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Research Article

Shaping An Inclusive Future: The Role Of Digital Technology In Education

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ABSTRACT

The shift in the education sector, driven by digital technology, has made it crucial to address the diverse learning needs of students. Every learner is unique and requires educational experiences tailored to his/her specific needs. Among these learners are children who need personalized attention to meet their educational requirements. These children are an integral part of our education system, and equal educational opportunities are their right. This paper explores the recommendations of NEP 2020 for the education of Children with Special Needs (CWSN), focusing on the role of digital technology in promoting inclusivity. It also examines the digital initiatives launched based on these recommendations, aiming to create an accessible and equitable learning environment for CWSN.

Keywords: Digital Initiatives, Divyangjan, Children with Special Needs, SWAYAM, DIKSHA.

Introduction

Disability is a broad and complex concept that varies across regions due to differences in legal, social, and political factors. It generally refers to conditions (physical or psychological) that can affect an individual's body movement, activities, or sensory abilities. Despite increased awareness, individuals with disabilities often face discrimination, particularly in education. In this context, digital technology plays a crucial role in making education more engaging, accessible, and inclusive. It has the potential to bridge learning gaps by offering personalized learning experiences, interactive content, and tools that support diverse needs. This is particularly important for Children with Special Needs (CWSN), as technology can help overcome barriers to education and create an environment where every child can learn successfully.

National Education Policy (NEP) 2020 highlights the importance of technology in ensuring inclusive education. It states that digital tools can enhance communication, social interaction, and cognitive development for Children with Special Needs (CWSN) thus making learning more accessible. In addition to this, the school teachers play a key role in the process of integrating digital technology to support inclusive education. While some disabilities are lifelong, early identification and support can help manage challenges and improve inclusion. Therefore, teachers need to be equipped with ICT skills to identify needs of CWSN, choose appropriate digital resources, adapt educational materials, integrate technology into teaching, and assess learning outcomes using innovative digital strategies.

Beyond education, digital accessibility is a broader concern. The exclusion of persons with disabilities is not only a human rights issue but also an economic challenge for societies. Digital technology in education has the power to remove barriers, providing equitable opportunities in education, employment, civic participation, and financial inclusion. However, if digital tools are not made accessible, they can increase existing inequalities or create new barriers.

Acknowledging the importance of accessible digital education, it is essential to prioritize the creation of inclusive classrooms. These classrooms should ensure that all learners, regardless of their disability, have equal opportunities to engage with the curriculum and succeed in their academic progress.

Recommendations of National Education Policy 2020 in context to Chidren with Speical Needs (CWSN):

In this era of modern education, technology has changed the way of living and learning by promoting qualitative, equitable, and inclusive education for all, regardless of their abilities. Technology has the potential to provide fair and inclusive opportunities for quality education for all. For Divyang students (Children with Special Needs, CWSN), technology unlocks new possibilities for learning. It paves the way for a modern education system that adapts to each student's unique needs, offering personalized approaches far beyond the limitations of traditional teaching methods.

Reflecting this vision, National Education Policy (NEP) 2020 has proposed recommendations in order to ensure equitable and inclusive educational opportunities. All educational decisions are built upon the principles of equity and inclusion, ensuring that every student has the opportunity to thrive within the education system. According to Singh (2023), "The policy lays emphasis on providing multiple pathways to learning, including non-formal education modes, especially for Socio-Economically Disadvantaged Groups (SEDGs)". It further explains the importance of providing education in multiple languages, use of technology in education and adapting an inclusive curriculum for Divyang students.

- Specialized training should be provided to teachers working with Divyang students at all levels of school education, such as ways for addressing specialized learning needs.
- Indian Sign Language (ISL) should be standardized nationwide, with curriculum materials developed at both national and state levels for students with hearing impairments. At the same time, local sign languages are to be recognized and taught wherever feasible.
- There is an urgent need for more special educators in specific areas of school education. This includes the requirement for subject teachers for children with disabilities/ Divyang children at the Middle and Secondary school levels, as well as educators skilled in teaching students with specific learning disabilities.
- Technology to be leveraged to orient parents and caregivers. It can also be used to widely share learning materials thus empowering guardians to actively support their children's learning needs.
- Emphasis will be given on integrating technology in education to ensure that students can learn at their own pace, in providing flexible curricula that build on their strengths, and creating systems for fair assessment and certification.

