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ICT Enabled Education: An Analysis in View of the National Education Policy, 2020, India.

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Abstract

In the 21st century, the demand for the use of ICT in education has increased rapidly as it has improved the way to be effective. The Indian Cabinet approved the new National Education Act and the sustainable development goals of the 21st century on July 29, 2020, after 34 years. The policy recognizes the need for and importance of information and communication technology across education to support research and innovation and to improve multilingual teaching, assessment, educational planning and management. The policy focuses on the creation of digital libraries, the creation of a virtual learning center with lending in financial institutions, and the creation of the National Technical Education Forum (NETF) to ensure effective use of technology and transparency of school management.

This article discusses various aspects of NEP 2020, namely, use of ICT in Education with special focus on Higher Education.

Keywords: National Education Policy, ICT, Higher Education, Digital Initiatives, Educational Technology.

1. Introduction

India is a diverse country with a population of 1.3 million, two-thirds of whom are youth (census 2011). In economic development and country development, education is seen as the country's capital in building educational relationships and improving living standards. Education in India is unique with 1.5 million schools, more than 900 schools, 8.5 million teachers and around 330 million students. In addition to acquisition and preservation, ensure inclusiveness, excellence, lifelong learning and inclusive education, including 21st century skills and development missions (SDGs).

Educational technology combined with information and communication technology (ICT) is the need of the day. It can teach, learn, evaluate, and continue to improve at scale and speed, anytime, anywhere, in all regions of the country, and by integrating digital distribution. With this consideration, the National Education Policy (2020) prioritizes the use of technology in education to increase access to education, improve the quality of education, emphasize inclusion and diversity, and promote access, equity and equity in education. country availability and system accountability. Therefore, careful use of educational tools and information and communication technology (ICT) can open up this process and help the country achieve good education.

This article focuses on the effective use of ICT within the framework of the National Education Policy 2020 and NEP 2020. The article also discusses creating a comfortable environment for Divyang and the use of next generation mobile technology 5G in education.

2. Rise of Educational Technology: Post-Pandemic Era

While many businesses have suffered during and after the COVID-19 outbreak, education has taken a new direction due to the growth and development of technology. Once the resistance is over, the institution must change the entire class. As organizations chart their future path, they explore technology-based outcomes such as technology learning to create learning environments that impact all academics. Change is difficult to achieve overnight, but with the support and collaboration of EdTech entrepreneurs, teachers, principals, parents and academics, a new event in education has begun. The power of Edtech is that with the right tools and techniques, education delivery and efficiency can be greatly improved. teachers can use technology to connect with scholars or scholars from different countries. Technology allows teachers to use a variety of learning approaches that integrate music, instruction, and hands-on applications. This allows them to offer educational results that meet international standards. Educational institutions are really limited in their ability to focus on changing trends and adapt to new technologies to make education more stimulating, useful and useful. By following the latest technological developments, educational institutions will not only be more suitable to improve the quality of education, but scientists will be better equipped to understand generalities, remember short information and retain information for a long time. A little support for this technology can go a long way in improving the integration of reliable information and education. These advancements in educational technology will revolutionize education by making it better and better than it is today. It can help scientists prepare for an exciting future that holds the future of society. To handle the various demands, Indian Edtech companies have started offering many features like on-demand literacy and expert-led classes to the traditional style. Although these services only supported students' literacy before the epidemic, they have now been moved and organized. Biju, Vedantu, Unacademy etc. Leading EdTech players such as e-learning, digital mark scheduling, online mock tests and exams have expanded their service offerings, establishing literacy pathways for use by scholars. Massive open online courses (MOOCs) have gained momentum and advanced educational institutions are creating content and lectures for the public during pregnancy. The sweat has produced incredible results, with some companies reporting a 60 percent monthly increase in their stone base. Top investors have significantly increased their investment in the Indian EdTech space, estimated at over 200 billion. With the advent of EdTech, educators and parents are asking for a more hands-on approach to learning. It is important not only to define the attitude of the unborn generation towards education, but also to prepare for a continuous, changing and uncertain future.

3. New Education Policy 2020

Due to the disruption caused by the pandemic, several important changes have taken place in the Indian education system. Chief among them is the introduction of the National Education Policy 2020 (NEP) which was launched on July 29, 2020, with the sole purpose of overall productivity, contributing to building a fair, inclusive and pluralistic society for citizens with an increased enrollment ratio. (GER) increased by 50 percent by 2035. This new policy ushers in a new era of education after 34 years. NEP aims to democratize the future by ensuring universal access at all school levels and 100 percent school enrollment / enrollment for children between the ages of 6-14. The focus of the new policy is on technology. In addition, e-courses in regional languages will be developed and technology will become more pervasive and focus on educational planning, teaching, learning, assessment, and preparation of teachers, students, and learners. In addition, there are special provisions in the new policy for socially, financially and physically challenged groups. The Cabinet has directed the development of digital

infrastructure, digital content and capacity building to ensure that all e-learning needs are met. NEP 2020 recognizes its importance

