

Retrospection on Digital Technology in the Field of Education

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Abstract

The impact of digital technology on our daily lives has increased, but it has become more apparent to students in our educational system... This can be seen in the increasing use of technology by students, from smartphones and tablets to laptops and other portable electronic devices. Students' increasing reliance on technology has led to an increase in the use of smart boards, computer labs, and online curricula in the classroom. Cyberbullying and plagiarism may be drawbacks of some forms of technology, but these are minor compared to all of the benefits that can be gained from using technology in education. Teachers can use digital technology to help them develop curriculums, to help students work more efficiently, and even to help kids find common ground between the lives they lead at school and at home. Additionally, it has been influenced by the spread of digital technology in education around the world. There is a wealth of information available online that does not limit students to a single point of view. Teaching a lesson can be made more clear and understandable with the help of audio or visual aids.

Keywords: Digital technology, Education, Online, Learning

1 INTRODUCTION

The words "classroom" and "education" in conjunction with the word "technology" immediately conjure up images of a large room filled with students, each of whom is holding a portable electronic

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device such as an iPad or a smartphone. This phenomenon has only started to become widespread in the United States since the early 2000s, when mobile devices and internet access became more easily accessible to the general public. Why not go back in time a couple of centuries or a few decades? In the past, technological advancement and inventiveness were not accorded the same level of significance as they are today. Hornbooks, which were wooden paddles on which lessons were written, are generally regarded as the first instances of classroom technology that have been documented. They date back to approximately the year 1650. Technology had advanced to the point that even relatively simple items, like pencils, could find their way into classrooms by the beginning of the nineteenth century (ibid). These days, cloud computing, augmented reality, and virtual reality are all trending topics, and we are discussing the benefits and drawbacks associated with each one. There is a possibility that hornbooks, in their current form, will no longer exist in the future. The quick progress that has been made in both humankind and technology is an illustration of this idea. Both people and the things in their environment will, as a matter of course, adapt to the new conditions that are brought about by this evolution. This is a rule that cannot be broken in any way. Because of this, today's classrooms are much more technologically advanced than they were even a decade ago.(Ng, 2015)

In recent years, the phrase "digital technology in the classroom" (abbreviated as "DTC") has come to be understood to signify digital processing systems that foster active learning, knowledge building, inquiry, and discovery on the part of the learners, and which permit for remote communication as well as data exchange to take place between instructors and/or learners in multiple physical classroom locations. This understanding of "digital technology in the classroom" (abbreviated as "DTC") has come about as a result of a shift in An extended definition of technology acknowledges the development of numerous technologies that go beyond the scope of information delivery systems and explains the significance of these technologies in the classroom rather than focusing on their more widespread application throughout educational institutions and learning centers.(Cambridge Assessment, 2017)

In the field of education, the term "digital technology" refers to the implementation of strategies that are supported by computers and other forms of technology to improve academic performance. Educators are increasingly relying on a mix of student-facing technology such as interactive whiteboards and open-ended apps, as well as teacher-facing technology such as learning management systems, in order to address this issue from a variety of perspectives and with varying degrees of success (LMS).

The educational system is currently going through a period of change. As a result of the widespread adoption of digital technology, both the teaching method and the learning process of students are undergoing transformations. A growing number of educational establishments are turning to digital technology such as the internet, laptops, and tablets in order to connect students to the vast array of digital services and resources in a way that is quick, easy, and cost-effective. However, despite the numerous benefits that can be gained from utilising digital tools in the classroom, there are also a number of potential risks and challenges that can be experienced by both students and schools. These problems, which are sometimes referred to as "digital difficulties," actually take place in the real world, and they

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present a challenge to educational institutions that want to use digital technology to enhance the education they provide their students(NetSafe and Ministry of Education, 2015).

