



**CHALLENGES, IMPACTS AND THE IMPORTANCE
OF DIGITAL TECHNOLOGIES ON MODERN EDUCATION IN
21ST CENTURY**

Dr. Pratima Tripathi

Principal, Aviram College of Education, Tiko, Kuru, Lohardaga, 835213 Jharkhand

Dr. K. Maheswari

Assistant Professor of Social Work, CDOE, Bharathidasan University, Tiruchirappalli -24,
Tamilnadu

Dr. R. Malathi

Assistant Professor of Biotechnology, DOE, Bharathidasan University, Tiruchirappalli-24
Tamilnadu

Dr Meenakshi Sharma

Professor, Faculty of Commerce and Management, RNB Global University, Bikaner, Rajasthan

Navpreet Kaur

Assistant Professor, Department of Mathematics, Maharaja Ranjit Singh Punjab Technical
University Bathinda

Santiago Otero-Potosi

Research Professor, Department of Investigation, Higher Technological Institute Customs
Lyceum, Ibarra, Ecuador

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Abstract

This article looks into how current, widely used digital technology might assist learning in educational institutions and contexts (and, in some cases, alter the nature of provision). It is stated that in order to fully make use of the opportunities and possibilities provided by digital technology both now and in the future, teachers must change their attitudes and behaviors. The findings showed that there are a lot of kids who use technology because internet mobile connections are so widely available. As a result of technology's value and relevance to the educational process, pupils have a high level of computer proficiency. Students agree that using

technology into classroom discourse is beneficial because it piques their interest in the topic at hand. Furthermore, students' everyday use of social media demonstrates the value of technology as an educational tool. This has been greatly influenced by students' increased exposure to the media. Despite the negatives, students still find social media useful in the classroom since it can excite the attention of others and inspire them to learn. Instructional delivery and assessment may need to change to accommodate students' needs in the twenty-first century.

Keywords: Challenges, Digital technologies, Modern education, 21st century, social media.

1. Introduction

In this article, the word "digital technologies" refers to Internet-connected, multipurpose gadgets, notably handheld and portable ones. Nowadays, it is widely acknowledged that such technology offers chances to alter how student learning can be structured. According to Traxler, most people currently own, use, and frequently have multiple such devices. This has led some to speculate that the widespread availability of such technologies may disrupt long-standing norms and routines in educational settings. As a result of the convergence of traditional Internet access (in a fixed place) and personal Internet access (on the go), educators now have the opportunity to probe a variety of trends in the current day. This essay aims to analyze how these technologies have changed the landscape of K-12 and higher education.

1.1. Education in the 21st Century

Despite living in a world where information is more accessible than ever before in history, the majority of methods for promoting learning in formal education still rely on the immediacy of the teacher-student interface, particularly those carried out in a shared physical environment. In addition, the aims of education are not often clear, with the emphasis instead being placed on reaching specified learning outcomes rather than developing a skill-based curriculum that is ready for a world that is changing rapidly. Modern education cannot function without the ubiquitous presence of digital technology, which are becoming increasingly complex, personalized, and comprehensive in their information-gathering capacities. "Students anticipate encountering technology in classrooms, dorm rooms, and workplaces," and "technology is no

longer inherently innovative or new." Presently, however, most educational institutions and settings have typically failed to adapt to these changes, leaving students in worrisome learning environments that are remarkably similar to those used during the previous two centuries of universal basic education and an expanding post-compulsory sector. This essay begins with a discussion of the purpose of higher education in the modern day, and then moves on to an examination of how widespread access to information has affected, and maybe even transformed, the very nature of knowledge itself. Both of these effects have implications for educational institutions and systems in the twenty-first century, which will be examined in the article's concluding section.

