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RESEARCH ARTICLE

**TRANSFORMING EDUCATION THROUGH DIGITAL TECHNOLOGIES:
ADVANCEMENTS, APPLICATIONS, AND CHALLENGES**

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Abstract

One of the fundamental components of the United Nations' sustainable development 2030 agenda is quality education. It aims to ensure inclusive and equitable quality education for all. Digital technologies have emerged as an essential tool to achieve this goal. These technologies are simple to detect emissions sources, prevent additional damage through improved energy efficiency and lower-carbon alternatives to fossil fuels, and even remove surplus greenhouse gases from the environment. Digital technologies strive to decrease or eliminate pollution and waste while increasing production and efficiency. These technologies have shown a powerful impact on the education system. The recent COVID-19 Pandemic has further institutionalised the applications of digital technologies in education. These digital technologies have made a paradigm shift in the entire education system. It is not only a knowledge provider but also a co-creator of information, a mentor, and an assessor. Technological improvements in education have made life easier for students. Instead of using pen and paper, students nowadays use various software and tools to create presentations and projects. When compared to a stack of notebooks, an iPad is relatively light. When opposed to a weighty book, surfing an E-book is easier. These methods aid in increasing interest in research. This paper is brief about the need for digital technologies in education and discusses major applications and challenges in education.

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Introduction:-

Sustainable development includes social well-being, which depends on education. Information technology has emerged to spread shared knowledge and is a primary driving force behind education reforms. The introduction of new technology-assisted learning tools such as mobile devices, smartboards, MOOCs, tablets, laptops, simulations, dynamic visualisations, and virtual laboratories have altered education in schools and institutions. The Internet of Things (IoT) is proven to be one of the most cost-effective methods of educating young brains. Educational technology businesses are continually attempting to create novel solutions to expand access to education for individuals who cannot obtain adequate educational facilities. Social media as a learning tool has come a long way. Large numbers of teachers and students use social media as an essential element of the overall e-learning

experience. It is a critical venue for exchanging information about crucial topics these days. Digital technologies influence agricultural operations, and they will soon revolutionise how farming is done in developed countries, reducing our dependency on pesticides and substantially cutting water use. COVID-19 Pandemic, lockdown, and quarantine are three concepts that have recently entered our lexicon. People worldwide are aware of the catastrophe caused by the coronavirus epidemic. In this crisis, digital technologies are at least keeping the educational system afloat. Students are learning from the convenience of their own homes. Integrating technology into education provides students with an engaging learning experience, allowing them to remain more interested in the subject without being distracted. The utilisation of projectors, computers, and other cutting-edge technical gear in the classroom may make studying fascinating and entertaining for students. Student learning can become more dynamic and engaging by establishing tasks in class that incorporate technology resources, oral presentations, and group participation. Participation can extend beyond verbal communication as well. From the environmental impact of using less paper for handouts and books to the time savings and convenience of research, digital learning is a wonderful way to cut costs, better utilise resources, promote sustainability and expand both reach and impact for students and teachers. Technology is pervasive and intertwined in many aspects of modern life and society. The digital revolution that is sweeping the world has begun to infiltrate the realm of education. It is rapidly transforming the way students learn, and as a result, technology is expected to improve the face of education by making it more inexpensive and accessible.

Objective of Study:-

- Understanding Digital Technology and Practices for the Improvement of Education
- Creating Digital Classrooms in Schools to Students benefits
- Challenges of Digital Technologies in Education

Review of Literature:-

AbidHaleem et al. (2022) have reported that the educational system has been found to be significantly impacted by these technologies. It had shown that the importance of digital technologies and some of the difficulties were faced by students at the time of COVID-19 pandemic. It is clear that more studies are needed on digital education and to find out the positive impact.

Research Methodology:-

The secondary approach was employed in the research for this study, and the information was gathered from a variety of secondary sources, including journals, publications, libraries, and newspapers. The researcher used a descriptive approach after analyzing the data from the associated research publication.

Understanding digital technology and practices for the improvement of education:-

The moment is now in the education sector for technology to flourish and enhance the learning process. With the major functioning of the world shifting virtually, education is an area wherein the play of technology is at its best presenting students across the world with solutions. From audio to the visual, virtual library to interaction, digital practices are significantly in action. While digitization has made the process of disseminating information easier for educators, it has benefited learners at a greater pace by dissolving boundaries. At the same time, the inclusion of technological practices has made learning a tranquil experience. The advent of these practices has integrated a culture of blended as well as mobile learning leading to improve the education system.

Augmented Reality (AR):

As the name suggests, the technology of AR is something that offers 'real-time use of information in the form of text, graphics, and audio which is integrated with real-world objects'. This is where the inclusion of the metaverse comes into education. It is a step ahead by bringing the factor of the real world into the screens. When AR is coupled with education it heightens learning abilities such as collaboration and problem-solving. With an edge over virtual reality, AR also provides tutors with the power to improve learning and its outcome.

Artificial Intelligence (AI) in learning:

It is a technological intelligence that is demonstrated through machines, as opposed to the natural intelligence displayed by animals and humans. With such high-end technology at play here, the integration of Artificial Intelligence into education only comes to pave way for smarter lessons and learning styles. The AI systems are powered with software development that not only can gauge a student's learning style, but also evaluates their pre-

existing knowledge in order to deliver bespoke support and instruction. The best part about using AI is that it does not take away the essence of the classroom, but enhances the experience. As opposed to traditional classrooms which made it difficult for the teacher to determine a student's strengths or weaknesses, AI systems are equipped to provide real-time solutions. There is no dearth of technology that can be implemented in education and make the experience of learning joyous for children. With these technologies in every classroom, the future of students is bright for their understanding of concepts will be enhanced.

