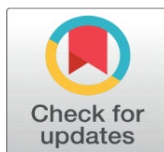# A STRATEGIC FRAMEWORK FOR INFORMATION AND COMMUNICATION TECHNOLOGY EMPOWERED EDUCATION SYSTEM IN INDIA

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ABSTRACT

Information and Communication Technology in Education has its own place to envision a new India in which the children and youth is empowered with to become 'Vishwa Guru'. The New Education Policy (NEP 2020) is the latest revision of the Indian education system giving a lot of emphasis on use of ICT. The present paper focuses on the journey of Information and Communication Technology in India as envisioned by NEP 2020. The study attempts to understand the reach of ICT in India and its use by students and teachers through National Educational Technology Forum (NETF) for its effectiveness. Research articles and policy documents were studied to understand the focus of government on ICT in classrooms. The findings reveal to bridge the gap for effective implementation of digital learning. The recommendations will help the authorities channelize the effectiveness of ICT in schools.

Keywords: Information And Communication Technology (ICT), National Educational Technology Forum (NETF), New Education Policy (NEP 2020), ICT Initiatives, Digital Divide

1. INTRODUCTION

Information and Communication Technology (ICT) has made mark since its innovation. The world was driven by this invention when it was first used by in the government official report by Dennis Stevenson in year 1997. During this period, India gained popularity in Information and Communication Technology (Nair and Hindle, 2013). ICT in education has improved the quality of education and is on litmus test to reach to the weakest person and remotest area of the country. A new feather in the crown is the National Education Policy (NEP) 2020 with its vision to boost ICT enabled learning. In the same line, UNESCO emphasised digitalization of education especially for marginalized communities. NEP 2020 mention to establish National Educational Technology Forum (NETF) as one stop solution for all ICT learnings.

2. RATIONALE OF THE STUDY

India's drive to enhance ICT in education must be examined in relation to international benchmarks and best practices. Across the globe the trend is to integrate technology in pedagogy. Developed countries are in advance stage of its integration and with the focus on student centred education. The rationale behind the study is to understand the India's approach from both perspectives for incorporating elements of digital literacy, teacher training, and infrastructure development, while grappling with its unique challenges of scale and socio-economic disparity.

3. REVIEW OF LITERATURE

The literature on Information and Communication Technology (ICT) reflects the outlook on its transformative potential and significant challenges in its implementation. Integration of technology in education helps enhancing the learning experiences of students. It provides an interactive learning environments which caters the diverse learning styles and needs of students. The digital tools like online platforms foster student engagement and collaboration, particularly in remote learning contexts (Kenzhegalieva & Alimbaeva, 2022). It is interesting and important to understand that ICT bridges the educational gaps by offering high-quality content with flexible learning options to every student. A study by Upadhayaya, (2023) defines the transformative role of ICT in education. This study emphasizes the need for innovative learning designs that incorporate ICT to enhance the educational experience in elementary schools, particularly in Civics and Social Studies. The use of ICT tools helps teachers to teach with efficiency. ICT enables greater interactivity in learning, with more opportunities for cooperation and an improvement in communication between teachers and students (Schulz-Zander,2002). Teachers who integrate ICT in the classroom demonstrate some degree of confidence, collaboration, and cooperation (Mundy,2021; Abel,2022). The integration of these ICT tools assists students in acquiring not just knowledge, but also essential skills and attitudes necessary for their personal and professional development and prepare students for the challenges of the modern world (Francis Kovic, 2022). Despite the NEP 2020 policy's ambitious goals, studies indicate that many institutions face significant gaps in ICT infrastructure, hindering effective implementation. (Gulnasin & Khatun, 2023).

3.1. ICT SETUP IN INDIAN EDUCATION

The success rate of education in developed countries is enhanced due to integration of digital tools into competency-based curriculums. India's is with the aim of education for all is reaching to every corner of the country with the digitalization of education using e-platforms like SWAYAM and e-Pathshala, which offer free online courses and digital textbooks. Country like Singapore, South Korean and other European countries have education system with a robust ICT integrated learning process. It sets an example for India to draw lessons from its success story.

