Adoption of Digital Technology: An Emerging Trend in the Indian Education Sector

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Abstract - **The Adoption of Digital Technologies in this modern era is known as the term 'Digitalization'. After the United States and China, India has been rated as the 3rd largest internet consumer. In a current scenario and moving forward, digital technology seems like a ship for an ocean called 'Education'. The paper aims to provide information that how digital technology changes education in modern education and makes it globalized. The author is adopting conceptual and analytical based secondary data, which is collected from books, Journals (National/ International), and published reports of govt. & other websites. The findings of this paper have suggested that digitalization is the new trend of Indian Education in the 21st century. So, we are compelled to use digital technologies in our education system.**
Keywords: **Digitalization, Indian Education System, E-Learning, Technology, Edupreneurs**

I. INTRODUCTION

In this paper, the authors will talk about the adoption of digital technologies in the Indian Education Sector, but before discussing their role in the modern education system we should firstly know what education is.

Education means making your mind open corresponding to the situations around us whether it is Biological, Physical, Psychological, Economical, Historical, and so on. If we talk about an Education System of India which has been influenced by the western education system. Even NEP 2020, where we talk about providing flexibility to the students to opt for careers/subjects according to their interests is the concept of the western education system. Therefore, education is an integral part of a student's life which leads to its growth and cannot be separated from their life irrespective of any unfavourable situation. This example has been set by all the educational institutes in recent pandemic crises.

Now with the coming of pandemic COVID-19, which teaches nothing is permanent and everything is uncertain, the online modes of education become a valuable way of providing education. This pandemic situation was a sudden natural calamity for which the world was never ready. To prevent the spread of the virus, the only possible option was social distancing in conjunction with the lockdown of the entire nation. This lockdown affected the education system adversely, as neither the teachers nor the students were ready for this unpredictable situation. Thus, in this scenario e-learning came out to be the best solution for both students and teachers. Conversely, the shift of teaching from the classroom to online was very swift and very quick that it hardly gave time to the students as well as the teachers to adapt to this new technological change in the education system (Ayadee and Kumar, 2020).

According to UNESCO, it affected around 32 crores of students across India (UNESCO, 2020) and, as we approached the first week of April 2020, the epidemic had spread to almost 200countries, leading to the closure of almost 90 percent of schools, colleges, and universities, affecting around 1.38billion students all over the world. One of the most powerful weapons to attain education all over the world is digital technologies (computers, laptops, mobile, virtual labs, etc.) and India is adopting this emerging trend in our education system at a broad level. The modern era is the era of globalization and globalization cannot be attained without digitalization. The new mantra of the Indian education system is to 'BE DIGITAL, THINK DIGITAL.'

II. OBJECTIVES OF THE STUDY

The key objectives of this research are mentioned below.

1. To explore the Digital Tools that is being used in the online education sector.
2. To explore the pros and cons of digital technologies.

III. RESEARCH METHODOLOGY

In this study, the research methodology /technique is based on a previous literature review on the adoption of digital technologies in the Indian education system. The researchers have studied previous literature on different digital tools and how they can improve the education system and their pros and cons.

A. Digital Tools

The digital tools have the potential to become a powerful resource, to learn the 21st-century skills which have become an integral part of our course. These courses in conjunction with the digital tools help the students to develop essential

life skills, such as Critical Thinking, Communication, Collaboration, Digital Literacy, Creativity, and so on.

B. Connect and Communicate

Technology has bestowed us with tremendous options through which we can connect with each other. The education sector has also utilized these tools in this pandemic situation, which has been proved to be a positive step towards the development of students. These tools helped students and teachers to interact with each other and to go ahead with their studies even in this crisis. A few of the commonly used tools by our educators are Zoom, Google meets, MS-Teams, and Cisco-WebEx. Zoom, which is a cloud-based platform, enables the individual to connect with video and audio conferencing, and simple online meetings can be done through this app. It is easy to use and is accessible by the students easily. It allows live video conferencing, chatting, and even records the session so that students can watch the recordings whenever they want. But later many countries felt the threat of data leakage through this application.

According to one of the issues of India Today, considering the security issues related to Zoom, US FBI warned Americans about the events that led to the phenomenon called "zoom-bombing". Later, Taiwan took some stringent measures by restricting the usage of Zoom in the country and warns the people about the possible threats the app could cause. As a result, many organizations started looking for alternatives to Zoom such as Google meet, MS- Teams, etc. Google Meet is a product of Google and is widely used by many educational institutions. The use of digitalization in a time of crisis can be well observed from the fact how Italy emerged from the natural calamity of the earthquake and even after the destruction of resources, they reconstruct themselves by adopting the path of digitalization in their education system. In 2016, three powerful earthquakes hit the land of Italy and lead to the devastation of the country.

