Original Article

Information and Communication Technology (ICT) in School Education Recommended in National Education Policy (NEP 2020): Major Issues & Challenges

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Abstract: *The goal of the current study is to execute the "National Education Policy 2020"'s suggestions for the use of ICT in the classroom. It has been suggested by numerous committees and commissions, including NEP 1986 and others, that ICT be used and implemented in schools in order to provide high-quality education. The government of Indiana has to address two key realities before reannounced the concerns in NEP 2020: The NCF 2005 and the officially supported Computer Literacy and Studies in Schools (CLASS, 2004) programme both emphasised the important role that ICT can play in education. The SarvaShikshaAbhijan began operating in the capacity and infrastructure building sector in 2000. Although a small amount of ICT infrastructure had been established, it was insufficient. Therefore, the concerns pertaining to the usage and implementation of ICT in school education were recommended by the NEP 2020. However, putting this policy's recommendations into practice is one of the hardest tasks. The researchers do not believe that the prior policies were absurd; rather, they believe that the oversight and monitoring mechanisms were malfunctioning. In order to improve teachers' ability to integrate ICT and create capacity, the researchers attempted to examine suggestions, problems, and challenges related to ICT use and implementation in school education in this article and compared it with prior policies. The government ought to set up those kinds of initiatives in schools with brand-new, substantial funding. Additionally, the state must take the initiative to designate ICT professors and institute the topic as a stand-alone course.*

Keywords: *School Education, ICT, NEP-2020, Implementation Challenges & Issues.*

I. INTRODUCTION

The Indian government's main education policy, Sarva Shiksha Abhiyan (SSA), aims to improve school quality by using ICT. ICT played a significant role in school education standards, according to the 2005 Universal Secondary Education report from the Central Advisory Board of Education (CABE). The Higher Education Department (Old Name: MHRD) released the most recent NEP 2020 on July 29, 2020. The NEP 2020 adheres to all ICT usage and development norms, standards, and procedures. Additionally, the NEP 2020 promotes the use of digital resources in higher education and in schools. The majority of tasks in business, education, and e-commerce rely on digital resources. At a 7.2% annual compound growth rate, India's total ICT investment is expected to increase from $101 billion in 2018 to $144 billion by 2023. A new web gateway called "SAKSHAT" (One Stop education portal, SwayamPrabha TV Channel, Spoken Tutorial, Fossee App.) was introduced by the Ministry of India. After it is developed in all subjects, excellent e-content will be posted on "SAKSHAT." India's approach to teaching and learning will shift as a result of multiple projects that are nearing completion and will likely be implemented shortly. In order to improve school education in India, it is now important to thoroughly examine all available data as well as information and communication technology. To ensure comprehensive choice for finished educational development, a strong policy is required. The National Council for Teacher Education placed significant emphasis on the use of ICET in creating education systems. Utilising ICET is crucial for enhancing classroom instruction. Governments and educational institutions shouldn't be careless.

A. Objectives of the Study:
The main objectives of the study are as follows-
- To study the recommendations made by NEP 2020 regarding ICT in School Education.
- To find out the probable challenges and issues to implementing ICT in School Education according to NEP 2020.
- To compare NEP 2020 with Previous Commission and Committee providing ICT in School Education.

II. METHODOLOGY OF THE STUDY

The current study is based on a review. The information was gathered from various government reports, academic publications, and unpublished, un-reviewed works about similar topics, newspapers, pertinent books, and online sources.

A. What is ICT?

Information and communication technology is defined as any tool, resource, service, forum, or other item that can be delivered, transformed into digital form, or used to support online learning objectives, improve resource access and reach, develop capacity, and manage educational systems. It encompasses more than just the hardware that is linked to a computer or software programme; it also includes interactive digital content, the internet, other satellite devices for communication, radio or television, web-based content, interactive forums, learning management systems, and management information systems. Additionally, it will cover the procedures involved in digitization, deployment, content management, platform development and utilisation, capacity building, and the creation of forums for communication and interaction.