- Utilize technology while recognizing potential risks and threats.
- Optimizing and expanding existing digital platforms and ICT-based learning initiatives to meet global needs and future challenges.
- Re-designed and appropriately measured experimental tests to determine the benefits of digital/online education.
- This policy envisages significant changes below to the current system.
- Go to multi-disciplinary universities and colleges and institutions of higher education in central India to provide local / medium Indian language education.
- To approve the integration of faculty and institutional leadership positions or the creation of the National Research Foundation.
- Transition to faculty and institutional autonomy.
- 'Light but tough' rules by a single regulator for higher education.
- Increasing access, equity and inclusion.
- Governance of HEIs by an independent board with academic and administrative autonomy.
- Establishment of the National Research Foundation.

4. ICT and NEP 2020: Focusing Higher Education

NEP 2020 explains that there are some weaknesses in the current higher education system, such as lack of focus on academic ability, fragmentation, limited access, lack of autonomy for teachers and institutions, lack of emphasis on research, and so on. The national education policy in 2020 envisages the revitalization of the higher education system. With an aim to revise the current Choice Based Credit System (CBCS) to ensure better innovation and flexibility, NEP focuses on:

- Better faculty and institutional autonomy.
- Professionalism in higher education leadership positions to ensure effectiveness.
- Create a National Research Foundation to fund and encourage research.
- Update existing curriculum to address gaps.
- Better student activity and participation.
- Motivated and capable instructor.
- Equity and inclusion.
- Curbing the commercialization of education.
- Promotion of Indian knowledge systems, arts, and culture.
- Ensuring Equitable Use of Technology among others.

The transformative potential of ICT in higher education in India has helped boost the country's demand for higher education through part-time and distance learning programs. It can be used as a tool to overcome challenges related to costs, teacher shortages, lack of education, as well as time and distance barriers. ICT-based differentiated education can provide reliability, validity and efficiency of data collection and analysis, evaluation and interpretation more easily at any level of education. As the world is rapidly moving to digital media, the importance of ICT in education is becoming increasingly important, especially in the post-pandemic era. It has changed the way education is distributed today in terms of how teachers interact and interact with students. In addition, it can provide a cross-border networking structure

and build empowerment among students.

5. Content Creation, Digital Storage and Dissemination

Repositories of digital content such as course creation, educational games and Augmented reality and virtual reality simulations will be developed by an open community network to evaluate the effectiveness and quality of users. Also, programs for students' fun basics, games about Indian art and culture will be created in multiple languages with clear practical instructions. A secure backup mechanism will be provided to distribute electronic content to students.

- **Create virtual laboratories**

There is also a need for existing e-learning platforms like SWAYAM, DIKSHA to be used to create virtual labs so that all students have equal access to quality hands-on learning experiences.

- **Online Assessments and Tests**

Blended Learning Model: The importance of face-to-face learning in supporting digital learning and education is fully recognized. Accordingly, different effective blended learning models will be identified for appropriate replication for different subjects.

- **Training and motivation for teachers**

Teachers will receive rigorous training in student-centered pedagogy to become quality online content creators using online learning platforms and tools. Emphasis will be placed on the role of the teacher in facilitating the active participation of students with content and each other. Teachers can subscribe to portals like VIDWAN and the Indian Research Information Network (IRINS) to enhance their network-centric view of information.

- **Setting Standards**

The policy makes several important recommendations for setting standards. As research in online/digital learning has emerged, the National Technology Forum (NETF) and other relevant organizations have set standards for content, technology, and pedagogy for online/digital learning. These standards are enforced by states, school boards, school complexes, universities, etc. It will help you develop guidelines for e-learning.

In the new Education Policy 2020, researchers are encouraged to choose innovative interdisciplinary research to take advantage of technology integration. The National Mission on Education through Information and Communication Technology (NMEICT) has developed virtual laboratories, access and open source tools, teacher interview initiatives, and lab experiments. It works as a centrally sponsored program to enhance the potential of ICT by providing quality learning material to students in any mode at any time. It is expected to be a major catalyst in increasing the total number of all institutions in the coming years. The government began participating in world-class universities, with 56 institutions appearing in the 2020 Times Higher Education Emerging Economies University Rankings. For this platform, an independent body, the National Education Technology Forum (NETF), will be established to provide a free exchange of ideas on using technology to improve learning, assessment, planning and management for schools and higher education. The purpose of the NETF will be to provide advanced knowledge and research, as well as advice to leaders of educational institutions, state and central governments and stakeholders to facilitate decision-making regarding the adoption, implementation and use of technology. and share best practices.

