areas who lack access to high-quality education due to their geographical location.

Each person now has the option of a flexible learning process thanks to the use of technology in education. Technology use guarantees a wide range of resources, which students interested in specific fields can further develop their skills.

Assistive technology, including features like enlarged fonts, audio readers, and other specialized tools, helps to accommodate students with special needs, thereby promoting inclusivity in education. The utilization of technology in education offers benefits, although it also presents disadvantages, restrictions and limitations.

Cons:

Because they can be expensive, not all institutions and students will have access to digital tools and technologies. Modern technological or programming equipment, as well as teacher preparation, come at a significant financial cost that not everyone can afford. Whether or not educational institutions can afford to invest in technology and give teachers the necessary training or courses is a decision that must be made by them.

Methodology. We implemented quantitative research methods during the study. Data was collected using Google Forms, from three school pupils and two university students. A total of 250 students. To calculate the influence and effect of information technology in education, I also used the SWOT analysis technique.

Main part. Some students may find it very tempting to use digital technologies for enjoyment rather than for educational purposes. In particular, social media, which demands a lot of time from adults who are professionals as well as students. Apart from social media, an abundance of entertaining films,

games, and other materials might lure students to divert from their primary objective of acquiring knowledge and waste their time.

SWOT (Strengths, Weaknesses, Opportunities, Threats) study was done in the field of education to determine the impact of digital technology. The analysis revealed both opportunities and threats in addition to strengths and weaknesses.

S	W
Strengths	Weaknesses
- Multimedia and interaction-rich content - Accessibility and Flexibility - Motivation and Engagement - Efficiency in Administration - Global Access to Information	- Infrastructure Challenges - Technical Issues, Malfunctions - Digital Divide - Training and Support - Digital Distractions
O	T
Opportunities	Threats
- Personalized Learning - Collaborative Learning - Lifelong Learning - Innovation in Teaching Methods	- Privacy and Security Concerns - Dependence on Technology - Cost - Resistance to Change

Therefore, it is crucial to take into account the positive and negative aspects, together with the requirements of the educational institution and its students, and to ensure the efficient integration of digital tools and technology into the educational process.

The percentage of people who own computers, tablets, and smartphones has gone up in recent years.

With the use of technology, it is now possible to overcome major industrial challenges, manage logistics processes, assess risks, analyze data, make predictions, and more.

In the realm of digital logistics, advanced technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and Blockchain are revolutionizing the way companies operate. These innovations enable real-time tracking of goods, optimize supply chain management, and enhance decision-making processes. AI-powered algorithms can predict demand, optimize routes, and manage inventory levels more efficiently, reducing costs and improving service levels. Blockchain technology ensures transparency and security in transactions, facilitating trust among stakeholders in the logistics chain. Through these technological advancements, companies can achieve greater efficiency, reduce operational risks, and adapt more swiftly to market changes.[4-10]

There is a global trend toward this. However, the educational sector is gradually embracing technology, and there are certain obstacles to overcome in that regard. The usage of technology by teachers varies

based on their demands and level of expertise; It is not a standard technique. These elements in particular make it more difficult to move from traditional classroom to an interactive digital classroom that takes use of cutting-edge technology.

Interactive whiteboards are one example of a digital technology that can help students find learning engaging and dynamic, and research has shown that it improves student learning outcomes. For example, introducing brief, concentrated sessions like Microlearning, which include learning language, practicing math skills, expanding vocabulary, and writing requirements- may improve the educational experience.

Due to the quantity of software resources and their versatility in several fields, the process of teaching and learning has been greatly facilitated. For instance, students can collaborate on group projects without being physically together by utilizing Google Docs to work on them simultaneously. If require, online learning can also be employed via platforms such as Zoom, Google Meet, Microsoft Teams, and other similar technologies. These tools not only support distance learning but also enable global communication, enhancing both educational and collaborative experiences.

E-learning has revolutionized the world of education and profoundly altered the process of knowledge acquisition. E-learning is an illustration of the never-ending pursuit of information and innovations. The process of learning has benefited from the integration of learning management systems (LMS). The Moodle system is another such.

These are the platforms that compile homework, quizzes, other forms of research, discussion boards, and other materials. All students have access to it, and facilitates communication between educators and students. The way that education is delivered is now adjustable to meet the demands of the students, thanks to LMS. Rather than selecting a whole curriculum, personalized learning systems assist students in selecting a specific subject they wish to study. Pay close attention and effort to learning the subject that interests them the most.

E-learning has fundamentally transformed the education system, by pushing boundaries and enhancing access to knowledge. However, there are specific advantages that technology can offer within the classroom setting. We must take into consideration a number of possible variables, including fair access to the internet and connected gadgets. Lack of internet at home or access to digital devices (computers, tablets, smartphones) prevents students from completing their assignments, widening the digital divide between social groups. For that reason, each student needs to be given a tablet or laptop, and everyone needs to have access to the internet at home or shared learning space. Where educational resources are accessible to every learner.

Teachers and students who rely on technology and internet access in the classroom face the risk of becoming the target of cyberattacks. Based on this, extra care needs to be taken to make sure school devices are sufficiently secured, and access to specific websites needs to be limited. Educators and learners alike need to understand the hazards associated with using technology in the classroom.