B. Foundation of ICT in Education:

Information and communication technology is used everywhere in the educational system, and it provides certified services and processes that enhance the system's efficacy, quality, and accessibility. Nonetheless, the Ministry of Education has several key objectives here:
  a) Community developments possess comprehensive information regarding ICT.
  b) A community who have knowledge of ICT and capable to utilize and enjoy benefits of ICT and contribute in building nation.
  c) Framework of cooperation, exchange, and association that supports the creation of requirements for the proper use and potential return on investment of ICT in the advancement of the educational system.
  d) State-of-the-art ICT tools and materials are completely accessible to all students and instructors in an unbiased, open, and free manner.
  e) Creation of high-quality, locally relevant content and support for instructors and students working together to generate and use shared digital resources.
  f) Creation of a professional framework for educators, resource people, and educational institutions to facilitate resource sharing, teacher development, and advancement.
  g) Education and professional development for educators, guidance and academic support for learners, resource sharing, administration, and networking among school administrators will all contribute to improved school operations in an effective manner.
  h) ICT-related research, analysis, and testing instruments as well as ICT-enabled processes for guidance, direction, and utilisation in school settings.
  i) Recognising the benefits, dangers, and drawbacks of ICT.
  j) While the use of ICT in the education system has given us access to a wealth of critical information, there have also been certain difficulties.

C. Recommendations of NEP-2020 on ICT:

To help our educational system deal with the quick and disruptive changes that put each of us, individually and collectively, at risk in a more competitive global marketplace, they include research, de-skilling, and raising awareness. Enhancing educational access, assisting with teacher training and professional development, and enhancing the teaching-learning and evaluation processes will be the primary objectives of technology interventions. Additionally, they want to simplify the planning, management, and administration of education, including the processes for admission, attendance, assessment, and so forth. In order to achieve these aims, NEP, 2020 will construct the National Educational Information and Communication Technology Forum (NETF), which will serve as the vehicle for integrating technology into many components of school education and higher education. The following will be among the NETF's duties:

1. advising Central and State Government agencies on information and communication technology-based interventions based on independent, evidence-based advice; ii) developing institutional and intellectual capacities in educational technology; iii) conceiving of strategic thrust areas in this area; and iv) articulating new directions for research and innovation. Moreover, it discusses enhancing CIET to advance and broaden DIKSHA and other educational technology efforts. Moreover, the NEP, 2020 has suggested the crucial actions below: I to carry out a number of pilot studies for online education, ii) to invest in developing digital infrastructure, iii) to promote appropriate online teaching-learning platforms, iv) to create e-Contents, digital repositories,

and their reliable dissemination, v) to focus on addressing the country's digital divide, vi) to use technology to create virtual labs for easy and equal access to all students, vii) to train teachers and to incentivize their digital.

D. Models for ICT Infrastructure of Secondary Education:
   a) States must endeavour to fulfill the mandate for separate teachers, with the exception of ICT at the +2 level, where ICT was introduced as a stand-alone topic. This is to enhance the ability of regular instructors to integrate ICT with capacity building programmes. Avoiding contracting out the hiring of teachers to BOOT agencies is imperative.
   b) States will evaluate the feasibility of pooling infrastructure; this might be done entirely or in part within the community to train youth after school or to increase educational opportunities. Care must be made to ensure that such use does not interfere with the ICT programme or school curriculum.
   c) The school or BOOT agency may also use it to expand their resource base. States must develop suitable community cooperation models to ensure the protection of school property and the appropriate use of resources and infrastructure. Regarding Incentives.
   d) States will implement suitable incentive programs to recognise, showcase, and promote originality and talent among educators and students. It is necessary to offer prizes easy lending facilities in order to purchase supplies and equipment. The possibility of a collaboration or sponsorship between the state and other private organisations including firms, banks, and charitable organisations must be examined.

E. The Probable Challenges and Issues to Implementing ICT in School Education According To NEP 2020:
   a) The challenges in creating content repositories for educational content in Indian languages are as follows: the organisations in charge of creating the initiatives related to content must have state-of-the-art technology that is error-free, easy to access, and understand, in addition to editorial processes for content uploading and rating systems that will enable the best content to appear at the top.
   b) The requirement that the contents be unique and not infringe upon copy rights or intellectual property rights is an inherent challenge. The dynamics of updates as and when necessary also present a significant barrier in light of the rapidly evolving field of technology.
   c) Adequate security measures and utilization rights need to be articulated and must be made available under the Creative Commons Licensing. The National Repository for Open Educational Resources (NROER) is one such example, butit needs to be supplemented with much more awareness building so that a lot more content comes online and more people find it useful.
   d) When it comes to large-scale utility, every action involving the ICT process today, regardless of the paradigm, requires significant expenditure. It is necessary to decide on the course of action for ICT, whether it will be through public-private partnerships or indigenous private investments.
   e) In the end, the financial model determines the sustainability issue and what kind of financial model is best suited to support such a repository. The whole range of content repositories will be very difficult.
   f) This technique may have the benefit of encouraging educators to produce creative, age-appropriate curriculum. The unpredictable nature of language barriers will also exist because the decision to establish repositories needs the content.
   g) The NETF can make the decision to hold all content in a single repository or to build separate repositories for each state depending on suitable financial models, but this will require careful preparation.