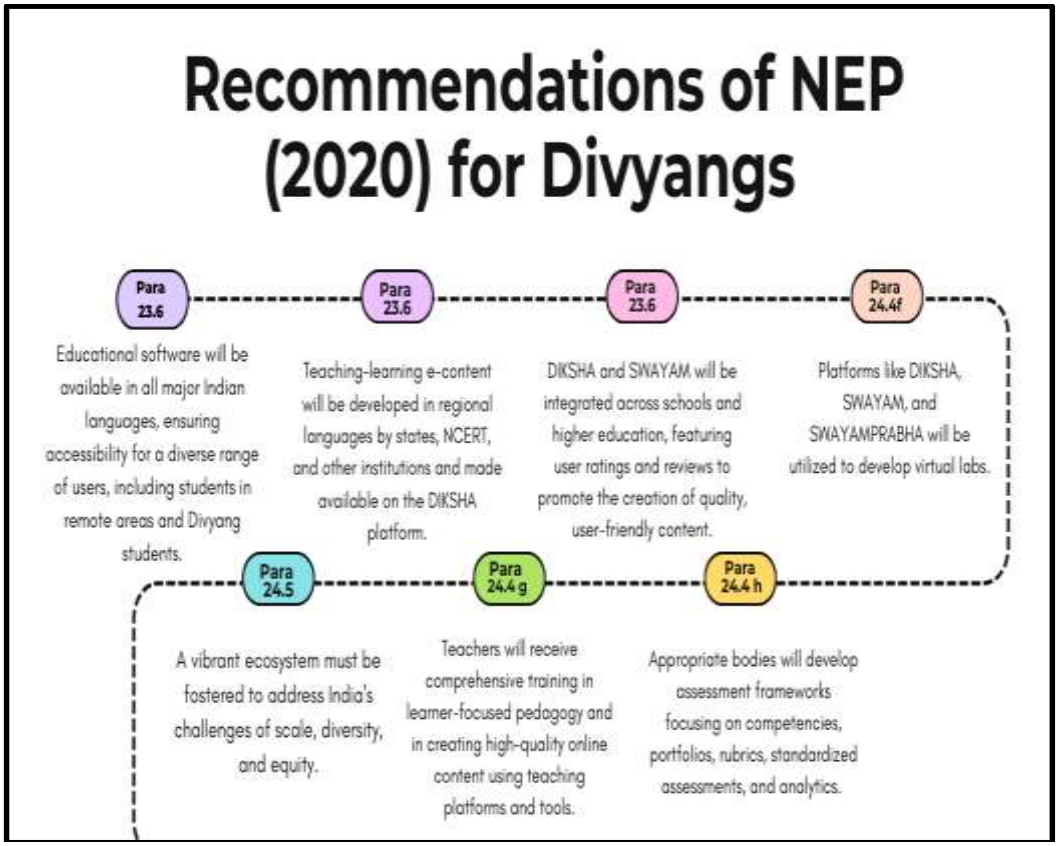

Fig. 1: Recommendations of National Education Policy (2020) for Divyangs

- Assessment and certification bodies, such as the proposed National Assessment Centre, PARAKH, will formulate guidelines and recommend appropriate tools for conducting such assessment, from the foundational stage to higher education (including for entrance exams), in order to ensure equitable access and opportunities for all students with learning disabilities. (Para, 6.13).

- The awareness and knowledge of how to teach children with specific disabilities (including learning disabilities) will be an integral part of all teacher education programmes, along with gender sensitization and sensitization towards all underrepresented groups in order to reverse their underrepresentation. (Para, 6.14)

Guidelines for Creating e-Content for Divyang Students

In line with the vision of inclusiveness, The Ministry of Education (MOE) and the Department of School Education formed a committee to provide guidelines for developing content for Children with Special Needs (CWSN).

Salient highlights from the Guidelines:

- Four principles i.e., *Perceivable, Operable, Understandable and Robust* should be kept in mind while developing e-content for CWSN.
- All types of e-content (audio, video, text,) should be constructed by keeping accessibility standards in mind.
- The platforms such as distribution platforms and reading platforms on which the content is uploaded must comply with the technical standards.
- Appropriate pedagogical strategies have been recommended to address the needs of Children with Special Needs (CWSN).