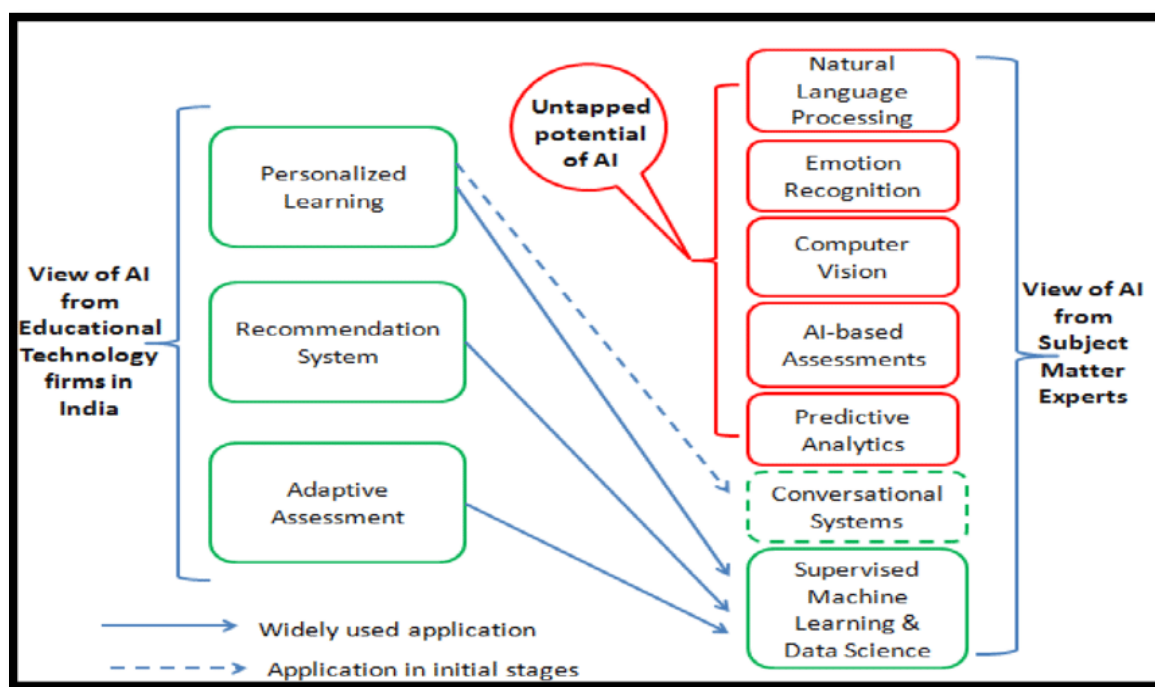


Figure 1: The use of artificial intelligence in Indian education

The key difficulties raised by this topic include the instructor's place in the learning process and the nature of their interaction with their students. The evidence strongly implies that in a world where technology has increased human capabilities, it is vital to offer the learner more control. Since flexible learning is generally viewed as necessitating some sort of pedagogical paradigm shift, this is the fundamental worry that arises from such a situation. It will be argued that traditional teacher-led environments ought to move away from directing and controlling learners

toward facilitating and guiding them, a process that calls for new skills and knowledge on the side of people responsible for guiding student learning. To describe this shift, the term "teacher as a guide on the side" has been employed”.

2. Literature review

Johnson, Becker, Estrada, and Freeman (2015) completed a comprehensive study that provides a comprehensive overview of emerging technologies and their potential effects on K-12 education in the NMC/CoSN Horizon Report: 2015 K-12 Edition. The paper delves into major issues and developments in technology that are poised to have an immediate effect on the classroom. Digital literacy, differentiated instruction, and the integration of technology into the classroom are all emphasized. The research emphasizes the importance of educators adapting their curricula and teaching strategies to digital devices in order to maximize student engagement and learning outcomes. Selwyn (2016) addresses the main topics and arguments surrounding technology and education. The author critically examines the connection between technology and education, examining issues including the digital divide, how technology affects how we teach and learn, and how technology might be used to overcome educational inequities. The study highlights the necessity for thorough examination of educational approaches and critical evaluation of technological solutions by illuminating the complex and multidimensional nature of technology integration in education.