Being a diverse country, India has its own unique challenges. Despite the challenges, largely related to getting technology into rural areas and training teachers, improving ICT in education in India is an issue about multinational practices. Digital divide is also the one of major factors of creeping pace of ICT in Education. To get a better perspective of India's ICT-influenced education reforms in a global context, it is necessary to examine global benchmarks, best practices and the constraints faced by both developing and developed countries. NEP 2020's initiatives by India such as enhancing digital access and introducing ICT in the curriculum and addressing the digital divide is a step in the right direction. India, like other countries, is also looking at addressing these challenges using digital inclusion policies and have targeted efforts and support.

3.2. SALIENT FEATURES OF THE NATIONAL EDUCATIONAL POLICY (NEP) 2020

In light of National Educational Policy 2020, popularly known as NEP 2020, education system deeply ingrained in the Indian ethos that directly contributes to India's transformation. With the provision of high-quality education, India has become a global knowledge superpower, transforming Bharat into an equitable and vibrant knowledge-based society. NEP 2020 aims to drastically alter the educational landscape in India. Accountability, affordability, quality, equity, and access its five main pillars. It is expected to give our youth the tools they need to deal with the plethora of local and global problems that lie ahead. The principles of the National Education Policy 2020 are that education must not only enhance cognitive abilities, or the "foundational skills" of reading and numeracy, and "higher order" skills such

as problem solving and critical thinking, but social and emotional skills, or "soft skills," including, among others, empathy and cultural sensitivity, grit and resilience, teamwork, leadership, and communication. With the goal of universal access to pre-primary education by 2025, the Policy puts special focus on achieving basic literacy and numeracy at primary school and onwards. It offers a plethora of reform recommendations for education at all levels with the goal of ensuring school excellence, such as bettering teacher preparation programs, changing the curriculum, and adopting a 5+3+3+4 pedagogy. The principles of NEP 2020 have been explained with the help of diagram as below.

Figure 1 The Fundamental Principles of NEP 2020

3.3. ICT INITIATIVES IN INDIA

India is the world's seventh-largest nation. As per the Privacy Shield Framework report, the Information and Communications Technology (ICT) sector makes up 13 percent of India's GDP. The ICT market has a current value of approximately \$200 billion and is expected to reach a value of approximately \$805 billion by 2025. The integration of ICT in education will raise the teaching and learning by improve the interaction, accessibility, and involvement of teachers and learners. The flagship program of Samagra Shiksha under Ministry of Education, GOI has ICT as its key component to pursue several projects to boost governance, advance digital transformation, and foster economic growth. A handful of India's most noteworthy ICT projects are:

1) Digital India to transform India into digitally empowered society
2) SWAYAM- Study Webs of Active Young Aspiring Minds, provides high quality and affordable higher education.
3) DIKSHA- Digital Infrastructure for Knowledge and Sharing, a national online platform for teachers and students.
4) E-Pathshala, a platform for providing e-content and resources to teachers and students at school level.
5) NDEAR- National Digital Education Architecture
6) NROER- National Repository of Open Educational Resources, to provide free resources to the students of remotest area of the country.
7) Digital Libraries and Virtual labs

It took years to cover the journey of ICT from radio reaching door to door in the remotest area of India to the latest internet driven technology and the AI technology. The journey of ICT has been presented through a road map.
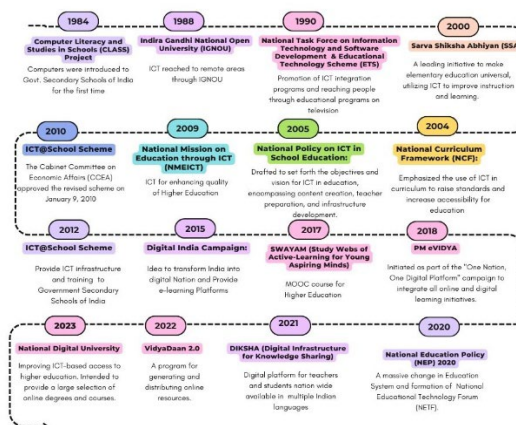
Figure 2 The Road Map of ICT in India