Because of advancements in information and communication technology, people can now communicate with one another regardless of the distance or the amount of time between them (ICT). Because of the inherent characteristics of online education, teachers in every part of the world have been compelled to learn how to apply new forms of technology in a way that is distinct from the typical manner in which we observe these tools being utilised in traditional classroom settings. Because of this, they have been forced to learn new skills. Over the past few years, there has been a significant increase in the popularity of online education. As a consequence of the COVID-19 legislation, it will be necessary for all educational institutions, including primary and secondary schools in addition to colleges and universities, to provide students with the opportunity to participate in distance learning by the year 2020. This requirement is imposed not only on the United States of America but also on the rest of the world. Because of the virus, many businesses have had to close, which has led to a shortage of supplies. It is anticipated that education from kindergarten through high school will soon cover this condition. An approximately one-third of students who were enrolled in higher education were additionally enrolled in at least one and possibly more than one online course at the same time (include completely online courses and blended courses). More than six million students signed up for online classes in 2016, representing a 3.9 percent increase from the previous year's enrollment levels. The rapid growth of online education may be attributed to a number of factors, including the proliferation and acceptance of technology as a method of instruction by the vast majority of higher education institutions, the rise in tuition rates, and a shifting workforce that is looking for opportunities for lifelong learning. Younger students tend to be more goal-oriented, self-directed, and energized than older students, who tend to be more sedentary and less dependent on technology. The population of online learners is diverse, including elderly students who are more sedentary and less dependent on technology. Since online education has become increasingly common in schools like universities and colleges over the past few years, it has attracted a wide range of students who come from a variety of different backgrounds. When instructing in a setting that is conducted entirely online, it is essential for teachers to acknowledge and value the cultural differences that exist among their pupils. They will be able to develop the most effective teaching strategies as a result of this, which will allow them to meet the educational needs of the whole student. The digital technology tools that are being used in online classes in this century have seen an unprecedented level of acceptance and use. It is imperative that a study be conducted to determine the effect that this has on the learning outcomes, level of engagement, and overall satisfaction of students. Students might benefit from active, inquiry-based online learning pedagogies that encourage problem solving, cooperation, and stimulation. These kinds of pedagogies are available to them through online learning platforms. Concerns have been raised by educators and instructional designers regarding the impact that the use of multimedia technology tools may have on the participation and engagement of students who come from a variety of different backgrounds in online learning environments. The tools, methods, devices, and resources that are referred to as digital technologies are those that are used in the process of creating and storing data that is related to teaching and learning. Online gaming, multimedia,

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cloud computing, 3D printing, and mobile computing are some additional examples of how technology is being used to assist students in their academic pursuits. There is a dearth of research on which digital technologies are most effective in enhancing the educational experiences and outcomes of students from culturally diverse backgrounds who enroll in online courses at the present time. Because of this, the purpose of this study was to investigate the application of digital technology in online learning environments at higher education institutions from the perspectives of a variety of students and the challenges they face (Kumi-Yeboah et al., 2020).

2 Digital Technologies in Online Learning Environments

A wide range of digital technologies, such as personal computers, iPads, cellphones, and other similar devices, are utilised on a regular basis within the context of online education. Students receive learning components that pique their interest and promote their thinking when they are exposed to multimedia technologies such as audio, video, and hyperlinked PowerPoint presentations with nested documents.

The utilization of various social media platforms facilitates the formation of partnerships and the conduct of negotiations among a collection of individuals. It has also been discovered that platforms for social media can encourage educational technologies that boost peer evaluation, student mentoring, and the social interaction of learning. Moreover Because of the use of technologies related to social media in the classroom, the students' skills in informal communication have significantly improved. The pursuit of interactivity is a primary goal that is shared by both the use of digital technology and traditional teaching methods in the classroom. Because it requires a significant amount of participation from each of the participants, video conferencing is quickly gaining in popularity. In spite of the fact that the introduction of the breaking out-rooms feature makes it possible for instructors to easily organise group activities while participants are participating in a video conference, it is essential that instructors deploy the organized guideline in order to promote accomplishment. Several academics worked together to conduct research on the topic of the application of scheduled pair activities and synchronous video break-out rooms in online programming classrooms. Students participated in a simultaneous rotation between the roles of driver and observer as part of an instructional strategy known as guided task instruction. When someone other than the driver was in charge of the shared screen and typing in a shared document (anyone who was there and saw what was being written by the driver), that person was considered to be the "driver." The findings of an observation and survey that were carried out on 114 sessions that took place in break-out rooms both prior to and after the implementation of structured guiding indicated significant improvements in coordination, expanded responsibilities, higher involvement, and enhanced productivity (Kumi-Yeboah et al., 2020).

The proliferation of digital technology has had a significant and positive effect on the progression of human civilization. The educational system is currently undergoing a paradigm shift, and as a consequence, modern educators are expected to play the role of digital networkers in order to motivate students to be creative and serve as change agents through the utilization of technologically advanced tools. It's possible that using technology in the classroom, like magnetic induction boards and real-time smart classrooms, can help students learn more effectively. Because we now live in the information age,

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it is essential that all parties involved in the process of information exchange improve their efficiency as a result of the various new technologies available. The primary duties of a teacher educator are to look out for the health and safety of their pupils, to protect the natural environment, and to encourage their pupils' development over the long term.

