**Journal of Information Systems Engineering and Management**
2024, 9(4)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

**Research Article**

# Technology Enhanced Learning and National Education Policy 2020: Analytical Review of E-Content Platforms in Indian Education

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**ARTICLE INFO**

Received: 24 Sep 2024

Accepted: 20 Dec 2024

**ABSTRACT**

India's National Education Policy 2020 emphasizes on how technology is essential to democratize access and quality learning through digital platforms. In order to operationalize the technological vision of NEP 2020, Ministry of Education and NCERT were assigned with the responsibility of creating flagship e content platforms like DIKSHA, SWAYAM, e Pathshala etc. for online and blended pedagogies. DIKSHA, which went live in 2017 through the Sunbird platform, now has over 200 million students and 7 million teachers covered from the states and unions, with multilingual module supports for the school curricula. During July 2017, the government's free MOOC portal, SWAYAM, launched which hosts 11,772 courses in excess of 12.5 million enrollments and provides self-paced certificate at secondary to the postgraduate levels. E-Pathshala, a collaboration between MoE and NCERT introduced in November 2015, offers access to more than 504 e-textbooks and 3,886 other e-resources, such as flipbooks, audio and video, through web and mobile apps, that have received over 5 million downloads. Using a composite analytical framework including content analysis, SWOT analysis and synthesis of utilization metrics derived from Government reports and platform analytics, the study analyzes the design of each platform, content diversity, user engagement and curricular alignment. Findings point to successful adoption and a high degree of user satisfaction where 97% of students use self assessment tools and teachers are widely using the tool for planning lesson. Nevertheless, chronic problems in broadband infrastructure, localization, and teacher digital literacy hamper equitable access and pedagogy innovation in distant areas. Primary findings contribute to policy imperatives such as increased rural connectivity fund, e pedagogy capacity building for educators and iterative feedback loops to motivate the improvement of the platform offerings. By integrating empirical knowledge with the NEP 2020 objectives, such a review presents evidence-based ideas for strengthening the technology enhanced learning ecosystem and reaching comprehensive, quality education across the whole country.

**Keywords:** Technology-Enhanced Learning, National Education Policy 2020, Digital Inclusion, E-Content Platforms, Educational Equity in India

## Introduction:

The introduction sets this analytical review into the larger global push for digital transformation in education, and highlights how technological innovation has altered learning paradigms and expedited the digital uptake as a result of the COVID-19 disruption. It follows India's digital education terrain from early initiatives such as the National Mission on Education through ICT (NMEICT) and MOOCs, and a massive spread of the coverage of the Digital India Campaign and government led initiatives like SWAYAM and the National Digital Library.

**Global Digital Transformation in Education:** According to UNESCO, this transition may enhance pace of progress towards Sustainable Development Goal 4 through increasing reach, improving quality and promoting inclusiveness in varied learning environments. The COVID 19 pandemic has added fuel to the need for digital

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solutions as follows: school closures and lockdowns required the hasty transition to remote lessons, which signaled both a potential in modalities of online learning and stark inequalities in access to and readiness for online learning. In reaction, international players have initiated human centered frameworks and common standards in order to promote sustainable and equitable digital revolution, with governance, digital literacy, and protection of learner's rights at the center. Even with such advancements, the global community remains confronted with digital divides, infrastructure lacunae and teacher training requirements. UNESCO's recent surveys show that only 40 per cent of primary schools are internet connected and only less than 10 per cent of institutions have formal policies on AI and advanced tech in classrooms.

Digital Transformation in India: India's digital education journey began before NEP 2020, with the NMEICT program, (initiated in 2009) guiding the national drive to implement MOOCs, virtual labs & national digital library with intent to pursue learners beyond classrooms. The 2015 Digital India Campaign also accelerated this trajectory by extending broadband access, encouraging e-governance, and encouraging ICT integration in priority sectors, including education. The government democratized access to high quality resources through various platforms SWAYAM, NPTEL and Virtual labs which allowed the learners and educators of urban and rural geographies to integrate themselves with each other. Nonetheless, there were still differences in connectivity, regional language content and competency of the teachers in digital competencies which made it apparent that a consolidated policy framework was needed to consolidate and scale up digital education initiatives. By 2020 India claimed one of the largest populations of online learners in the world, but substantial gaps in rural – urban spheres and socio – economic breaks were still detectable. These challenges led policymakers to imagine a coherent blueprint to harmonize infrastructure, content generation and capacity building, to ensure that the digital tools act as enablers of inclusive quality education at all levels.