There was a huge loss of life and property. The biggest hit was on the University of Camerino, one of the oldest universities in the world. The situation is like the present Covid-19 situation where students were unable to continue their education. Sometimes it is difficult to stick to the traditional road when the road itself has crumbled. Taking all the issues into consideration, Italy realized that face-to-face interaction is impossible during this pandemic; therefore, it was decided by the management and leaders that some action plans must be devised to keep the educational processes ongoing. (S. Dhawan, 2020) As a result, to continue the teaching-learning processes, they started using Webex (an online tool) by Cisco. This tool can be used to design instructional programs and can also be used to share notes and presentations with students, and this helped educationists a lot. In a period of almost 1 month, these e-learning techniques and tools were very well adopted by the university. They immersed themselves well into the world of e-learning. They justified that, although

the face-to-face instruction method has its own value, e-learning can be used in synchronization with the conventional teaching methods to bring out the efficiency, critical thinking, effectiveness, and competitive edge and, thus can impart quality education (Barboni, 2019).

C. Collaborate and Create

Another learning-based tool is Canva for Education, and it helps to have an interaction between the student and the educator, with the help of virtual sessions, and eventually leads to teaching and learning. With the onset of the pandemic, it is not possible to gather students in a classroom; therefore, remote learning seems to be the possible solution. In this scenario, Canva for Education has proved to be an important tool that has helped to facilitate a learning environment in a similar way as that of traditional schools and because of this continuity of education can be maintained. In nutshell, one can continue with his classes and lessons online, without having slow, clunky technology getting in the way. Canva for Education provides tremendous benefits and is the best solution for an educator who is willing to start remote or online classes and who wants to induce some creative factor in his class. Moreover, this platform is free of cost, which again gives it a chance to be selected as a learning tool.

This tool is compatible with any of the software you are already using such as Dropbox, Google Drive, and Google Classroom. It is basically a tool for all with user-friendly design features and has a single sign-on making it easy for students to access. Apart from teaching, it encourages creativity among students as well as teachers, enhances collaboration among team workers, and streamlines the work. Another such tool is Padlet which is used by students as well as by teachers. With the help of this tool, online posts can be created and can be shared with any student or teacher, by giving them the unique Padlet link. The ideas can be inserted either anonymously or with your name. This tool is also very user-friendly and easy to handle.

One can easily check what others are writing or what has been posted, very easily, by just opening the Padlet board on his smartphone or computer. Online little sticky notes can also be added by the students with the help of this app and can access all the ideas gathered on the teacher portal immediately.

To list some more apps, we can quote an example of Adobe Acrobat Reader, developed by Adobe Systems, for viewing Portable Document Format (PDF) format. It is one of the most common ways to view PDF documents. The information in this file can be compressed into smaller sizes, which can be emailed and opened easily. It can be downloaded easily and is free of cost. For creating and editing PDF files, one must have Adobe Acrobat software. One more application known as Book Creator can enhance your creativity and can be used to develop digital books.

These all above-mentioned tools support learning collaborative and creative which takes an education at another level.

D. Practice and Assess

Technology can give tremendous opportunities for practicing and instant assessment in many of the students' responses and learning. For instance, there are several applications, such as Kahoot, Quizizz, google forms, edtech, edpuzzle, etc which can provide the feeling of games in the form of quiz, and simultaneously can be used for formative assessment. This can eventually, leads to active engagement in the class, helps in identifying the knowledge gaps, and can enhance deep learning. Kahoot! is game-based learning and trivia platform that facilitates learning beyond the classroom. One can open Kahoot from any device, via the website or the app, which makes learning fun and inclusive for all ages. For educators, Kahoot! is a great way to prepare fun lessons. Kahoot! allows teachers to create interesting class content ranging from multiple-choice games, as well as a multitude of other forms of games related to class lessons to keep students alert and engaged throughout. Kahoot! is also a very flexible system that caters to various subjects. For conducting group works, exams, pre-test reviews, periodicals, and impromptu tests, Quizizz can be used. It uses a quiz-style teaching and learning method where a user answers questions in a series independently and contends with other users on the same quiz.

The free online survey tool is quite in trend i.e., Google form. Google Forms allows you to gather information from people via personalized quizzes or surveys. The information collected can be summarised and recorded in the spreadsheet on Google Sheets. The spreadsheet then populates with the responses from the quiz or survey in real-time. This allows Google Forms, as one of the easiest ways to save data directly into a spreadsheet. Simple online forms can be used to collect RSVPs, surveys, or quizzes for students. These forms can be shared via email, a direct link, or on social media and can be asked by everyone to participate. As Forms is an online tool, so it can be shared and collaborated with multiple people at the same.

Therefore, these online practices & assessments can be used by the candidates to attempt tests or questionnaires. It can also evaluate various abilities and characteristics. For instance, it contains memory and concentration tests, language skill tests, personality questionnaires. Moreover, the order of attempting the test can also be selected and the test can be conducted even in intervals or in one sitting.

IV. PROS AND CONS OF DIGITAL TECHNOLOGIES

Digital technology may be a base 2 method. Digitized info is recorded in code within the combination of the digits zero and one, conjointly known as bits that represent words, images, and videos. An oversized quantity of data to be compressed on a tiny low device is permitted by digital technology. The data will be simply kept and transported. The speed of information transmission is enlarged with the invention of digital technology. It's fully remodelled the method individuals communicate, learn, and work.

