



Technology in Education: Benefits and Challenges for first-year students

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Abstract

The integration of digital learning tools into education has been significantly emphasized by various studies, particularly in the wake of the COVID-19 pandemic, which catalyzed a rapid technological infiltration into teaching methodologies. This transformation has led researchers to explore diverse facets of technology-enhanced education, thereby reinforcing the synergy between education and technology. In the realm of English language instruction, the advent of interactive multimedia resources, language-learning applications, and online platforms has fundamentally altered student engagement in the classroom. Students utilizing these technology-enhanced resources exhibit notable improvements in their learning attitudes, engagement, motivation, and overall academic performance. The pervasive influence of digital technology extends beyond education, impacting sectors such as entertainment, business, housing, economics, advertising, and healthcare. While the rise of technology presents challenges, such as increased opportunities for academic dishonesty, it is possible to design assessments that mitigate these risks. Ultimately, the digital classroom, characterized by the use of electronic devices and software, redefines traditional educational practices, facilitating more effective learning experiences and enabling better tracking of student progress.

Keywords: Education, students, technology, learning and classroom

1. Introduction

Learners are more engaged and have more fun with digital learning tools because of the many audiovisual and cognitive stimulation they give. People may change their behavior and achieve their goals by engaging in repeated activities. The employment of electronic pedagogical tools is also supported by cognitive theory. Attention, perception, interpretation, processing, and decision-making are some of the learner's internal cognitive processes that are mostly highlighted. Starting with the most fundamental ideas and working one's way up to more complex ones is key to this paradigm's approach to teaching. Consequently, it works well with the processes linked to using digital learning materials. Making use of a wide range of online educational tools to improve the efficacy of learning should be one of the criteria for developing educational experiences. The goal of these criteria is to guarantee that a diverse array of educational opportunities is available to every student experience that foster their personal, social, emotional, and cognitive development.

There has been a strong emphasis on using digital learning tools that are touch-based as the primary means of

instruction, particularly in light of the current COVID-19 epidemic. These tools are specifically made to cater to children's unique psychological inclinations. They are essential for helping children develop information, skills, and values that align with their cognitive, social, and psychological characteristics. Digital learning tools have an impact on many parts of education, and as a result, several studies have stressed the significance of incorporating them into the teaching process. There is evidence that these methods have a positive effect on cognitive attainment, learning efficiency, problem-solving skills, learning outcomes, skill performance, motivation, and strain on the brain. A framework for the creation of digital learning tools is laid forth by the essential components that govern their implementation. Emotions, dynamics, and mechanics make up the parts. Parts of the mechanics include things like quests, badges, levels, leaderboards, and points. Active participation, rivalry, obstacles, accomplishments, incentives, and other interactive components are all part of the learning situation's dynamics. A wide range of emotional responses, including creativity, generosity, and discovery, may be triggered by digital learning technologies.

Regardless of a child's country of origin, prior research has looked at how digital learning tools affect their learning. These studies highlight the need of instructors in guiding pupils to participate in substantial discussions after the use of technological resources for education. In order for kids to have better social experiences, it's important for them to understand how to use touchscreens on digital learning tools with enthusiasm, drive, joy, and active involvement. It all comes down to the tasks at hand when it comes to using digital learning technologies in order to raise the bar for pupils' educational experiences from both the host country and other countries. A major emphasis on matching learning activities and tasks to children's capacities is prevalent, which is in line with global trends in early childhood education. This aspect is crucial for helping youngsters from all over the world, including those in the host country, develop their social skills and their capacity for creative and inventive thinking. As a result, students' agency and participation have been enhanced via using online tools, such as adaptive learning systems, multimedia resources, instructional software, and Alternative and Augmentative Communication (AAC) apps. The purpose of this research is to examine how these digital tools have affected the education of children with special educational needs, drawing attention to the positive and negative aspects of their use.