In today's modern society, more and more people are opting to receive their education online. It is being aggressively pushed because both the state and educational institutions have a strong interest in it and want to see it implemented. The results of this development include the growth of the market for educational services as well as the broadening of participation in educational opportunities for all members of society. Significant shifts are occurring in educational practices as a result of the expanding application of cutting-edge digital technology. Adaptive online learning environments can be developed by utilising existing online education best practices and standards. It has been demonstrated that in order to fulfill the requirements of adaptation and produce an individual learning trajectory, it is necessary for all educational items to be deposited in a specific repository. This is necessary in order to create an individual learning trajectory. An online library that acts as a location for storing, managing, and exchanging educational information with other individuals is known as a special repository. The system determines which instructional components should be included in the online course, as well as the order in which they should be presented, based on the data collected about the students' educational activities. An object-based approach to knowledge structuring could be utilised in order to better structure the educational process that is being carried out. This makes it possible to develop learning technologies that are adaptable and customizable, as well as to modify pedagogical content and settings. Taking into account the growth of ground-breaking and promising innovations, the establishment of a digital economy, and the impact that these factors will have on business, the utilization of existing information technologies in online education will make it possible to respond in advance to the demands of society for skilled workers (Viliavin et al., 2020).

3 Digital Technology in Classrooms

Back when educational technology was still in its infancy, developing a multimedia lesson plan that incorporated it necessitated not only a sizeable financial outlay but also an in-depth familiarity with the various technologies involved. Recent technological developments, such as tablets like the iPad, have made the process of designing, developing, and delivering a course that makes use of digital tools significantly simpler. This includes all of these steps. Because of the relative ease with which modern technology enables instructors to implement digital solutions in just a few lectures or particularly challenging sections of the course content, the multimedia format does not longer imply a complete reversal of the way in which course material is presented (**Girlando & Eduljee, 2012**).

The level of student engagement is the single most important challenge facing the education system. Sociologists have known for a long time that there are significant class, gender, and racial differences in the levels of student engagement in the classroom. There were significant socioeconomic, gender, and racial differences in student participation as a direct result of education delivered through print media and spoken language. Throughout the entirety of the 20th century, these were the instructional tools that

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were utilised in schools the majority of the time. According to decades' worth of research, it is possible to keep one's literacy skills sharp outside of the classroom by having literate and interested parents, in addition to having access to books and print media libraries. The socioeconomic status (SES) of a family has a significant bearing on the availability of these resources. In the field of sociology, it has been known for a very long time that the academic success of a family's children is significantly influenced by a variety of factors, including the number of books and magazines the family owns, the length of time their parents have spent in school, and the amount of time the parents spend reading aloud to their children. There is some evidence to suggest that a child's early experiences have a significant impact on both their reading and writing abilities when they are older. In recent years, there has been a rise in the number of schools that implement cutting-edge digital technology in the classroom, such as robot kits, smart boards, and tablets. Students in these classrooms are inspired to engage in learning in ways that are more active, collaborative, and creative as a result of the use of technology. Politicians in the modern era view digital devices and "gamified" curricula, which incorporate elements of game design into teaching, as useful tools for engaging students and improving educational settings. The combination of these technologies is referred to as "gamification," which is a term coined to describe the phenomenon (Rizk & Davies, 2021).

The concept of modernizing education provides an overview of the various new demands that society places on the educational system. The primary and secondary objective is to improve the effectiveness of the assimilation of educational material, with the ultimate goal of elevating the quality of education that is currently available. It is essential for a school that offers a general education to give its students access to an integrated system of information, skill sets, and talents, as well as the opportunity to practise autonomous activity and take personal responsibility for their education. Enhancing the forms and methods of instruction, carefully selecting the subject matter that is taught, and making use of educational technologies that are not so much focused on the transmission of pre-packaged information as they are on the development of a set of personal attributes in each student are all ways in which the quality of education should be improved. This should not be done at the expense of adding more work for students.