NETF will provide independent, evidence-based advice to central and state government agencies on technology-based interventions. It will also develop intellectual and institutional capabilities in

educational technology, predict strategic directions in the field, and create new directions for research and innovation. To stay relevant in the rapidly changing field of educational technology, NETF will continuously provide real data from multiple sources, including educational technology innovators and practitioners, and work with various researchers to analyze the data.

Another aspect of the National Education Policy 2020 is the Academic Loan Bank (ABC) established under the aegis of MEITY (Ministry of Electronics and Information Technology) and MOE (Ministry of Education), which is expected to facilitate the academic mobility of students. freedom to study in higher education institutions in the country, transfer degrees/diplomas/PG-diplomas etc. from one program to another. It is compatible with the leading 'loan transfer' mechanism and is an online loan collection and loan payment system to ensure student mobility.

- **Divyang Friendly Digital Initiatives**

The 2011 census estimated that 2.21 percent of India's population has a disability. About 16 percent of the world's population is affected, according to the World Health Organization. While technology has tremendous potential to level the playing field for people with disabilities, if it doesn't address their needs, it can exacerbate the obstacles that people with disabilities will face.

People with different disabilities need special assistance and equipment for their daily activities. This support is available through various programs of the Ministry of Social Justice and Empowerment. A major initiative is the Accessible India Campaign / Sugamya Bharat Abhiyan launched in 2015 to make public spaces such as government buildings, transportation and information and communication technology (ICT) accessible to people with disabilities. In addition to purchasing assistive devices through this program, a higher education institution may require special training and assessment facilities to help students with various disabilities enrolled in higher education. Institutions have access to screen reading software, vision devices, scanners, mobility devices, and more. Having a computer like this will enrich the educational experience of people with different abilities. National Institute of Speech and Hearing (NISH) is an autonomous institute under the Department of Disability Empowerment, Ministry of Social Justice and Empowerment. Provides education and research on speech and hearing disabilities, as well as services such as audiobooks and accessible software. Therefore, schools are encouraged to purchase such devices and make readers available to blind students. The Ministry of Empowerment provides financial assistance for the purchase of assistive devices, and the Assistive Technology Industry Association (ATIA) has been established to promote assistive technology research and development.

It is difficult to estimate the exact number of ICT devices such as smartphones or laptops that are disabled in India because there is no accurate data. However, according to the 2011 Indian census, there are approximately 2.68 million (26.8 million) people with disabilities in the country. India is reported to have 750 million internet/smartphone users in 2020, which has increased significantly in the wake of the coronavirus pandemic. Using an index of 16 percent, this comes out to approximately 120 million (12 million) disabled internet/smartphone users. However, steps should be taken to increase the availability of digital services that support education and awareness to raise awareness of the needs and capabilities of people with disabilities. This could include training developers and designers on how to create accessible digital products and services.

- **Implement website accessibility standards**

Governments must ensure that all websites and mobile applications comply with web accessibility standards such as the Web Content Accessibility Guidelines (WCAG).

- **Encouraging inclusive design**

Re-designing products and services that are accessible to all users, especially with disabilities, should be an important part of the design process. Companies and developers should be encouraged to incorporate inclusive design principles into their products from the start.

- **Perform regular availability checks**

Regular accessibility checks should be carried out to ensure that digital products and services are accessible to people with disabilities. This can help identify obstacles and areas for improvement.

6. Futurism

Recent advances in portable access technology have brought greater access to rich digital resources beyond the physical boundaries of the classroom and into the hands of students. One of the major milestones achieved was the introduction of 5G mobile technology in major Indian cities. As a key enabler for the Internet of Things (IoT), 5G will allow more devices to be connected simultaneously and improve order in areas such as latency, energy efficiency, terminal location accuracy, reliability, and availability and flexibility. adapt to the future. creating unprecedented applications with "infinite" power effects. The future learning model will be an international, direct, virtual and interactive environment that allows students to learn and communicate more than we do today. The new model will be learner-centered, competency-based, on-demand and personalized. It will enhance student development in the areas of critical thinking and collaborative learning. New mobile technologies and connected devices will allow students to learn with minimal teacher intervention and primarily through exploration, discovery, and peer-to-peer learning. Some use cases related to blended learning are:

- **Communication through the Internet and skills**

Having a system that can carry out our tactical communication on the Internet will help us move from the current content and transmission of information on the Internet to the Internet that provides direct skills. This will give rise to new methods of Tele-learning and Tele-learning especially for manual training and skill development.

- **Virtual reality and education**

In addition to the entertainment industry, VR is becoming increasingly important in education and training, where it will play a major role in providing quality education and improving learning based on understanding among students. By customizing this educational service (for example, a virtual tour of the human body with the ability to interact with models and move different body parts), the learning process can be more interesting. It can also bring a new experience to distance learning by allowing students (for example, those in their neighbourhood) to be in the classroom virtually. This type of service requires very high bandwidth (both ways) and very low latency (i.e. 2-4 meters).