Creating Digital Classrooms in Schools to Students benefits:

The world of education has been constantly evolving and the use of technology in education is one of the biggest innovations which has been re-defining the scope of learning. The inclusion of technology in education ecosystem for its advancement has been discussed and debated for many years. Realizing its innumerable benefits, schools are building smart classrooms to provide a holistic learning experience to the students. Nowadays, children are introduced to technology even before they enter school. Parents try to keep them engaged and entertained at home with the help of iPads, mobile phones and laptops. Hence, learning becomes more interesting when education is backed by the amazing benefits of technology in the form of digital classrooms.

Creates a more engaging environment:

When technology is integrated with everyday lessons, it is bound to create interest among students. It makes learning fun and enjoyable. Teachers can teach the same set of syllabus in different ways. With the help of smart classrooms, a teacher can take the students to a virtual field trip to show a manufacturing unit or may describe photosynthesis with the help of an interesting video. This method also encourages more participation as a difficult or boring subject can become more interesting with virtual lessons or through a video.

Improves knowledge retention:

Technology integrated classrooms create interest among students. They enjoy the subjects taught and understand better with the help of enhanced teaching methodologies. Hence, when they understand better, they can retain the knowledge for a longer time. Another advantage of this process is, teachers can experiment and decide what works best for students in terms of learning experience.

Easy access to information:

A smart classroom usually has a digital display board and projector. The world of internet has a lot of information on the subjects which are being taught in class. Educators can support their teachings with online information to make more sense to the students. The digital method of learning gives students the ability to access information beyond classroom training. They can have instant access to fresh information which can supplement their classroom learnings. Hence, it helps students learn more and retain better.

Prepares students for the future:

Smart classrooms help students to be future-ready. Digital learning solutions emphasize on methods that are constructive, collaborative and drives the students' attention towards a real-world approach to learning. The skills which are developed while learning in a digitally supported environment ultimately contributes in building stronger skills for tomorrow which they will require in a college or university or workplace. It can help develop many practical skills like creating presentations, learning to differentiate reliable from unreliable sources on the Internet, maintaining proper online etiquette and many more. Starting to develop these skills at a young age can help prepare students for future digital demands.

Challenges of Digital Technologies in Education:

While technology is being utilized more and more frequently in education, many teachers are still struggling with integrating it in their classrooms and questioning if doing so is the right move for them. There are a number of factors we must each consider (cost, ease of use, ongoing support for proper understanding and usage) that will impact our decision of how, when, and if we should introduce new technology. Common challenges and concerns teachers experience when integrating technology and digital media in the classroom include:

Students misusing technology:

With the introduction of technology in your classroom, you are sure to encounter students attempting to misuse it, largely for entertainment purposes instead of educational ones. Admin is designed with some of the most intuitive and comprehensive tools to protect against students misusing their devices, including the ability to block VPNs and

students attempting to access incognito browser modes via USB, both of which are popular ways in which students attempt to bypass web filters to access gaming sites or social media, search for inappropriate content, or use their devices at inappropriate times. Additionally, with Teacher, teachers are able to lock student devices at times they aren't needed to avoid students using them during videos, presentations, or when guest speakers are visiting.

Keeping Students Safe Online:

The increasing popularity of education technology in schools is also leading to increased concern regarding how to keep students safe while using it. Increased access to technology can leave students vulnerable to either intentionally or otherwise being exposed to graphic content (including violent media and pornography), online predators, scammers and hackers, and cyberbullying. Features of Admin and Teacher software, like keyword blocking and smart alerts, have been shown to be very effective in mitigating these risks and helping teach students to be responsible digital citizens.

Keeping Up with Changes:

Technology is a constantly evolving industry, and education technology can quickly become obsolete as new technology is introduced. A major barrier many teachers struggle with when introducing technology into their classrooms is keeping up with these many changes and trends.

Conclusion:-

Digital technology in the classroom refers to various software and gadgets meant to help students with particular accessibility needs. The most effective way to reduce the number of repetitive, time-consuming duties a teacher undertake is to use technology in the classroom. Educational technology applications may save a lot of time and energy by automating or partially automating day-to-day operations like attendance tracking and performance monitoring. Students are taught how to use technology responsibly and strategically, which can help them make decisions and develop self-discipline. Technology in education can help students to prepare for lifelong learning. These technologies provide students with a virtual world and the freedom to access digital knowledge according to their learning styles. Thanks to digital content production tools that customise teaching and learning, students can study at their own pace. The digital classroom uses electronic devices and software to instruct students and incorporates technology into education. A traditional classroom is transformed into a digital classroom through computers and the Internet. Students can learn more efficiently and track their progress with the help of technology and sophisticated equipment. In the upcoming days, these technologies will successfully be implemented in education to enhance the students' digital learning environment and performance. Modern technologies have been instrumental in complicated data analysis and management to make long-term decisions in areas such as climate change, air and water security, biodiversity protection, catastrophe resilience, etc. These technologies refer to innovation that considers natural resources while also promoting economic and social growth. These aim to dramatically decrease environmental and ecological concerns while producing a long-term product. These technologies reduce degradation, pollution, and other negative environmental effects.

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