Digital Initiatives for CWSN:

The RPWD Act (2016) has listed 21 new disabilities to ensure that every person with disability can lead their life with dignity and have equal access to education. The Section 16 of RPWD Act states that it is important to make education inclusive and schools should provide necessary support and environment to achieve the goal of inclusion. In addition to this, identification of learning disabilities at an early age is important to develop suitable teaching strategies. Considering these recommendations, several digital initiatives have been launched to ensure the inclusion of every child in mainstream education.

1. e-Content and Accessible Learning Platforms

a. SWAYAM

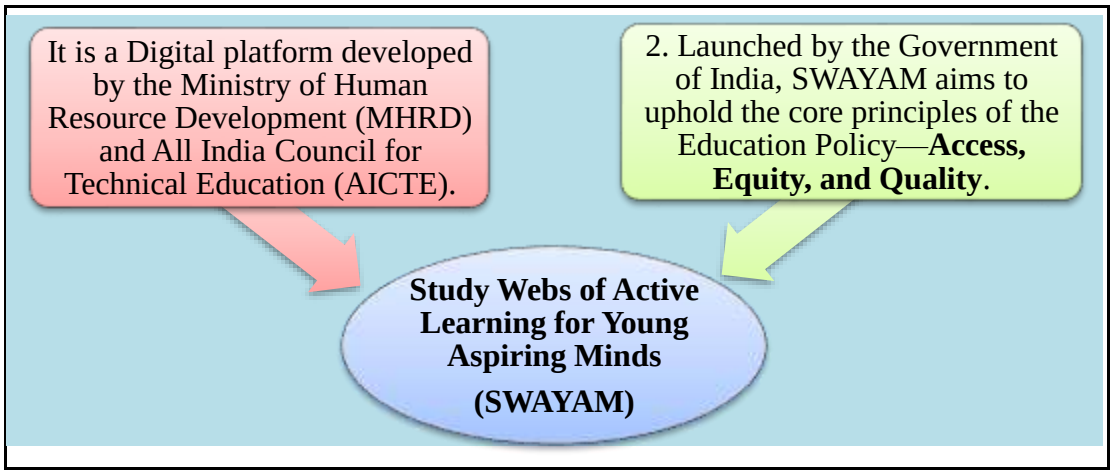

Fig. 2: Features of SWAYAM

It provides an affordable and flexible learning opportunity, allowing anyone to register and study at their convenience. This platform is particularly beneficial for learners from rural and disadvantaged backgrounds who may have limited access to quality education (Majumder, 2019).

b. DIKSHA

DIKSHA (Digital Infrastructure for Knowledge Sharing), launched in 2017 by NCERT under the Ministry of Education, is a national platform for school education. To support teaching and learning for Children With Special Needs (CWSN), DIKSHA offers a wide range of accessible resources, including audiobooks, Indian Sign Language (ISL) videos, and an ISL dictionary. These resources, contributed by schools, teachers, content partners, NGOs, and corporates under VidyaDaan, help create an inclusive learning environment for CWSN.

2. PRASHAST

PRASHAST, developed by NCERT, is a tool designed to assist teachers in the initial screening of children with disabilities. Part 1 focuses on screening all school children to identify those who may have a disability, while Part 2 provides further assessment to guide referrals for diagnosis. The results serve as a preliminary step in recognizing children who may require additional support. Early screening through PRASHAST helps in ensuring timely educational interventions and promoting inclusive learning opportunities for children with disabilities.

3. PM e-VIDYA

Digital technology has become one of the basic building blocks for modern education. Since then, its potential has been realized and steps have been taken to leverage digital technology in education. Considering this, PM e-VIDYA program was launched as a comprehensive initiative for diverse access to education. This program integrates digital, online, and broadcast-based learning resources to enhance accessibility. It includes specialized e-content for students with visual and hearing impairment, radio and podcast-based learning, and QR-coded digital textbooks on DIKSHA portal.

a. DAISY Books (Audio Books for Learners with Visual Impairment)

Study material has been developed in the Digitally Accessible Information System (DAISY), a technical standard for digital audiobooks, periodicals, and computerized text. DAISY books feature "embedded navigation," allowing readers to jump to any section instantly, similar to how a sighted person flips through pages. The text is structured with tags such as chapters, pages, and paragraphs, which are synchronized with audio files. Readers can navigate this hierarchy using Arrow keys, the Tab key, or other player controls.

b. ISL Dictionary for Learners with Hearing Impairment

An Indian Sign Language (ISL) Dictionary has been developed to enhance learning and communication for deaf and hard-of-hearing learners. It is an invaluable resource for teachers, parents and students. To further support inclusive education, selected NIOS course content has been translated into sign language and made accessible on both the NIOS website and YouTube. Additionally, video lessons covering seven subjects and a Yoga course have been created in sign language, ensuring greater educational accessibility at the secondary level. These initiatives focus on facilitating communication with children with auditory and hearing disabilities.