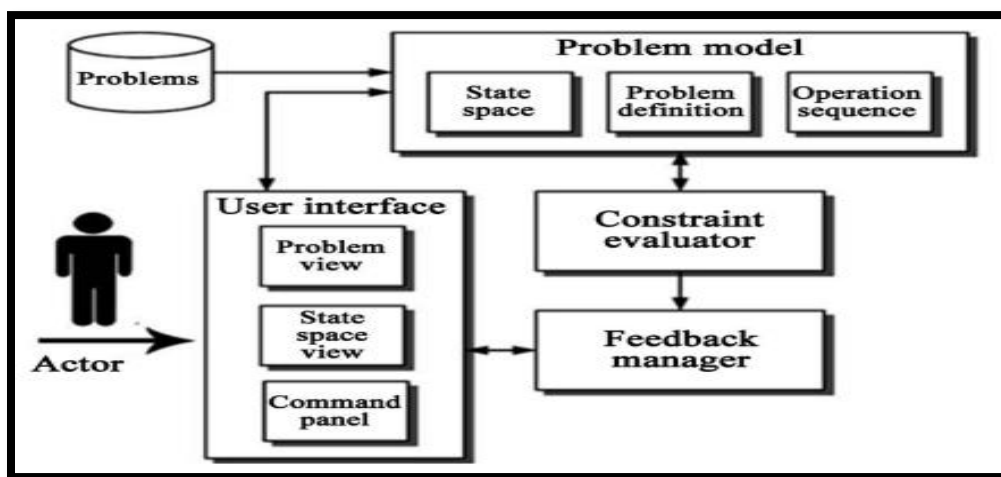


Figure 2: A standard design for an intelligent teaching system

Designing mobile and wireless learning experiences is the main area of attention for Kukulska-Hulme and Traxler (2007). They look into the potential of mobile technologies to support learning in formal education, workplace training, and lifelong learning, among other contexts. The paper covers the benefits and drawbacks of mobile learning, including concerns about pedagogical design, network connectivity, and device capabilities. It emphasizes how crucial learner-centered methodologies, situational awareness, and teamwork are when creating successful mobile learning experiences. The terms "digital immigrants" and "digital natives" were first used by Prensky (2001) to emphasize the generational gap between people who grew up using digital technology and those who had to catch up later in life. Prensky contends that because of their early exposure to technology, digital natives have unique cognitive and learning tendencies. On the other hand, digital immigrants could find it difficult to properly adopt and incorporate technology into their daily life and academic practices. This study started a conversation about the necessity for educational institutions and educators to modify their instructional strategies to take into account the learning preferences and technology expectations of digital natives. International frameworks for 21st-century skills and their consequences for national curriculum plans were compared and analyzed by Voogt and Roblin in 2012. To find recurring patterns and essential skills needed for people to succeed in the twenty-first century, researchers looked at a variety of competency frameworks created by various nations. In educating students about the problems of the modern world, the study underlines the significance of abilities including critical thinking, cooperation, digital literacy, and problem-solving. To ensure that students succeed in a constantly changing world, it emphasizes the necessity for educational systems to link their curricula and instructional strategies with these 21st-century skills.

3. Methodology

3.1. Research Design

This study employed a convergent mixed methods design to collect quantitative and qualitative data simultaneously, give equal weight to each approach, and draw meaningful conclusions from the results in both ways. The study utilized both quantitative and qualitative approaches for data collection and analysis.

3.2. Research Participants

Dimensional strand. For SY 2021–2022, 100 senior high school students from a school in Mumbai, Pune City, Maharashtra, were specifically chosen to participate in this study. The participants' names and the institution to which they are affiliated were purposefully withheld.

Quality Strand. Five senior high school students were carefully chosen as the participants for the qualitative portion, and they underwent in-depth interviews. These five SHS students were not among the participants in the quantitative portion of the study. These students attended a school in Mumbai, Pune City, Maharashtra, and met the prerequisites for enrollment in SY 2021–2022.

3.3. Research Instruments

Threads of space and time. The researcher adapted survey questionnaires to learn more about the use of technology in the classrooms of today's high school seniors. The researcher began by making adjustments to the research questionnaire developed by Das and Mishra for the Technology-Enabled Learning Implementation Handbook. The survey Reconstructing the Pupil's Attitude Towards Technology conducted by Ardies, De Maeyer, and Gijbels was also amended by the researcher.

Quality Strand. All of the original statements were recorded by the researcher using an interview guide. The interview guide was used to respond to the inquiry regarding the use of technology in learners' 21st-century education after it had been approved by experts.

