The Role of Technology Integration in NEP 2020: Transforming Indian Education: A comprehensive review literature

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1. Abstract:

Now the current era is called science and technology. There is no aspect wherein the impact of science and technology cannot felt. The education is important field of human life. The paper focuses on the integration of technology in high school under NEP-2020, emphasizing to the use of technology in the field of education so that it can enhance the teaching-learning process, increasing of access to education as well as quality of education. The study adopts a systematic literature review methodology to analyze the existing study on the role of technology integration in NEP 2020: Transforming Indian Education. The present study is mainly based on secondary data. The important information has been collected from the book; publish data of World Bank report, research paper and journals that provides an entire picture about the role of technology integration in NEP 2020: Transforming Indian Education. In conclusion, it can be said that, NEP- 2020 has a major role in determining the course for educational reforms, because it addresses the drawbacks of education system. A lot of students will gain necessary social skills along with profound understanding of Indian heritage values, enabling the students to prepare for the modern world's complexities. NEP-2020 also has stressed on making education affordable and penetrates for everyone, ensuring that students are furnished to take on the future with better career opportunities and successful.

2. Keywords: Science and technology, Digital Education, NEP-2020, Integration of technology.

3. Introduction:

Now the current era is called science and technology. There is no aspect in which the impact of science and technology cannot felt. The education is the important field of human life. In the field of education, science and technology are involving due to various reasons. As a result, in case of teaching and learning a revolutionary change has come. Now education has emerged in a new way by releasing traditional method. Now the role of teacher is social engineer. From the 20th century, a huge change has come in the way of lifestyle. This change has to be noticed in each level of life. The impact of science and technology is the main cause of this change. Today man lives with a comfortable house, use medicine to avoid died, development of vehicles has been progressed as much as possible they have done comfortable. Today, we have to acknowledge that the quality improvement in materials wouldn't be possible without science and technology.

Let us give an example, then it will be clarify that, in the ancient time, people live in a soil's house, but nowadays the people live in a modern house. The science and technology helps in making cement, steel rods or

iron rods and other materials. The contribution of science and technology is not less only in quality excellence but quantity excellence. The impact of technology is noticed in case of producing anything. In the ancient time, when the printing press or machine was not there, then coping of book was done by manually but, the huge amount of time was consumed in coping of any book. Anyone couldn't buy those books except rich or elite families. As a result of invention of printing machine, a revolutionary change has come in terms of publication. A large number of books were printed in the short period of time in very low cost or prices. As a result of which people were able to buy books easily. Moreover, today people can procure many materials with comfortable and convenience. But, in the past time, people couldn't enjoy all these comforts. All the tools invented with help of science and technology which help in achieving qualitative and quantitative excellence.

The aim of National Education Policy 2020 is to change the Indian education system and make it more significant in the need of 21st century. One of the focusing areas of this policy is to coordinate the technology with the education. The paper focuses on the integration of technology in high school under NEP-2020. This policy emphasizes to the use of technology in the field of education so that it can enhance the teaching-learning process, increasing of access to education as well as quality of education. This policy was identifies technology as potential to transmission the way of education NEP-2020. It encourages more the use of digital tools and resources in high school system to make a conducive and healthy learning environment.

4. Objectives of the study: The following objectives of study are as below:

- ➢ To study the technology in terms of education
- ➢ To identify the ways of integrating technology in to high schools under NEP-2020
- ➢ To study the challenges for implementing the recommendations of NEP-2020 in terms of integration of technology in the field of education
- ➢ To study the recommendations made by NEP-2020 with respect of integration of technology in the field of education

5. Methodology:

The study adopts a systematic literature review methodology to analyze the existing study on the role of technology integration in NEP 2020: Transforming Indian Education. This method enables a structured and thorough examination of available literature. This method identifies the traits, strategies effectiveness. A systematic investigation has been conducted in academic databases including ERIC, PubMed, Shodhganga, Indian Times, Academia and Google scholar. The present study is mainly based on secondary data. The important information has been collected from the book; publish data of World Bank report, research paper and journals that provides an entire picture about the role of technology integration in NEP 2020: Transforming Indian Education.

6. The technology in terms of education:

The national Education Policy (NEP-2020) has currently introduced by the Government of India. The aim of the National Educational Policy is to revamp the education system throughout the country. The objective of NEP-2020 is to provide the quality education to all the students throughout the country. The use of science and technology improves the efficiency and effectiveness of the education system. It provides the students with more access to huge range of resources and enables them to learn by their own space. There are some roles of technology in terms of education.

6.1. Individualized learning:

Technology helps in individualized education by giving learners with more access to the wide range of resources like, online tutorial, videos; interactive games which will fulfill their need and their learning pattern. Technology helps the learner to learn at their own space and develop their comprehensive ability to subject matter.

