

Integration of ICT Based Education in India: A Review of Challenges

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Abstract: The National Education Policy (NEP) 2020 is an education policy implemented in India. It was approved by the Union Cabinet of India in July 2020. The National Education Policy (NEP) 2020 is a transformative document that aims to revolutionize the education system in India. One of the key pillars of NEP 2020 is the integration of technology in education, with a strong emphasis on Information and Communication Technology (ICT). This chapter explores the potential of ICT-based pedagogy; issues and Challenges in realizing the goals of NEP 2020 and revolutionizing the learning experience.

Keywords: NEP 2020, ICT pedagogy, Digital learning, E-content

Introduction

Technology has become an integral part of our daily lives, and its impact on education cannot be overstated. A survey conducted by the World Bank in 2019 found that nearly 90% of children aged 3 to 16 in low- and middle-income countries regularly use mobile phones or tablets. These devices were increasingly being used for educational purposes through the availability of educational apps and content. ICT refers to the information and communication technologies in the teaching and learning process. It involves the integration of digital tools, resources, and platforms to enhance educational experiences and outcomes. ICT-based pedagogy holds tremendous potential to enhance teaching and learning experiences, promote active and personalized learning. ICT-based pedagogy encompasses a wide range of technologies, including computers, mobile devices, educational software, multimedia resources, online learning platforms, and communication tools. It includes these technologies to facilitate interactive and engaging learning experiences, foster collaboration and communication, and personalize instruction to meet the diverse needs of learners.

Reviewing status of ICT Usage in Education:

Mishra, R., & Rastogi, M. (2017) examines the challenges faced by schools in India during the implementation of ICT tools and the opportunities. The research identifies issues related to infrastructure, digital content, teacher training, and policy support and emphasizes the potential benefits of effective ICT integration in improving learning outcomes and fostering student engagement.

Chaturvedi, A. (2017) investigated the digital divide that persists in the Indian education system, hindering the effective integration of ICT. The study emphasized the unequal distribution of ICT infrastructure and internet access across urban and rural areas, leading to disparities in learning opportunities. The digital divide continues to be a significant challenge for policymakers seeking to promote equitable access to ICT-based education.

Gupta, S., & Sharma, R. (2018) conducted a study examining the impact of e-learning platforms on student learning outcomes in Indian schools. The research revealed that well-designed e-learning modules significantly improved student engagement and achievement in various subjects. However, the study also highlighted the need for proper teacher training and support to maximize the benefits of ICT integration.

Sharma, S., & Singh, S. (2019) investigates the impact of e-learning platforms on student academic performance in Indian higher education institutions. The study analyzes data from multiple universities and finds that the use of online learning resources positively influences student performance, particularly in courses where students can access multimedia-rich content and interactive learning materials.

Jain, P., & Verma, D. (2019) investigated the usage of educational apps in Indian classrooms. The research found that teachers were increasingly adopting educational apps to supplement traditional teaching methods. These apps were particularly useful in providing interactive learning experiences and promoting personalized learning. However, concerns were raised regarding the quality and effectiveness of some apps, underscoring the importance of curating reliable digital resources.

Kumar, A., & Singh, N. (2020) explored the role of ICT in teacher professional development in India. The study highlighted the significance of online training programs and workshops for teachers to enhance their pedagogical skills and ICT integration abilities. Furthermore, it emphasized the need for continuous support and access to updated ICT resources for sustained teacher development.

Nair, S., & Menon, S. (2019) identified the challenges faced by Indian schools in implementing ICT. The study revealed that issues like inadequate funding, lack of technical expertise, and resistance to change from stakeholders were prominent barriers. Policymakers must address these challenges to create an enabling environment for ICT adoption in educational institutions.

Sinha, A., & Reddy, M. (2018) examined the potential of ICT to foster inclusive education in India. The research demonstrated that assistive technologies and accessible digital content could significantly benefit students with disabilities, allowing them to participate more effectively in the learning process. However, accessibility issues and a shortage of specialized resources were noted as areas needing attention.

Malik & Hooda (2023) explored in their study the significance of educational technology i.e. moocs to enhance access, equity and quality at higher education. Moocs have potential in dealing with various challenges and issues before higher education. Moocs are easy to access irrespective of any sort of barriers or limitations on the part of learners and make learning enjoyable, engaging and interesting.