3.4. Data Collection

Dimensional strand. A survey questionnaire that was completed online using Google Forms was used to collect the data. To fit the situation, the survey's questions were modified. The criteria include student attitudes toward technology and learner usage of technology.

Quality Strand. The five individuals were interviewed in-depth virtually by the researcher. The interview guide was provided as a guide for the data collection, which followed basic interviewing procedures. With the participants' consent, interviews were taped, and each interview lasted no longer than an hour.

3.5. Data Analysis

Dimensional strand. To gauge the level of learner technology use and students' attitudes about technology, frequency, percentage, and mean were used.

Quality Strand. To better understand and appreciate the analyzed data, the researcher used thematic analysis. An important strategy for achieving qualitative study results was transcription. The translated data was encoded, then the pertinent subjects and theme statements were properly coded and examined.

3.6. Ethical Considerations

Students in this study first hid some information out of fear of making a potentially embarrassing disclosure. Therefore, the researcher ensured that the following ethical standards would serve as the foundation for the research: respect for human subjects, kindness, fairness, informed consent, and confidentiality. It is vital to obtain their consent before conducting a study by having them read and sign an informed consent form. Before conducting the in-depth interviews and survey, I explained the purpose of this study both orally and in writing. Once I had their consent, I had them sign the informed consent/assent form. Anonymity of the interviewee in respect to the information supplied was preserved to reduce risks or harm. By adopting a coding scheme to conceal their genuine identities, the informants' identities were protected as well as the confidentiality of the findings. The confidentiality of study participants was given due consideration. Participants were informed that they are under no obligation to answer any questions they feel uneasy responding during the interview.

The convenience of the participants was of utmost importance to me throughout the research process, therefore I made sure they didn't have to pay anything to take part in the survey or interview. In order to ensure privacy, I changed the students' names and hid their personal information. After data processing, all of the audio recordings, encrypted documents, notes, and other things were thrown away or shredded.

4. Results

4.1. Quantitative Results

The findings of the quantitative information acquired by the survey questionnaires are covered in this section.

- **The nature of technology's contribution to senior high school student's education in the twenty-first century**

The two characteristics that characterize the importance of technology in the education of high school seniors in the 21st century are students' use of technology and their attitudes toward technology.

4.2. Learner Use of Technology

In this section, we address the role of information and communication technologies (ICT) and students' attitudes about using them in the classrooms of the twenty-first century.

1. Access to and Use of ICT

Quantifying access to and use of ICT involves the concepts of ownership of ICT, internet access, usage of ICT and online skills, social media, and resources/services/spaces. The subsequent talks present the results and supplementary readings.

- **Ownership of ICT**

The ownership of ICT by students in senior high school is displayed in Table 1 below. It demonstrates that seventy-three percent (73%) of the student's own cell phones, whereas three percent (7%) of them only own desktop computers, laptops, netbooks, smartphones, and tablet devices (such as iPads).

2. Internet Access

Table 1 displays how ICT is accessed and used in terms of the most common devices used to access the internet. The majority of students (73%), who use smartphones or mobile phones often, do so. But none of the respondents use an iPad or tablet to access the internet.

Table 1: Access to and utilization of ICT in terms of commonly used internet-accessing devices

Frequently used devices in accessing the internet	Number	Percentage
Desktop computer	7	7%
Laptop	20	20%
Smartphone/Mobile phone	73	73%
Tablet or ipad	0	0%
Total	100	100%