- **Augmented reality and education**

Like VR, AR has started to show its importance and usefulness in education. Providing relevant information can make contextual learning ubiquitous. AR can be an effective way to deliver the right amount of information to the right audience. Immersive AR can enable new learning methods and collaboration in education through services such as mobile cloud classrooms and virtual presence. It can also help teachers get the information they need about each student and cater to their unique needs and abilities. Performance requirements for such services should be considered, including optimal routing, wide area coverage, virtual presence, speech coding, and low-end night video.

- **A brick class**

By combining virtual reality with virtual reality, the future teaching and learning experience can transcend boundaries. This can remove the limitation of physical location for the practice process and facilitate the sharing of resources among a large number of students regardless of their current location. The effect will be more significant in the experience of working with expensive equipment and facilities.

- **Student wireless wallet / distributed cloud system**

Today, cloud storage services allow you to access files regardless of device. Due to the centralized architecture of cloud providers, there is a significant delay in accessing content even with a fast internet connection. Future mobile technology will enable access to content from any device using distributed cloud and mobile edge computing. All the user needs is a device to access the stored content and files. With this feature, students can continue to work on-time and on-the-go on multiple devices, experiencing instant response times.

- **Students with special needs**

Advances in mobile technology and robotics can open up new possibilities to help students with special needs and facilitate their learning. A cloud-based robot can be considered a complete assistant for students with disabilities to help them interact with the learning environment and peers. Instead of the teacher asking for help (which can waste time for both the student and the teacher that could be used more productively), students can solve problems with the robot.

- **IoT and Smart Classroom/Smart Campus**

IoT applications affect all aspects of our lives, from smart buildings to smart healthcare. However, the fastest growing area of this program is knowledge that can improve our current teaching, learning, and campus experience. IoT applications can change the role of the teacher in the classroom, reduce the administrative burden and give more attention to the person. Automatically log in as soon as you enter class, get an alarm when you lose focus during a lecture, and provide real-time feedback to your professor about areas where students are struggling based on time. analysis. Note, these are just a few examples of how IoT and the connected classroom can enhance the learning and teaching experience.

ICT has also enabled the growth of virtual universities that provide online education. In a virtual university, from registration to examination, i.e. admission, content delivery and student support services are provided online. However, they are called "virtual" because they exist only on the Internet and have no physical location except for their administrative units. Even communication between students and lecturers or staff in virtual universities is mainly online. Distinction delivery, exams and assessments are also online. Some of the virtual universities are the German Virtual Global University; Virtual University of Canada, Canada; Virtual University of Michigan, USA, etc. The use of 3D technologies such as Second Life, as well as 3D immersive technologies used in social networks, add a new dimension to the virtual university.

Established in 2001, Tamil Virtual Academy, formerly known as Tamil Virtual University, is a distance learning institute located in Chennai, Tamil Nadu. Founded as an educational institution and company to provide online educational resources and opportunities for the Tamil diaspora (and others). Several higher education institutions like Amity University, Sikkim Manipal University, Chandigarh University and BITS offer UGC approved online courses through their virtual colleges. Recently, IIT Madrasa has come forward by offering Bachelors and Diplomas through online courses. Several NGOs and non-profit organizations, such as Virtual University of India, Virtual University of India for Peace and Education and Bharath Virtual University for Peace and Education, provide a wide range of learning options,

assessments, globally recognized certifications, mentorships and careers. guide Therefore, it provides access to those segments of the population that cannot attend physical universities for reasons such as distance - students cannot attend traditional courses from physical institutions; people with different abilities and need flexibility - some students need the flexibility to study at home whenever they want.
By January 2023, the University Grants Council (UGC) and Distance Education Organization (DEB) have approved 57 universities in India to offer online degree courses. By using ICT, the university can reach students outside the traditional catchment area and provide greater flexibility for students. However, institutions must develop and implement relevant policies and plan and manage new ways of teaching and learning.

7. Conclusion/Summary

Undoubtedly, NEP 2020 has promoted progressive ideas. He recognized the role of technology in taking education one step further because it plays a great role in facilitating teaching and learning. Some countries have adopted and implemented new policies, many others are in the process, but it is still a long way off. However, some points can be made from scholarly writings, discussions, and research about potential problems with NEP

- Lack of adequate resources for implementation.
- Move away from regional languages in favour of Hindi or English.
- Criticizing government control of higher education and the lack of academic freedom.
- Concerns about the privatization of education and the exclusion of marginalized communities.
- Lack of clarity about how the policy will be implemented and potential opposition from stakeholders.
- Potential negative impact on employment opportunities for those working in traditional industries.
- Concerns about the potential cost of implementation and the impact on public investment in other sectors.

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