Any student, regardless of their unique needs, may take part in school activities in conjunction with digital tools that might facilitate those overcome cognitive and physical obstacles. Furthermore, they encourage personalized instruction, which lets teachers tailor lessons to the specific areas of strength and improvement for each learner. A gap in the literature is sought to be filled by this research, which systematically investigates how digital technologies impact the learning of children with SEN provide academics, educators, and policymakers with theoretical and empirical grounding.

2. Literature Review

Abd Kerimova, Elmira, *et al.* (2025) ^[1]. Findings from this systematic research will shed light on how digital resources have affected student achievement in elementary and secondary school. A thorough searching four scholarly databases for relevant literature was used to choose 31 relevant articles for the analysis, which were then subjected to a dual-review process based on tight inclusion and exclusion criteria. The research in the study was published between 2018 and 2023. The research strategy focused on studies that looked at how digital technologies affected teaching methods and how well students did in class. The results showed that students' engagement, conceptual comprehension, and academic achievement were much improved by digital technologies, and this was true across all levels and topics. Findings highlight the need of digital resource availability, focused educator professional development, improvements to infrastructure, and enabling regulatory frameworks for successful technology integration. Problems including uneven access to technology and a lack of quick training in digital skills were highlighted by the study.

Johnson Mary, Britney (2024) ^[2]. New paradigms in secondary education have emerged as a result of the

widespread using educational materials found online. This study aims to examine the motivations and practices of secondary school students who make use of online learning materials. A varied sample of students and instructors from different schools were surveyed, interviewed, and academic achievement criteria were used to gather data. The data shows that digital tools like LMSs, educational applications, and interactive e-learning platforms are widely used, but that utilization varies greatly depending on variables like socioeconomic position and access to technology. Access to a variety of educational materials, personalized instruction, and student engagement are all positively impacted by digital technologies, according to the research. But how well these technologies work in the classroom is dependent on factors including student digital literacy, instructor ability, and how well the tools fit into the curriculum. Other obstacles to efficient usage include technological difficulties, possible distractions, and uneven access.

Lim, Geoffrey FC, *et al.* (2023) ^[3]. Nowadays, more and more schools are using digital learning methods. Like their counterparts in other nations, Malaysian teachers are keen to investigate the potential of digital resources for elementary school curricula. Nevertheless, there is a dearth of literature reviewing the process of creating and deploying digital technologies for elementary school. Therefore, this study presents a literature evaluation that is methodical in nature and examines the pros and cons of creating and using digital tools for elementary education. It examines the recurring topics from 30 papers found in Scopus, ERIC, and World of Science (WOS). A thorough framework for systematic reviews and data collecting, the procedure known as the PRISMA technique was used to conduct the review. Studies published in the years 2018–2022, inclusive, were included in the review. The factors that were examined were the advantages and disadvantages of creating and using digital technologies. Teachers should take their students varied cultural origins and ability levels into account when designing digital literacy and personalization tools, according to this research. In order for the implementation to be effective, Teachers and students alike must prioritize obtaining acquainted with the internet technology.

Anastasopoulou, Eleni, *et al.* (2024) ^[4]. By improving transformative learning environments, new ways for educators to gauge their students' development, technology's incorporation into formative assessment has transformed contemporary education. Personalized learning paths, enhanced engagement, and real-time feedback are all made possible by digital tools Such as LMSs, AI-driven platforms, and VR/AR immersive technology. These advancements pave the way for more multimedia-rich and interactive learning spaces, which are more accommodating to different learning styles and encourage in-depth understanding. Concerns about data privacy, biases in AI-driven systems, insufficient teacher preparation, and the digital divide are some of the obstacles that make fair adoption difficult. Exciting new possibilities for advancement lie in the realm of predictive analytics, blockchain technology for safe data storage, and gamified evaluation methods. A more inclusive, engaging, and successful educational environment may be achieved by addressing these difficulties while harnessing technology improvements. This will better equip pupils to meet the

demands of a global that is always changing.