4. Barkhaa

The Department of Elementary Education (NCERT) has developed The Barkhaa Series.

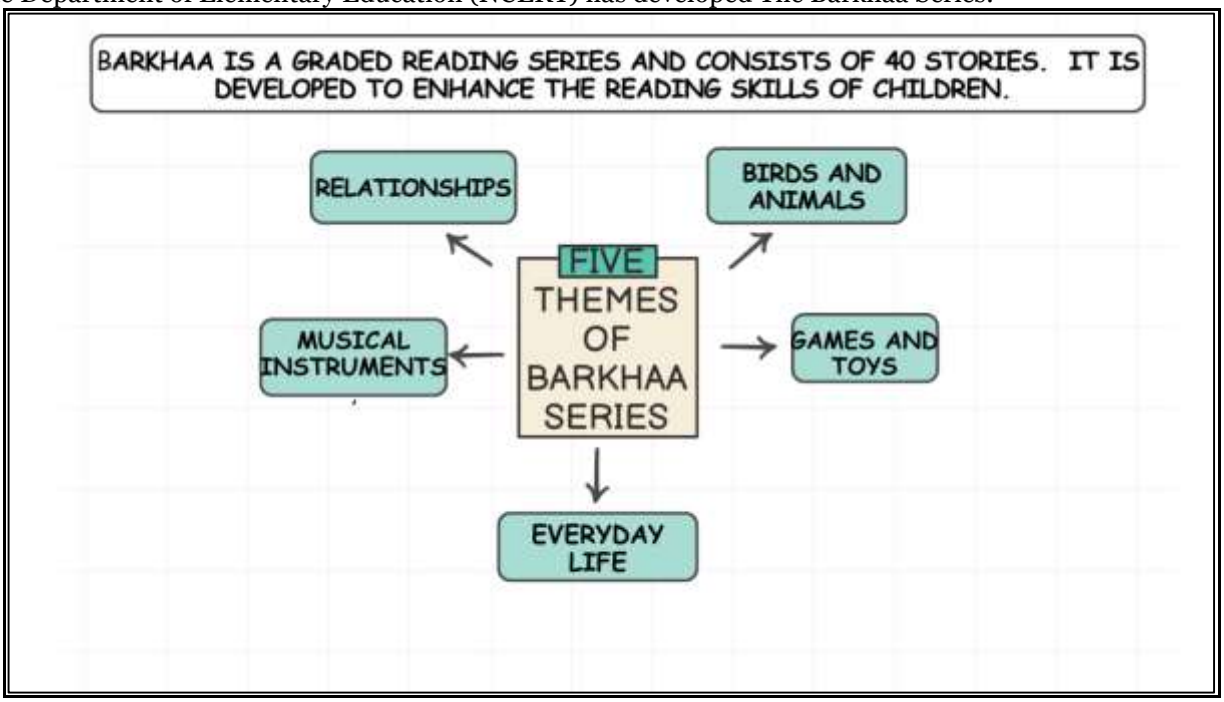

Fig. 4: Five Themes of Barkhaa Series

These stories are related with the daily life and experiences of children. This series aligns with the principle of inclusion and ensures that children with special needs can participate in the reading process.