6.2. Access to quality education:

Technology fulfills the gap between digital and non-digital thought. It provides more access to quality education to learners in far areas and under privileged places. By using e-learning platform learner can access the educational resources and attempt to participate in virtual classes regardless of their location.

6.3. Collaborative learning:

Technology facilitates in collaborative learning of the students and promoting in teamwork among the students. With the help of online classroom, virtual collaboration instruments, student work together on the project and share their ideas and resources. They receive feedback from their friends and teachers.

6.4. Assessment and evaluation:

Technology also helps in the assessment of student and helps in evaluation system. With the use of online evaluation process and assessment tools, teacher can very simply assess the student progress and provide feedback that can improve in student learning performance.

6.5. Teacher's professional improvement:

In case of professional development of the teachers, technology can be used like, inline training, webinars and online communities of practice. It helps the teacher to stay current with the latest teaching methods, strategies and promote the quality education that they provide to the learners.

6.6. Multilingual education:

In the implementation of NEP-2020, technology has to give a lot of helps. In the NEP-2020, emphasis in multilingual knowledge by giving access to educational resources in the different type of languages. This policy will promote to linguistic, cultural diversity and inclusivity in the field of education.

6.7. Analysis of data and management:

In the analysis process and management of data, technology can be used in the various ways. Technology helps us to analysis of data in the student progress and helps in making decision. It helps to school and educational institution to promote their operation and give better services to learners and parents.

7. Way of integrating technology into high schools under NEP-2020:

There are some key points in which technology can be integrated into high schools under NEP-2020.

- **Digital content resources:** This policy recommends the use of digital resources like, e-journal, e-books and other online contents supplementing in traditional classroom teaching. It would enable the students to access high quality learning contents and involve self-paced learning.

- **Online evaluations:** NEP-2020 recommends the use of online test to evaluate the student's learning experience. It will consent the teachers to give instant feedback to the students wherein they need to improve.
- **Virtual labs:** This education policy promotes the use of virtual labs to give the students with manual learning experiences in science, engineering and other subjects. It will help the learners to understand the complex concept better and develop the practical skills without presence of physical equipments.
- **Blended learning:** NEP-2020 fosters the use of blended learning that mixes traditional classroom teaching with online learning content. It would be able the teachers to give personal learning experience for each learner.
- **Teacher training:** This policy identifies the importance of teacher training in the effectiveness support technology in the field of education. NEP-2020 suggests that the provision of regular training and help to teachers so that they can use the digital equipments and resources.

This policy gives more important to the need of coordinating of technology in the high school to produce more interaction and involving learning atmosphere. NEP-2020 suggests use of learning environment, online evaluation, and online labs, mixed learning will enable in teaching learning. The appropriate involvement of technology in high schools under the NEP-2020 has the powerful to change the Indian Education and equip the students with skills and experience.

8. Challenges for implementing the recommendations of NEP-2020:

There are some challenges of using technology in school education in implementing technology in the field of education in the perspective of NEP-2020. Let's see

8.1. Digital divides: While the policy stresses the use of technology in education, existing digital divide, particularly in rural area and among socio-economic disadvantaged group may be hinder the equitable implementation of technology driven learning solution.

8.2. Lack of trained teachers: The pedagogical challenge means the difficulties in changing and improving teaching and learning in the school education system. There might be shortage of trained teachers to support of online teaching. If there are lacks of trained teachers in educational institution then student cannot learn properly.

8.3. Lack of infrastructure: There might be a lack of infrastructure such as electricity to support online education. There are different types of infrastructure such as smart mobile phones; laptop, internet access etc are required for getting online education.

8.4. Resistance to change: There are some people who are resisting adopting online education. There are several challenges in adopting online education. These are:

- Problem in mindset and attitude of teachers and students who might accustomed with traditional and non-traditional mode of education.
- Difficulty in making and providing the clear teaching pattern, which might require a clear sound curriculum.
- Problem in assuring the quality and effectiveness of the new teaching methodologies which might require a rigorous and continuous monitoring, observing and assessment.

8.5. Infrastructural limitations: There are some infrastructural limitations such as

- 78% of educational institutions have mentioned insufficient technological infrastructure.
- Backdated hardware and limited internet connection hindering technology integration.
- Superfluous digital resources challenging in delivering modern education.

8.6. Financial constraints: There are some financial constraints such as

- 85% of educational institutions are facing financial barriers in NEP-2020 recommendations or policies.
- Inadequate resources hindering in infrastructural upgrades and training.
- Budget constrains challenging in acquiring required software licenses.

8.7. Fragmented legacy-based software:

- The survey has exposed that 67% of institution depended on fragmented legacy-based software system
- This outdated system is creating inadequacies and challenges in the process of data integration and workflow management process.
- Education institutions are fighting compatibility issues and lacking main platform for seamless operation.