Asmara, Adi., (2024) ^[5]. The effect of adaptive learning systems on improving learning outcomes is the focus of this research. In order to comprehend how adaptive learning systems individualize instruction and boost student achievement, a qualitative literature review is the principal tool to be used. The study uses a qualitative literature review approach in order to provide an exhaustive review of the existing literature about the topic by combining results from research papers, reports from businesses, case studies, and empirical investigations. A literature review is a methodical process that entails gathering and evaluating academic articles that discuss different components of RLSS inside the framework of LT software for classroom instruction. Topics addressed by the research include adaptive learning system development and deployment, data analytics' function in individualized instruction, and how these systems influence the drive and achievement of students throughout class. Thematic analysis is a powerful tool for discovering patterns and trends in how different technologies affect learning results. The findings demonstrate that adaptive learning systems have the potential to tailor course content to the needs of individual students via the use of data analytics and machine learning algorithms, hence increasing motivation and engagement.

3. Technology in the education system for the benefit of first-year students

A new paradigm in education is being ushered in by the revolutionary power of educational technology's incorporation into elementary schools. Drawing on current research results, in this introductory section, we will explore why instructional technology is so crucial in improving educational processes. The rise of digital technology has opened up new vistas for instructors and students alike, allowing for more individualized lessons and the elimination of time and distance barriers. Because the COVID-19 pandemic, emerging technologies (ETs) have become more popular in the classroom, drawing attention to their ability to help students persevere through difficult times.

Technologies like education on the go, AR, and VR technologies have been shown to be very beneficial in improving educational processes. These technologies provide students with immersive learning experiences, which may increase their motivation and knowledge application. Knowing how students embrace and incorporate technology into the teaching process is as crucial as incorporating it into the classroom itself.

Students who make use of technology-enhanced learning resources show more improvement in their learning attitudes, engagement, and motivation, as well as better levels of learning overall. These results provide further evidence that instructional technology has the potential to improve student achievement in a range of contexts, including elementary school. Students in technical subjects, including building engineering, benefit from increased learning freedom when instructional technology is used in a discipline-specific manner. Students in specialized fields benefit greatly from the increased learning autonomy and enhanced educational experience made possible by technological advancements in classrooms, which have been associated to better learning results overall.

Additionally, it is impossible to exaggerate the significance of Assistive Technology (AT) in assisting children with impairments in elementary school. Using AT has a favorable effect on competence, flexibility, self-esteem, and academic self-efficacy; it also boosts academic engagement and overall well-being. This study emphasizes the importance of assistive technology in meeting the requirements of different learners and promoting equal access to education. Improving the use of educational technology may provide several benefits, including improved learning outcomes, increased student engagement and motivation, enhanced learning freedom, and support for students with impairments into primary school. If educational technologies are to fully realize their promise in today's dynamic classrooms, careful planning and widespread adoption are of the utmost importance.

3.1 Mobile technology for children learning

Learning possibilities are available around the clock and at the learner's convenience thanks to mobile technologies that are interconnecting with almost every part of our life. Tablets, iPads, cellphones, iPods, and other mobile devices are helping teachers build a new learning community where students and teachers can collaborate. One definition of "mobile learning" is the provision or acquisition of educational information using mobile devices.

Any material that can be accessed using a mobile device is considered instructional content, which encompasses all digital learning elements. The use of mobile devices for both instruction and student engagement is still in its infancy, both when it comes to the framework and procedures. Whatever the case may be the benefits and drawbacks of learning in general, the mobility of learners and their learning, the technology and devices involved, or some other way researchers still haven't settled on a single definition of mobile learning. With each new version of these mobile gadgets, the ways in which young people learn are changing. Children are provided with fresh ways to relate their experiences to abstract concepts via mobile learning, which is both interesting and effective. This is because youngsters are constantly thrilled to use mobile gadgets.