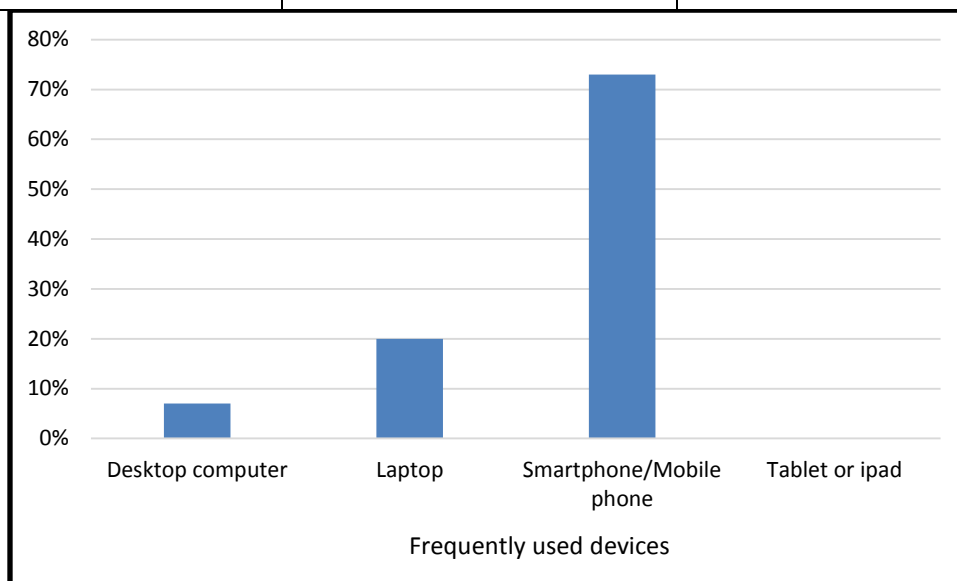


Figure 1: The prevalence of different types of internet-connected devices among those with access to and use of ICT

Table 2 displays how ICT is accessed and used in terms of typical internet usage. It can be seen that, according to the number 66, or 66% of students, more than half of them use the Internet every day.

Table 2: ICT accessibility and utilization in terms of typical Internet usage

Average internet usage	Number	Percentage
Daily	66	66%
Alternate days	22	22%
Once a week	6	6%
Irregularly	4	4%
Rarely	2	2%
Never	0	0%
Total	100	100%

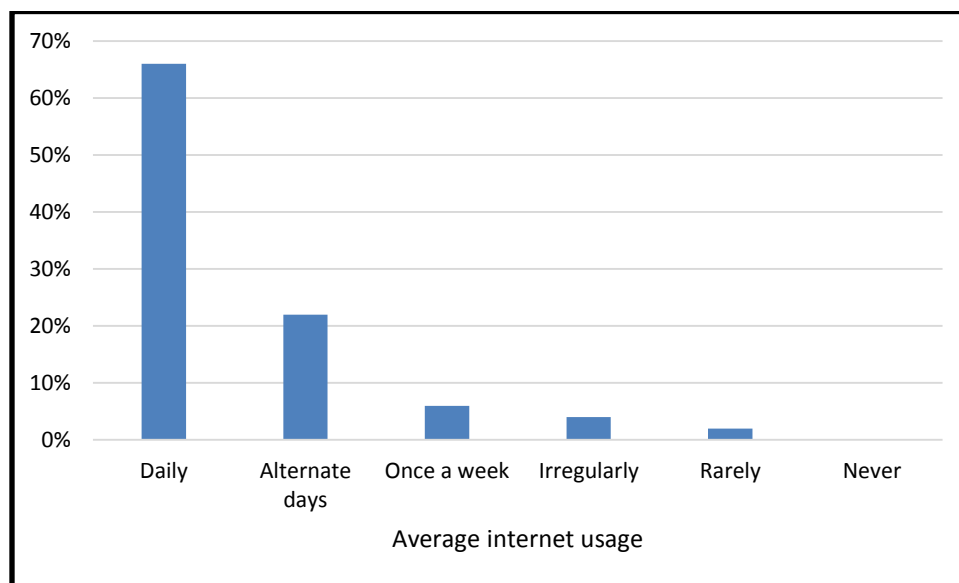


Figure 2: ICT availability and usage, namely in terms of monthly internet time spent

5. Conclusion

Due to the widespread availability of internet mobile connections, many students now regularly use technology in the classroom. Technology is widely employed and highly proficient in schools because of its value and relevance to the educational process. Students agree that using

technology into classroom discourse is beneficial because it piques their interest in the topic at hand.

Furthermore, students' everyday use of social media demonstrates the value of technology as an educational tool. This has been greatly influenced by students' increased exposure to the media. Despite these concerns, students still value the usage of social media in the classroom.

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