India has witnessed an unprecedented growth of ICT that is the largest network of radio and television network in the world. Towards the goal of ICT for all by 2008, policies were provided for setting the base for a rapid spread of ICT awareness among the people, propagation of ICT literacy and training of ICT professionals. All these initiatives will be culminated under the National Educational Technology Forum (NETF).

3.4. WHAT IS NATIONAL EDUCATIONAL TECHNOLOGY FORUM ?

The National Educational Technology Forum (NETF), an independent organization that will be established to offer a forum for the unrestricted discussion of how to use technology to improve planning, instruction, evaluation, and administration. All educational levels will have appropriate technology integration implemented to support teacher professional development, enhance educational access for underprivileged populations, and simplify educational planning, administration, and management. Higher education and schools will more effectively integrate technology-based learning platforms like DIKSHA and SWAYAM. The National Educational Technology Forum represent a significant advancement in modernization of education system. The objectives of NETF are to promote the sharing of concepts, best practices, and cutting-edge methods in educational technology with the integration of AI. Additionally, NETF is positioned to be a major force behind the integration of ICT into education at all levels and in driving the adoption of digital learning resources.

3.5. BRIDGING THE DIGITAL DIVIDE IN INDIA

It's an essential part of achieving education and technology access for all. There are differences between those with access to modern information and communication technology (ICT) and those without, and this gap is known as the digital divide, especially in rural and underprivileged areas. According to Kumar, et. al. (2014) reports a wide gap between the urban and rural students in terms of computer access and usage. whereas 91.33% of urban students had accessibility on computer and only 32.33% of rural students had the access.

4. FINDINGS OF THE STUDY

1) NEP 2020 is a potential initiative of Ministry of Education, Government of India with unique features to improve and channelize the Indian Education System.
2) The ICT initiatives, moocs like DIKSHA and SWAYAM has the potential to bring in remarkable improvement in the literacy rate of India.
3) It is still a challenge to make ICT available to the remote area of country as there is lack of infrastructure.
4) Establishment of The National Educational Technology Forum (NETF) will promote the research and innovation in technology.

5) Digital divide persists in the ICT ecosystem of India.

5. CONCLUSION

ICT initiatives in India is one of the important initiatives which has opened new avenues for the people who that getting education is not their cup of tea. NEP 2020 has given boost the existing ICT initiatives along with the introduction of new schemes. However the findings has showed many challenges in making these programmes instrumental. The prominent factors are digital divide, multiculturalism, and awareness of these programmes by the people. NETF for sure will help reach to the people and make them aware of ICT initiatives along with providing one stop solution for digital learning related queries. Substantial investment in infrastructure, teacher training, and policy reforms will help to bridge the gap.

6. FUTURE SUGGESTIONS

1) The present article has investigated the theoretical and practical aspects of implementing ICT initiatives in India and strategies followed as suggested by NEP 2020.
2) Further qualitative and quantitative studies can be carried out separately in this area to access the effectiveness of the programme.
3) Investment in ICT infrastructure must be the priority of the school authorities.
4) Trained and potential teachers or instructors must be appointed.
5) Regular mandator workshops must be conducted to update the ICT progress.
6) An efficient monitoring and evaluation system must be set up to assess the effectiveness of ICT initiatives towards education.
7) This avenue of research can thus help develop innovative teaching and learning solutions, thereby allowing India's education system to keep a step ahead on global trends and thus create a comparative edge.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

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