Possible applications of modern technologies that stimulate the cognitive development of young children has been significantly altered by this advancement in educational technology. On the other side, it's also been shown that when kids are given a mobile device to use for anything else, they tend to become sidetracked and focus only on the gadget. Because they are engrossed on what's on their phones, kids may tune out the world around them. Researchers polled college students to find out how often they use their phones, what features they like, and what kinds of educational activities they think are good for phones. It's crucial to make sure kids don't get too absorbed in technology and don't use it excessively. As a means of assisting Japanese students in developing their command of the English language, we created and released two sets of mobile-friendly resources and documented the students' responses to these new learning tools. In a similar vein, the authors of sought to demonstrate that researchers may have a positive impact on youth technology use by establishing and maintaining a realistic knowledge of digital technology

and youth.

In particular, the research looked at how we may use apps and mobile devices to aid kids' education. There are three sections to it. In the first, we looked at the latest trends in mobile devices, namely the pass-back effect, in which an adult gives their own gadget to a youngster. Researchers looked at the viability and efficacy of employing mobile applications to promote learning in youngsters in the article's second part who are in preschool and early elementary school. In the third and final section, we discussed how these results may affect future studies and classroom instruction. The research looked at mobile learning from several perspectives in each section.

4. How students learn from digital study materials

Because of how rapidly cellular communication and the Internet are expanding technology, many interactive multimedia networks have lately evolved, such as mobile learning, instant messaging, and mobile voice. Reading is seen as more than just reading; it is a mindset, a skill set, and a method of experiencing the world. The ability to read is the result of a complex interplay between a person's linguistic competence, background knowledge, and the visual representation of information. Seeing written or printed signals and making sense of them is what it is all about. Reading is seen to be good for one's health and development as an individual.

To achieve national and worldwide competitiveness, digital learning resources made available over the Internet would replace traditional methods of instruction. It follows that schools will follow the rest of society and use digital resources and technology into their lessons. Teachers are doing this by increasing multimedia presentations in educational settings. Several educational tools presented over the academic semester are the basis of this study endeavor, which aims to increase students' engagement in class. Students will feel more invested in their study and have a more positive self-image as a result. There is a wide variety of accessible e-textbooks when looking at their different characteristics. Popular features of traditional textbooks are now available in an electronic format that can be accessed online or via mobile apps; this is called an e-textbook.

The dominance of digital technology has permeated every area imaginable. This includes the entertainment, business, housing, economics, advertising, and healthcare sectors, among many others. In addition to playing an essential role in our daily lives, digital technologies are gradually fading into the background. This evolving topic may be better understood by reading the literature from the perspectives of students, educators, and district officials. "Digital study materials will potentially replace existing paper-based/printed textbooks in the educational curriculum." Electronic textbooks are most popular among current students because they fulfill students' need to read and because more books are available, both of which are signs of progress in the world. Teachers are always faced with the task of providing diverse student populations with engaging, personalized learning experiences, therefore it is critical for them to have a firm grasp of how students see both digital and physical books from their perspective. Explicit information may be represented on several fronts. Various

forms of visual and auditory media are used to portray them. Still, a lot of students would rather utilize paper copies of study guides than digital ones. This is mostly due to the fact that many students find print to be more comfortable and convenient, and also because digital versions sometimes need specialist software or gear to read. Several academics have shown that digital study materials are superior than printed ones. More flexibility and accessibility are offered by digital learning tools compared to conventional education. These days, secondary and postsecondary education would be incomplete without incorporating technology. What started off as an interesting side note is now fundamental to the policymaking process in many districts. At global conferences, where educational institutions and policymakers share philosophies and ideas, technology integration is becoming more and more of a topic.

Online note-sharing and discussion forums are further examples of digital study materials that facilitate collaborative learning. "Digital learning" is shorthand for the distribution of digital resources, including text and graphics, over the Internet. Acquiring digital educational materials for use in classroom teaching both online and off is what digital learning is all about, and it may be done over wired or wireless networks.