ICT adoption in the Indian education system has shown promising results, but challenges such as the digital divide, quality of resources, and teacher training need to be addressed. Policymakers must focus on providing equitable access to technology and comprehensive support for teachers to harness the full potential of ICT in education. Future research should continue to explore innovative ways to leverage ICT for improved learning outcomes and inclusive education in India.

Research Questions

1. How does the NEP 2020 address the integration of ICT in Pedagogy?
2. What is the current state of research and literature on the challenges and issues related to ICT-based pedagogy in the Indian education system, and what gaps exist that require further exploration?
3. What are the key issues and challenges faced by educators and institutions integrating ICT-based pedagogy in education.

How can ICTs be used in pedagogy?

- **Delivering content:** ICTs can be used to deliver content in a variety of ways, including through online courses, videos, and simulations. This can make it easier for students to access content and learn at their own pace.
- **Facilitating collaboration:** ICTs can be used to facilitate collaboration between students and teachers. This can be done through online discussion forums, group projects, and virtual classrooms. Collaboration can help students to learn from each other and develop their problem-solving skills.
- **Providing feedback:** ICTs can be used to provide feedback to students in a variety of ways, including through online quizzes, rubrics, and comments. This can help students to track their progress and improve their learning.
- **Personalizing learning:** ICTs can be used to personalize learning by providing students with different levels of difficulty, different types of content, and different learning activities. This can help students to learn in a way that is most effective for them.

Challenges associated with ICT-based pedagogy:

The use of ICT in education in India is still in its early stages, but there is a growing recognition of the potential benefits of this technology. The government of India has made ICT a priority in its education policies to promote the use of ICT in schools and colleges. According to the Unified District Information System for Education (UDISE) 2021-22 report, 34% of schools in India have internet access and 45.8% have functional computers. This means that about half of all schools in India have access to ICT tools, but only about a third of them have functional computers. The percentage of teachers using ICT tools in the classroom is also relatively low. According to a study by the National Council of Educational Research and Training (NCERT), only 52.5% of teachers use ICT in their teaching. These numbers suggest that there is still a lot of room for improvement in the use of ICT in education in India. However, the government is taking steps to increase access to ICT tools in schools, and there is a growing awareness of the benefits of using ICT in education. As these trends continue, we can expect to see a significant increase in the use of ICT in education in India in the years to come.

The challenges of using ICTs in pedagogy can be overcome through careful planning and implementation. By addressing these challenges, teachers can use ICTs to create more engaging and effective learning experiences for their students.

Initiatives taken by the Government of India for promotion of the use of ICT in education:

The government is also working to develop a national ICT infrastructure for education, which will provide schools with access to high-speed internet and other ICT tools. In 2021, the government launched the Digital Saksharta Abhiyan (Digital Literacy Mission) to provide digital literacy training to 600 million people by 2023. These initiatives are expected to help to increase the use of ICT in education in India and improve the quality of education for all students.

DIKSHA: DIKSHA is a national digital learning platform that provides access to a wide range of educational resources, including e-books, videos, and interactive exercises.

ePathshala: ePathshala is an online portal that provides access to digital textbooks and other educational resources for students from classes 1 to 12.

SWAYAM: SWAYAM is a massive open online course (MOOC) platform that offers free online courses on a wide range of subjects.

One Class-One Channel: One Class-One Channel is a program that broadcasts live lessons from top schools across the country on television and radio.

These are just a few of the initiatives that have been taken by the government of India to promote the use of ICT in education. As these initiatives continue to be implemented, it is likely that the use of ICT in education in India will continue to grow.

Conclusion:

ICT-based pedagogy has the potential to revolutionize education in alignment with the vision of NEP 2020. It can transform the learning experience, promote personalized and collaborative learning, and ensure access to quality education for all. However, to realize this potential, concerted efforts are required to address infrastructure challenges, provide adequate training to teachers, and foster digital literacy among students. By embracing technology and leveraging it effectively, India can create an inclusive and future-ready education system that prepares learners for the challenges and opportunities of the 21st century.

The use of ICT in education in India has the potential to transform the education system. By providing students with access to a wider range of resources, facilitating collaborative learning, and assessing student learning more effectively, ICT can help to improve the quality of education for all students. As the challenges of infrastructure, cost, curriculum, and teacher training are addressed, it is likely that the use of ICT in education in India will continue to grow.

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