Each technology created by mankind has its pros and cons. Same in the case with digital technology. The digital world works on two base processes, in which the information processing is recorded in binary code in the combination of the digits 0 and 1, also called bits, which represent words, images, and videos. This technology stores a large amount of information by compressing it on a small storage device. As a result, it is easy to store and transport a large amount of information throughout the world, which in turn has influenced the people and organizations' communication, learning, and working styles in the world. The adoption of this new technology has revolutionized almost every aspect of people's lives including education. To quote some the examples of digital technology, there are social media, online games, multimedia, and mobile phones.

But everything has two kinds of aspects: their pros and cons like the two sides of the same coin. Digital technology has become an inseparable part of our lives and the world is being globalized with this technology. The friends and families have come closer than earlier. It has changed our communication styles for example, by words, video, audio, and exchange of the media. With the creation of websites, apps, and software socialization has boomed in recent decades. The most popular social media are Facebook, Twitter, and Instagram. This process has been further accelerated by increased data transfer rate or internet speed since dial-up methods for internet connectivity. Broadband technology has increased the speed of the internet even more, which has led to the transfer of large files instantaneously, streaming video and audio in real-time, and accessing data virtually from anywhere in the world. Initially, working in a closed room with international co-workers was considered impossible due to large geographical barriers, but with the advent of this digital technology and the increased internet speed with broadband services anyone can work from any part of the world in real-time.

This has benefited many people by providing comfort to work from home and do online and freelancing jobs sitting many miles away without any hindrance. Taking into the consideration of education system, the 20th-century education system was completely based on the traditional classroom method, taught by teachers only. Students were completely dependent on teachers for acquiring knowledge where the face-to-face method was the only option, whereas, with the arrival of digital technology teachers and students, both are heavily influenced since they can connect to the internet where you can find the solution to almost every possible problem. According to a survey done by the 2011 report of the Nellie Mae Education foundation, technology provides numerous benefits, such as enabling

private study, developing computer skills, and increasing student engagement. Moreover, various feedbacks can be obtained on the queries on different platforms. With the help of digital technology, one can pursue his or her hobbies and interests. In addition to this, you can play online games and admit in music courses from any part of the world with the man of your choice. With digital devices, we can access different types of T.V and reality shows are on the internet.

While observing the negative side of the digital technology, the biggest concern is the data security. In digital technology one can collect and store a huge amount of information (text, images, and videos). This stored information can be stolen or hacked by the hackers and can reach to the criminals, terrorist, enemies, etc. because the world relates to each other with the internet. Another major concern is that with the advent of digital technology, the face-to-face communication has become a rare event nowadays. The socialization and communications are now restricted to the online social media. This creates a false identity and can create disbelief among people. Research says that the lack of real-life contact can leads to depression and other forms of mental illness in many people. On one side the digital technology has enhanced the performance, proficiency, and speed of completing any task, on the other side it has its drawbacks also. Managing large number of emails from all around the world can be sometimes hectic for an individual.

Some tasks require recording and analysing a huge amount of data on daily basis, which needs proper attention and accuracy, these kinds of situations sometimes can lead to social isolation and distress among people. Another major drawback is the minimum requirement of manpower, therefore reducing employment opportunities. Nowadays, with the help of the internet, the task can be performed remotely, without being physically present in the office. As a result, there are many workers who are ready to do the task at minimum wages, using the internet, irrespective of geographical barriers. This phenomenon has declined employment opportunities. In addition to this, earlier tasks such as banking records and other records were maintained manually by the people, but these days, they are done by automatic machines and software, and hence require less man force. Increasingly, with the addition of more digital tools in a working area, it has reduced the chance of getting a job.

V. CONCLUSION

To conclude, digital technology has been adopted by people in almost all sectors such as the marketplace, society, or groups of people. Moreover, this technology has been widely accepted, deployed, and implemented by these sectors. The process by which people embrace, implement, and use this technology to its fullest extent and for its intended purpose, has been referred to as Digital adoption. The future can be seen clearly belonging to Digital adoption. This digital transformation is the result of the adaption of new technology and fully leveraging its features, which is essential for the modern organization. India stands third in the online market after China and the United States. This huge online market is the result of a vibrant economy with an expanding middle class and more than 200 million Internet users. Therefore, in this kind of scenario, where there is a huge market, there is scope for increased demand of digital tools and technologies in the field of education also. However, some of the factors which have limited the use of digital facilities in the schools are lack of infrastructure, poor supply of electricity and low signals of internet in the semi-urban and rural areas. Thus, there is a need for government to take some action plan, so that these challenges can be addressed, and a comprehensive network can be developed. To sum up, though there are many challenges of adopting digital technology, yet India's flourishing urban areas offer an outstanding opportunity for digitalization of educational services. To uplift the quality of education with the newest digital technological knowledge, majority of the schools and universities are implementing them, so that they can keep pace with the digital transformations. Through this paper author gives the complete exploration of adoption of digital technology in Indian Education Sector so that the educators can empower themselves with the tools of digital technology, which can overcome the challenges prevailing in the India's education system.

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