F. To Compare NEP 2020 With Previous Commission and Committee Providing ICT in School Education:

The National Policy on Education 1986, which was updated in 1992, placed a strong emphasis on the use of educational technology to raise educational standards. In 2004, a more comprehensive centrally sponsored programme called Information and Communication Technology @ Schools was made possible by the policy statement, which also led to the creation of two significant centrally sponsored programmes: Educational Technology (ET) and Computer Literacy and Studies in Schools (CLASS). Another plan to improve science teaching included a large role for educational technology. The National Curriculum Framework 2005 (NCF) 2005 has also emphasised the important role that ICT may play in education.

SarvaShikshaAbhiyan (SSA), the government of India's main education policy, includes the use of ICT for quality enhancement. Once more, ICT is a major component of the standard of education that the Central Advisory Board of Education (CABE) proposed in its 2005 report on Universal Secondary Education.

Given the convergence of technologies, it is now essential to examine every information and communication technology that could be used to enhance the nation's educational system. Only a solid policy can serve as the foundation for the all-encompassing selection of ICT for the holistic advancement of education. The enormous potential of ICT for expanding reach and raising educational standards is what spurred the proposal of ICT Policy in School Education. Within the context of a national policy framework, this policy aims to offer guidance to support the States in optimising the use of ICT in education.

POA(Programme of Action 1992)The States will draw up a Programme of action to inform and guide various aspects of the ICT programme, viz., development of infrastructure, management of the programme, development of digital resources, capacity building, monitoring and evaluation of the programme.Based on a suitable road map and time line, the States shall ensure coverage of all Government and Government aided secondary and higher secondary schools. It will also ensure similar development in all private and unaided schools through the respective State Boards of affiliation. The time line will be broken up into appropriate phases and suitably monitored. The programme will be expanded to the upper primary stage, covering all the schools within an appropriate time frame.The States will set up an institutional mechanism for implementing the ICT programme under the existing educational system, suitably delegating responsibilities up to the school level. States may experiment with different models based on past experience and appropriateness.

G. Purposes that can be served by the Information and Communication Technologies:

Technology won't change education; yet, a changed education might gain a lot from information and communication technology.Based on the vantage point a person has, from whence to perceive the challenges with education, several technologies are offered. In the IT and allied sectors, as well as in manufacturing, warehousing, marketing, logistics, finance, human resource development, etc., close interactions with information and communication technological solutions are of course possible. The sophisticated media applications and easy access to very powerful consumer gadgets, notably cameras and audio-visual equipment, have all contributed to the widespread appeal of contemporary information and communication technology. Explorations of technology that could have an impact on the educational process have been frequent and well-documented in industrialised cultures, especially when affordance is not a criterion. Recently, the following technologies have been on the wish lis.and teaching-learning includes improved collaboration, student teacher connect, parent-teacher communication, better access to open educational resources, and devices to support various aspects of teaching-learning. Larger system-wide supports include big data analytics, learning a new language, and learning a new skill each of the aforementioned options has been tested in a variety of educational settings with children of varying ages, and the results have been extensively published. Each of these tools, goods, or services has a particular function that lends itself to instructional usage. Some of them—like e-learning, for example—have even become the preferred information and communication technology. Cost and dependability of the solution are impacted by the intricacy of the arrangements, the unique devices, the small markets, and the lifespan of the technology. As a result, they are no longer taken into account in a public education system. In reality, in order to reduce expenditures, at the expense of a longer life, and to directly contact the end user, the technology sector has positioned many, if not most, of these technologies as consumer apps and gadgets. It is important to acknowledge that information and communication technologies have seldom developed in response to educational demands. Nonetheless, a wish list of usage is suggested, drawing inspiration from its diverse applications across enterprises and sectors. This includes: the general administration and management extending from the individual school to the state education system level; the capabilities of teachers and other employees at all levels; and the teaching-learning processes Broadly, in an order of priority, technology support is sought to serve the integration of ICT Secondary level Education.