It is impossible to teach a modern lesson without utilising some form of problem-solving technology or one of its component parts. The only way to generate a high level of motivation for educational activities and increase the cognitive interests of students is to resolve rising contradictions and problem situations in the classroom. This is the only way to accomplish both of these goals. In the classroom, having access to technology like this is absolutely necessary, and this is one of the reasons why. Students are required to continually acquire new knowledge, new approaches to problem solving, and new talents when they are presented with realistic challenges. The resolution of educational issues, which have a positive impact on students' emotional spheres, is beneficial to the students' emotional well-being, as well as their ability to communicate and think creatively. Additional educational outcomes are those that can be achieved by students who are able to engage in autonomous cognitive activity, thrive in a world that is constantly evolving, and work with the text, as well as those that can be achieved by students who are able to recognize issues, pose questions and propose hypotheses; define concepts; conduct

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observations; make inferences; and work with the text; as well as those that can be achieved by students who are able to work with the text. In order to foster children's creative thinking, teachers can encourage problem-solving in the classroom by presenting students with challenges. In the context of education, problem-based learning strategies can be implemented at any stage of the learning process to produce a problem scenario in the classroom (Silva, 2021).

However, these studies frequently focus on only one or two aspects of education and technology (for instance, the conditions that exist in classrooms or the level of technical expertise possessed by teachers and students), thereby isolating the subject of study from the larger context that exists within a school. The results of the studies that have been conducted on the use of digital technology in schools, classrooms, as well as among teachers and students, have not been universally consistent with one another. Despite the large amount of research that has been conducted on the topic, if an approach that is more all-encompassing is not taken during the process of building a school, there is a slim chance that innovative projects will have a positive impact over the long term. An investigation was carried out to determine whether or not there was a correlation between the incorporation of ICT into the educational setting and pedagogical shifts. In the end, they arrived at the verdict that the learning outcomes of the students were affected by both the organisational activities and the instructional activities. The new school community model is intended to increase educational innovation that is linked to the use of digital technology. The model places an emphasis on the learning of students as well as the settings in which students learn, as well as the professionalism, leadership, and partnerships of teachers. When analyzing how current practices in a school should be reviewed and improved, there is a significant amount of leeway for interpretation due to the fact that it is a general model. This leeway can be found in significant amounts (Ilomäki & Lakkala, 2018).

4 Digital technology and education

Researchers have shown in study after study that exposure to digital technology is related with modest learning benefits, amounting to an extra four months of development on average. This association has been shown to be beneficial to learning. On the other hand, the effect might turn out quite differently depending on the specifics of the situation. Technology-based alternatives to more traditional methods of instruction should be used to enhance the practices that are already in place rather than to completely supplant them. Although it is highly improbable that certain technologies will directly bring about changes in learning, it is possible that certain technologies will have the potential to facilitate changes in the ways in which teaching and learning interact with one another. For example, they might be able to help professors provide more helpful feedback or make use of more helpful representations, or they might be able to encourage students to engage in more practise. Studies have shown that methods that individualize learning with technology (such as providing each student with their own laptop so they can go through learning exercises at their own speed or using drill and practise software on an individual basis) may not be as beneficial as studying in smaller groups with technology or the collaborative utilization of technology. One example of this is providing each student with their own laptop so they can go through learning exercises at their own speed. Spelling and problem-solving skills benefit less

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from digital technology methods than writing and math practise, although there is some indication that digital technology techniques are more helpful with young learners. This is despite the fact that digital technology methods are becoming increasingly prevalent.(Evidence, n.d.)

A shift is taking place in the way education is delivered. We live in a digital world where students are influenced not only by the subject matter that they study but also by the instructional approach that they are given. There are many aspects of information that are distinct from their physical counterparts, and these can be found in digital form. It can be reproduced, disseminated, and stored in a variety of locations rapidly and with little effort. Because of these variables, it is difficult to regulate and completely get rid of. A comprehensive understanding of these characteristics is necessary for developing a strategy that is both preventative and responsive that is successful. The impact is felt most keenly when a school has to deal with a situation involving the inappropriate use of digital technology. This type of situation can have a significant negative impact. It's possible for teachers to have the misconception that they don't have the authority to successfully implement the digital technologies that are necessary to achieve their objectives. Even though one has more control over the situation, this does not necessarily result in a better outcome. Schools are required to recognize and appreciate the nature of the changes and challenges that have been brought about as a result of the introduction of digital technology, as well as to establish systems and processes to address these changes and concerns (NetSafe and Ministry of Education, 2015).