It could be challenging to integrate new technologies in the classroom, some teachers and students may find it difficult to adapt and use technology. Additionally, it might be challenging for the institutions to draw funding for teacher preparation.

SAMR model

SAMR is regarded as well-liked approach for organizing the educational process in the classroom through the use of digital tools and technology integration. (SAMR: Redefinition, Modification, Substitution, and Augmentation. The 'enhancement' steps are the first two, while the 'transformation' steps are the second.)

SAMR model for the integration of technology in education consists of four steps, the first in which the technology replaces traditional teaching methods, the last in which the technology is completely integrated and allows teaching to be implemented, with new methods that could not be implemented by conventional methods. This model can be used to prepare a plan to help teachers and school staff move from the use of technology to its limited use and the slow integration of technology into the learning process[11-12].

In the first and second steps of substitution-augmentation. An interactive whiteboard can be easily used. The teacher can use a smart board as a direct substitute for a traditional chalkboard to display information digitally or to empower it through multimedia resources. To display materials such as videos, podcasts, or PowerPoint presentations. Interactive dashboards can also be used for annotations on top of existing materials, making it easier to highlight a certain portion of the relevant content as needed during the reference/notes or lesson.

SAMR model

| SUBSTITUTION | AUGMENTATION | MODIFICATION | REDEFINITION |
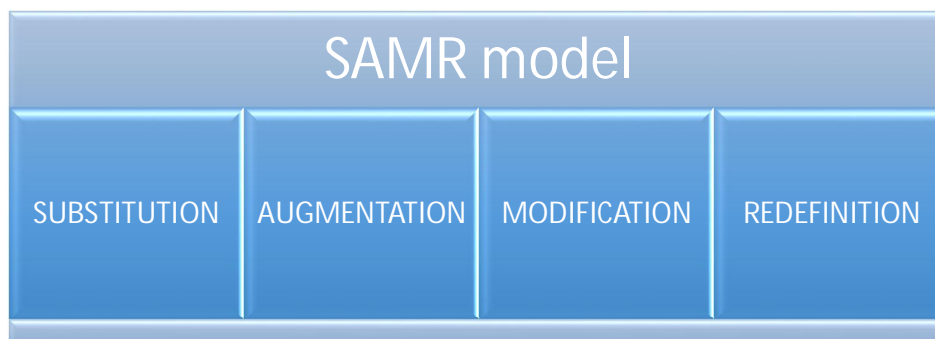
At the third modification level, students can use an interactive dashboard to storm the mind (brainstorming) or to solve mathematical tasks while collaborating with others. To compare results and methods with each other. In addition, interactive dashboards can also be used to evaluate students and get to know the results on the spot.

Fourth, at the final stage, when redefining, digital tools can be used to completely change the structure of the lesson. Interactive boards simplify the conversion of a personalized lesson into a mixed or even entirely online lesson, with tools such as Microsoft Teams or Google Classroom, which allows students and teachers to easily communicate with each other, share materials/assignments or various opinions, and it is also possible that the invited speaker will join the lesson to provide his professional opinion on the issue asked.

In the learning process, virtual reality VR headsets can also be used to create learning experiences that were impossible when taught by traditional methods.

Analysis and results. Several factors are in place when evaluating the use of digital and information technologies in education, including government policy, technological infrastructure and educational

practices. According to the latest data, the following countries are leading using digital and information technology in education:

1. Estonia-known for its comprehensive e-learning infrastructure and integration of digital tools from early childhood education to higher education.
2. South Korea-with a large dose of technology is integrated, in the educational process. Digital tools and smart classrooms are widely used in the field of education.
3. Finland- Uses of technology to improve learning experience, digital literacy and skills development from an early age.
4. USA-has a diverse range of digital learning tools and platforms from K-12 to higher education. Invests heavily and is distinguished by innovation in educational technologies.

How actively digital and information technologies are used in the learning process in Georgia for quantitative analysis of all this, a survey was conducted on the use of distance learning, learning platforms and digital tools in several schools and higher education institutions.

Conclusion. Integrating digital tools and technologies into the learning process and achieving the fourth step of the SAMR model is a complex task, but this process can be divided into phases and step by step, slowly making changes in the learning process.

In addition to being interested in new technologies, it is important for students and teachers to be ready to quickly follow the news and learn how to work with new technologies. Digital tools make learning more attractive and dynamic, provide easier access to information and multimedia resources, and enable personalized and differentiated learning experiences. Digital tools and technologies have undoubtedly changed the education system, offering many benefits and opportunities to both educators and students. These tools enhance engagements, serve a wide variety of learning styles, promote personalized learning experiences, and provide access to a wealth of information and resources. Facilitate and promote collaboration between students and teachers. However, while digital tools offer significant advantages, their integration into education should be thoughtful and well-planned. It is necessary to discuss issues such as digital literacy and equal access to technology, training and supporting teachers to effectively engage them, these tools in teaching practices, and exploit their full potential.

In the future, the role of digital tools in education will increase even more. Using these tools and considering their results will be crucial to creating a richer, more effective learning experience for all students. In the future, more innovation and investment are needed to ensure that technology provides high-quality education in the world.

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