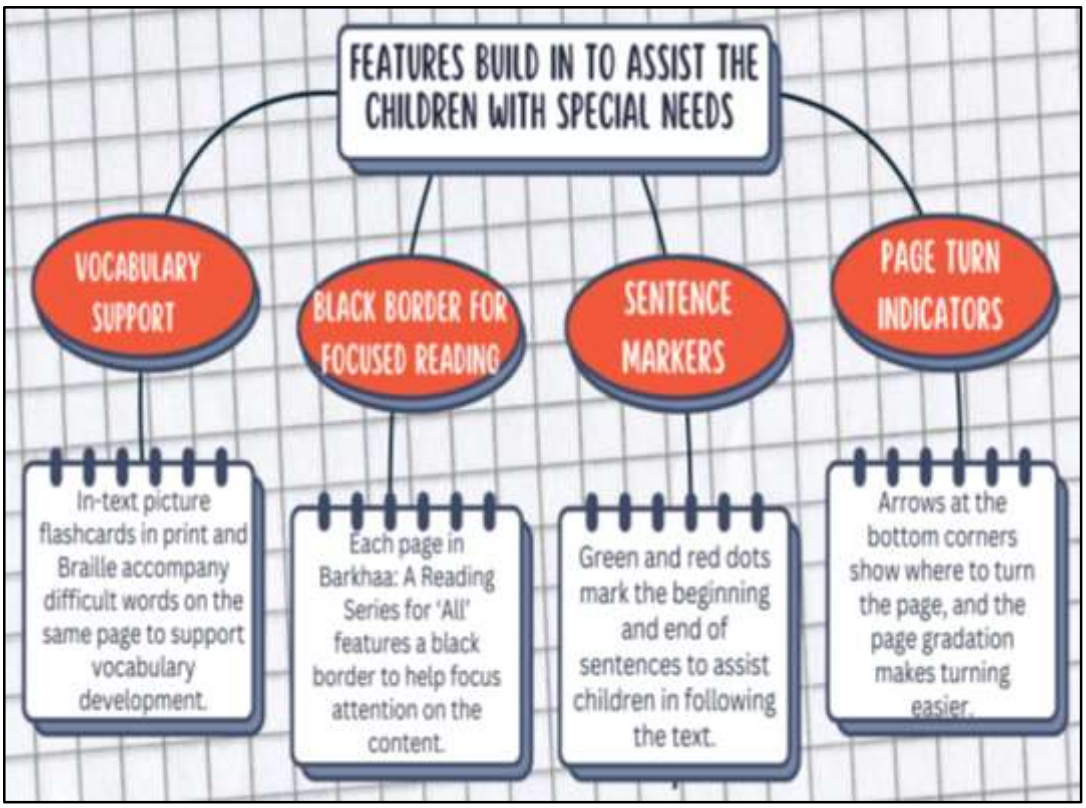

Fig. 5: Features Build in to Assist the Children with Special Needs

5. Tactile Map Book

As part of efforts to promote accessible education, NCERT has developed tactile map books to support students with visual impairment. These books follow a Universal Design for Learning (UDL) approach to enhance inclusivity and awareness. Using advanced raised-print techniques, the tactile maps provide a touch-based representation of physical, geopolitical, and environmental features of India. Each book contains seven tactile maps with descriptions in Braille, ensuring better comprehension and accessibility.

6. Priya: The Accessibility Warrior

The comic book Priya – The Accessibility Warrior tells the story of a girl named Priya, who experiences temporary mobility challenges after an accident. Through her journey, the book highlights the importance of accessibility and provides practical steps to improve it. Available on the DIKSHA portal, e-Pathshala, and the NCERT website, the comic includes embedded Indian Sign Language (ISL) videos and audio in flipbook, PDF, and e-Pub formats. It also features nine interactive activities to help readers understand accessibility and its role in everyday life. The key takeaway from the book is: *"Everyone Needs Accessibility, Accessibility Helps Everyone."*

7. Bhasha Sangam

This initiative helps people communicate in 22 Indian languages and Indian Sign Language (ISL), promoting cultural and language inclusion. The *Bhasha Sangam* app, available on iOS and Android, offers over 100 sentences on different topics to help users learn basic conversations in these languages. The app also allows users to test their skills and earn online certificates. By encouraging people to learn languages from different states, the app supports the idea of *Ek Bharat Shreshtha Bharat*, bringing people closer to each other's cultures.

Conclusion

Digital technology has the potential to transform education, ensuring that every student, regardless of ability, has the opportunity to thrive. By integrating accessible tools and resources, doors to learning are opened for Children with Special Needs (CWSN), ensuring that no child is left behind. Initiatives like SWAYAM, DIKSHA, and PRASHAST, along with the standardization of Indian Sign Language, provide personalized learning opportunities that address diverse needs. Teachers, parents, and policymakers must uphold the principle that 'Each Learner Deserves Equal Attention and Opportunity'. Embracing this mindset collectively paves the way for an inclusive educational environment where all children, supported by the resources and opportunities they deserve, can reach their full potential.

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