The incorporation of digital technologies into instructional environments has been at the forefront of policy discussions for the past few years. Considering the rate at which technological advancements are being made, it is anticipated that this will continue to be one of the most important issues in education policy. The decision-makers and stakeholders in each of the Member States believe that the advent of digital technology presents a once-in-a-generation opportunity to improve the educational system's efficacy as well as its fairness. This opportunity is presented by the fact that the advent of digital technology presents a once-in-a-generation chance. The fact that education systems are necessary to provide individuals with the digital skills they need to participate in the economy and society of the 21st century, in order to reverse the present digital skills gap, further emphasizes the significance of the incorporation of digital technology into educational settings. This is because education systems are necessary to give individuals with the digital competencies they need to participate in the economy and society of the 21st century (Rodrigues & Biagi, 2017)

When used in the context of education, the term "digital technology" may be understood to refer to digital processing systems that encourage "active learning," "knowledge creation," and "inquiry and discovery" on the parts of students, and that also make it possible for instructors and/or students located in separate physical classrooms to communicate with one another and share data remotely. This is an expanded definition of technology that recognizes their progression beyond basic information delivery systems and defines their function in classrooms in contrast to their widespread usage throughout universities and other learning centers. This definition also acknowledges their progression beyond basic information delivery systems (Khanzode & Sarode, 2017).

5 Conclusion

Education is quickly becoming the most important factor in achieving great socioeconomic results and the primary source of a source of competitive advantage, as is made abundantly clear by both the current information culture and educational system. These methods highlight how important knowledge management and intellectual capital are to a business. Access to education that is delivered via the Internet has become increasingly important in modern society, and educational institutions are making concerted efforts to ensure that students have the opportunity to participate in this type of learning. Providing students with the opportunity to select their own modes of instruction constitutes an innovative new strategy in the field of education. This new course of action is determined by taking into consideration the requirements and demands of the student, and it helps educate pupils to be independent in addition to training them to do the job that is objectively required of them in addition to the training they receive to do the job that is objectively required of them. The creation of software that is capable of tracking a student's progression in an environment in which the demand for online courses is growing and their popularity is expanding is a crucial task in modern education... The digitization of education necessitates the development of individualized, adaptive online courses that adhere to the most recent standards for online learning. This will ensure that education can be accessed and taken with students no matter where they are located. Not only does the creation of a repository of educational objects that are crafted in accordance with current standards for their storage, administration, and sharing cater to the contemporary requirements of online education, but it also makes a contribution to the education of highly educated personnel for the digital economy.

When digital technologies are incorporated into online learning environments, students from a diverse range of backgrounds may be better able to comprehend and participate in the development of knowledge, engagement, and academic accomplishment. According to the findings of one researcher, the social environment is an essential component of the learning process. When selecting materials and programmes that aim to foster a sense of community among online learners, it is important to take into consideration the sociocultural backgrounds of the students. The findings suggest that students from a variety of cultural backgrounds are able to achieve academic success through the use of digital technologies, specifically: (a) the influence of digital technologies that encourage effective educational experiences such as I video lectures, (ii) voice thread, (iii) blogs/blogging, (iv) wikis, and (v) Google Hangouts; (b) the influence of multimedia presentations and online learning experiences including PowerPoint and Prezi; and (c) the influence of digital technologies that encourage effective educational experiences. At the same time, people have fewer options to choose from because there are not enough books or other resources that cover multicultural topics. The purpose of this research is to determine how the use of digital technology can assist us in learning more about how it can most effectively assist students from a variety of backgrounds in their ability to learn and succeed in online classes. Therefore, educators who deliver instruction via the internet should be aware of the cultural backgrounds of their students and make use of resources that reflect this in order to guarantee that all of their pupils have access to an engaging educational setting.

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A growing number of students are getting experience with various forms of instructional technology. Because educational technology plays such a significant role in students' learning and the acquisition of a wide variety of cognitive information, and because the newest generation of students enters school already prepared to work with these new technologies, it is absolutely necessary that educational technology be incorporated into the curricular plans for the future. The students' abilities and mental faculties are improved as a result of the use of instructional technology. Because of the advancements that have been made in mobile technology, it is currently simpler than ever before to acquire new information and knowledge. Teachers are increasingly making use of cutting-edge technologies in the classroom. However, there is a question regarding whether or not teachers are instructed to remain current with emerging technologies as they are developed and put into use. There are two main problems with this. Is the university fully equipped with all of the most recent technological methods, and do the faculty members have the necessary skills to make use of the available educational technology? Even though a great deal of research has been done on the topic, some of which is still ongoing, there is still a lack of consensus regarding the most effective methods for incorporating educational technology into classroom instruction.

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