5. Challenges of digital technologies in education

There are certain challenges associated with educational technology, most notably with its use and implementation. Furthermore, questions of technological equity, teacher effectiveness with technology, and students' excessive screen time are brought up. Because of the COVID-19 issue, the substance is now more important than ever. It is imperative that educators develop and disseminate lesson plans online, with an emphasis on encouraging students to think critically about a subject from several perspectives. On top of that, there are a lot of variables, such as a lack of support, that contribute to certain students' success in online learning environments and others' struggles. Someone who has struggled in the past when dealing with face-to-face situations may find this present scenario much more challenging. Services that these individuals may have relied on are now unavailable. In regions where it has not yet become the standard, however, online education may pose challenges for teachers.

A few of the causes of the education problems are well-known. One of the main causes is the poor quality of education. It is common for educators to be unprepared and lack knowledge in their subjects. There are technological answers to this problem, and they might improve teacher and student education. Technology allows for the provision of in-service training or hybrids of online and face-to-face instruction. There is also evidence that teachers need more enticing rewards. They have the ability to teach, but they don't want to. While learning has always taken place outside of traditional classroom settings, the sheer magnitude and rapid evolution of online and distant learning environments need heavy investment in research, development, training, and participation. Contributors to attentive learning and teaching may include reevaluating engagement, reaching, teaching methodologies, dealing with competing time demands, motivating students, having little or no touch with

students, and living with limited environments.

There is evidence to indicate that "instruction at the appropriate level" with little technology may have a big impact on students' ability to learn. Thorough research is necessary to determine the relative merits of high-tech and low-tech solutions as the former are more cost-effective and finance is scarce in developing countries. Teachers are delivering lessons via video, but that doesn't mean they're always more effective than when they're face-to-face with students. Though more and more people are enrolling in and taking advantage of MOOCs, many of these courses do not address the issue of student learning and are not appropriate for use with primary school children. It is possible that low-income children might not have access to the internet and other technologies that their peers take for granted connection at home. Children could be motivated to spend more time learning if certain tactics, such as gamification, are used. Last but not least, think about the possibility that good learning results may be achieved even without the use of educational technology.

For some students, the shift to online education has been a difficult one. Children from low-income families' households can face challenges at school since they do not have access to telephones at home. The reality is that millions of children's homes simply do not have internet connection. Despite early access to this complicated technology, students under the age of 15 often suffer from visual impairment and back pain. Additionally, some educators just fail to possess the appropriate expertise to make good use digital tools in the classroom. But they make every effort to send their kids to online schools. Due to the impossibility of gaining practical knowledge via online programs, students who choose for more practical rather than theoretical college courses have comparable obstacles. Although technological advancements provide students with more opportunities to cheat, it is feasible to create tasks and tests in a way that makes this very improbable. The use of open-book examinations, on the other hand, allows for the prioritization of competency above memorization. Automating routine tasks like keeping tabs on students' attendance and grades may save a lot of time. Engagement tools may help speed up grading for discussions, participation, and writing projects and answer common student questions since they are objective. Participation in distance education is not possible without adequate ICT tools, internet/mobile network access, educational materials, and teacher preparation. There is a higher likelihood of academic failure for students hailing from low-income families, geographically dispersed rural regions, or places with little resources. Additional personalized support will be necessary for students who have impairments or whose native language is not English.

6. Conclusion

In conclusion, the integration of digital technologies into the classroom has significantly transformed traditional educational practices, leveraging electronic devices and software to facilitate more efficient learning experiences and effective progress tracking for students. As these technologies continue to evolve, they promise to further enhance the digital learning environments and academic performance of students, particularly those from low-

income backgrounds who may benefit from improved English language skills, especially in writing. This research highlights the importance of addressing the educational needs of primary school-aged children, as the intersection of technology and education becomes increasingly vital in fostering essential skills such as social interaction, creativity, and innovative thinking. Moreover, modern technologies are instrumental in managing and analyzing complex data, which is crucial for making informed long-term decisions in critical areas like climate change, resource security, and disaster resilience. Overall, the landscape of English language instruction has undergone a remarkable transformation due to the advent of new technologies, underscoring their role in empowering young learners globally and enhancing their educational outcomes.

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