H. Major Challenges of ICT use in School Education System:
Further suggestion given by Centre/ State Government to Pro-mote the ICT program in Schooling System:
Connectivity and Network (Digital Resources) Resources supplied by the relevant department. Curriculum and content development is handled by the State Government, NCERT, and NCTE. Digital content must be shared and disseminated by school administration (in conjunction with the library). At the district and state levels, the Programme Monitoring and Evaluation Group (PMEG). In order to integrate ICT programmes into the current educational framework, the state must establish an institutional framework that will allow for appropriate accountability at the school level. States may experiment with various models based on their experiences. Establishing the fundamental ideas, guidelines, protocols, and organisational framework needed to implement policies effectively at the local level (village level). Keeping an eye on how policies are being implemented effectively will entail the following tasks:A useful timeline, an action plan, and an applicable road map. Guidelines based on national norms and principles for infrastructure, process execution at various levels, capacity-building initiatives, and goals, criteria, and observation. The organisation, choice, analysis, deployment of repositories, and application of digital content.

Promoting broad stakeholder participation, including community and private partners, in all facets of the ICT initiative, as well as efficient policy implementation. digital infrastructure technology creation, implementation, and maintenance. development and implementation of a capacity building programme that is appropriate. mobilisation of resources from both public and private sources. establishing appropriate district-level legal and regulatory framework. All aspects of observation, examination, and execution must adhere to the guidelines issued by the Central Government. Standards, norms, and procedures that the relevant management adheres to. States must adopt standard principles and guidelines established by an interministerial group at the national level for every aspect of ICT execution in order to assure high standards, standardisation, proper usage, and cost-effective execution. Regarding the combination of technologies, equipment handbook, software selection and connectivity, selection and organisation of digital resources, and capacity-building programme.

I. Challenges for Implementation Information and Communication Technology School Education:

While the policy has unquestionably done a remarkable job of integrating ICT into the classroom, there are a few issues that need to be addressed. The policy's execution will undoubtedly be difficult. From July 2017 to June 2018, a survey on household social consumption was undertaken. instruction.49,238 urban and 64,529 rural households were included in the sample. In India, 6,188 blocks and 8,097 villages provided the sample.It was discovered through the study that approximately 77.7% of people aged 7 and up were literate. It was 87.7% in urban regions and 73.5% in rural areas. The literacy rates of men and women differed as much, at 84.7% and 70.3%, respectively. All students must have access to technology in order to incorporate it into their education; at the very least, they must have smartphones and PCs with internet connectivity. One of the biggest obstacles to be addressed is that the less fortunate pupils do not, regrettably, have access to the same. Managing network faults, power outages, and stopping unethical behaviour present additional challenges. Accepting the switch from the conventional rote learning system to the technology-driven critical thinking and experimental learning system presents another difficulty. The stakeholders' mindsets will need to shift as a result, and ongoing efforts are required to comprehend and carry out this new vision. Teachers with digital competency are desperately needed to meet the new criteria. In addition, there is a lack of infrastructure for digital materials, and certain courses have restrictions when it comes to teaching in digital spaces.States and the centre must collaborate for the policy to be implemented successfully since there are obstacles to be overcome in both integrating information and communication technologies and putting the policy into practice. There is still much work to be done and significant progress in the areas of information and communication technology. The most comprehensive education strategy of the century is thought to be NEP 2020.

III. CONCLUSION

The development of ICT policies in schools to increase outreach and raise educational standards was spurred by the technology's enormous potential. The policy offers recommendations to support the state's national policy structure for the appropriate use of ICT in education. NEP 2020 intends to focus on appropriate background information for e-learning, virtual lab facilities for experiment execution, online testing and certification, and online teacher and instructor availability. By utilising the DTH (direct to home) and education satellite EDUSAT (GSAT-3, September 20, 2004) platforms, instructors will be empowered and trained to effectively implement new teaching and learning methodologies. It has come to light that the ineffectiveness of the inspection and supervision initiatives was due to the process. Therefore, before recommending the use and deployment of ICT in school instruction, policymakers should reconsider. The state's education department and the Ministry of Education (MoE) will oversee the implementation of the ICT plan, including its monitoring and analysis. The relevant departments will be represented on the advisory board; one such department is the State University Department of Engineering, which is well-known for handling various technical, instructional, financial, and administrative responsibilities. The current theme paper suggested that the government set up an ICET programme at the school and institution levels using recently developed, highly resourced materials. The Ministry of Education and State University should occasionally host national and international conferences, seminars, and workshops.

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