8.8. Poor funding: Poor funding is also a challenging issue. Most of the education the education institution can't beard technology in their institution. Due to poor funding lot of education institution can't integrate technology with education. Even they can't buy the digital resources to integrate the technology in the field of education.

8.9. Research and Innovation: The new education policy aims to promote research and innovation in high school system. However, there are still a number of problems in this domain. For example, lack of funding, the insufficient qualified researchers and teachers.

8.10. Lack of access to school education: The main objective of NEP-2020 is to increase access to school for all section of society. However, there are still a number of barriers to access like, poverty, sex discrimination, lack of resources etc.

8.11. Lack of quality of teaching and learning: The education policy 2020 suggests the implement of quality of teaching and learning in school system. However, there are still a number of obstacles in this domain. For example, insufficient qualified teachers, backdated curriculum.

9. Recommendations made by NEP-2020 with respect of integration of technology:

The National Education Policy (NEP) 2020 identifies the importance of technology in the field of education and aiming to integrate it into the school system. The recommendations of NEP-2020 are as follow:

9.1 Digital infrastructure: NEP 2020 suggests that different types of digital infrastructure should be provided to educational institutions and also to students so that any educational institutions can support to students with educational infrastructure like, computer, Laptop, Smart mobile etc. Apart from this, by using such digital technological infrastructure, student can learn about the different types of subjects. This is why; NEP-2020 has recommended that digital technology is very important in student's learning and education.

9.2 Online teaching-learning platform: NEP-2020 proposes the promotion of online teaching-learning platforms and e-learning resources. Nowadays online teaching-learning platform is required for students which help to interact in different types of students or groups. These types of platform create a healthy environment wherein teacher and students can interact within themselves. As a result of which both are benefited through online teaching-learning platforms. These kinds of platform increase the standard of education and effective learning of the student.

9.3 Digital literacy: NEP-2020 is focusing on developing digital literacy, as well as critical thinking and problem-solving in the students. It means digital education. Digital literacy or digital education is a major aspect of NEP-2020. The main purpose of NEP-2020 is to develop digital literacy, critical thinking and problem-solving ability among the people. Equal opportunity should be arranged for the students so that, they can be well educated.

9.4 AI (Artificial Intelligence): The NEP-2020 recognizes the potential of AI and recommends its integration into the education system. The larger aim is to align with the NEP-2020 and optimize the current ATLS infrastructure to make Indian school AI-ready. For example, class IX will gain knowledge with the help of newly designed lesson plan that focuses on identifying reasons. This will work in group projects to develop a LED device that glows wherever an in correct posture is detected and green light glows when the correct posture is retained.

9.5 Personalized Education: National Education Policy NEP -2020 is a whole structure of transforming the education system in India. Focusing on the customizing of courses to meet the needs of learner is the one of the important aspects of NEP-2020. NEP-2020 inspires the schools and colleges to use technology so that, customized course is enhanced. Because technology helps in learning of personal experiences, providing appropriate feedback to the teachers as well as students so that they can improve properly and facilitating in collaboration among learners.

9.6 Interactive learning environment: This policy stresses on the need of integrating of technology in high school to create conducive interactive learning environment so that students can interact with themselves. Technology creates a such environment in which their learning is joyful that is why, NEP-2020 proposes the use of learning resources, virtual labs, blended learning to enable the high school to deliver high quality education, so that the needs of 21st century are meet.

9.7 Technology based assessment: The need of introducing technology based assessment tool is stressed by NEP-2020 to improve the quality and efficiency of examination. The use of artificial intelligence and machine learning should be included in the NEP-2020 to analyze the performance of the students and provide personalized based feedback. Technology based assessment like, computer based online exam software helps us to reduce the human error and make the examination process more transparent and fair.

10. Conclusion:

In conclusion, technology plays a pivotal role in helping the implementation of NEP-2020 in the school education environment. In case of managing and integrating different sides of the education system, Enterprise Resource Planning and Learning Management System are very useful. This also helps in delivering educational content, finding student progress, and giving professional development opportunities for the teachers. The

combination of ERP and LMS supports in integrating of technology in the field of education and help to develop the efficiency and effectiveness of the education system. Beside, invest of good integrated ERP and LMS software support in implementing of NEP-2020 and in improving the leveling of the institution.

The National Education Policy 2020 has a major role in determining the course for educational reforms, because it addresses the drawbacks of education system. A lot of students will gain necessary social skills along with profound understanding of Indian heritage values. This would qualify the student to prepare for the modern world's complexities. NEP-2020 also stresses on making education affordable and penetrate for everyone. The policy 2020 makes sure that students are furnished to take on the future with better career opportunities and preparedness.

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