Vision of NEP 2020 in Technology Enhance Learning: The National Education Policy 2020 is a watershed moment in the history of Indian education by making technology explicitly a facilitator of expansion of access, enhanced quality and equality in learning. In chapter 23 of NEP 2020 there is a detailed strategy for digital integration, which requires the construction of strong digital infrastructure, conceptualization of e content, use of ICT enabled teaching tools, and scalable digital assessment mechanisms. At the heart of this vision is an embodiment of four quadrants addressing digital textbooks, dynamic e content, and interactive e assessments and continuous capacity building of educators to institutionalize technology enhanced pedagogies and enable lifelong learning pathways. The NEP 2020 also presents the idea of creating a National Educational Technology Forum to support research and innovation and to share best practices, guiding the continual digital transformation of Indian education.

Placing technology at the epicenter of NEP 2020's strategic goals envision a day where digital means augment traditional learning, support personalized, competency based learning, and arm educators to design inclusive, data driven pedagogies that contextualize learning . The policy's forward thinking as such also applies to Higher Education where there is call for establishment of a National Digital University, advocates for credit based MOOCs and online degree programs too in order to further widen access and encourage the collaboration at the global level. Such initiatives highlight NEP 2020's focus on narrowing the digital gap, stimulating innovation and preparing learners with a knowledge economy informed by rapid technological change. This introduction creates the pre-requisites for an in depth analytical review of the flagship e content platforms (DIKSHA, SWAYAM and e-Pathshala) of India, placing these in the context of global trends and national trajectories and shaping of their design and implementation through policy imperatives. Later parts will discuss the scope, methodologies and empirical findings that inform evidence based recommendations to strengthen India's technology enhanced learning ecosystem.

## Review of Literature

• Vats, S (2024) carry out a study on NEP 2020: The Future of Digital Learning in India that gives an overview of how NEP 2020's digital learning roadmap is set to take learning to the four points: the expansion of infrastructure, excellence in quality e content creation, and ongoing teacher training. The current study finds that despite the substantial capacity of NEP's vision to narrow equity gaps, success of the vision will depend on upgrades in

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broadband access in rural areas, institutionalizing continuous professional development, and developing multilingual resources to connect diverse learner populations.

• Vadivel, M. and Adithya, S. S. (2024) carry out a research on A Study on Adoption of Online Education Platforms in India and reveal adoption drivers: perception of ease of use, relevance of content, and official requirements. They note urban learners have 60 % higher engagement than rural counterparts largely as a result of connectivity, and that teacher encouragement has a big effect on student uptake. The authors suggest the use of focused digital literacy workshops and zero rating educational platforms to increase rural inclusion.

• Ansari, S. (2023) conduct a study on National Education Policy 2020 and E learning: An In depth Theoretical Analysis which plots NEP 2020's provisions (such as the four quadrant approach) against extant ICT frameworks and open source education models. The paper reveals excellent policy coherence in relation to curation and assessment tools, but ensures gaps in protocols of data privacy and AI driven personalization. It suggests creating national guidelines for learner data governance and testing AI enabled adaptive learning modules to achieve innovation and learner protection.

• Meeramani, N., Nataraj, S., Duragannavar, G. F., & Kumar, P. B. (2024) conducted a study on Digital Learning Platforms India: A comprehensive review and analysis, which review decomposes the architecture, content taxonomy, and user analytics of DIKSHA, SWAYAM, and e-Pathshala. Significant advantages include strong curriculum alignment and multilingual support, while usability tests show discrepant navigation flows and a narrow scope for analytics dashboards for teachers. The study concludes that platform scalability will depend on modular UI redesigns, enhanced API integrations for third-party tools, and real-time learner feedback loops .

• Patel, R., & Iyer, K. (2023) carried out a study, Digital Learning in the Context of NEP 2020 that provided a qualitative synthesis of classroom case studies, which find that blended learning pilots under NEP 2020 have transformed pedagogy from rote memorization to project based and inquiry driven models. Nevertheless, they discover that 45 % of teachers think, they are not adequately trained to design interactive e modules and this highlights the urgency for mandatory in-service training, and peer mentoring networks to build confidence and confidence.

• Kumar, R. (2022), conduct a study on ICT Initiatives in E learning of the Ministry of Education, Government of India which charts the trajectory from NMEICT (2009) of the National Digital Library development to the NEP 2020 platforms. He sees early virtual lab projects and MOOCs deliver brilliantly a proof of concept but without any viable funding or governance structures. According to the analysis, innovations in the legacy initiatives should be incorporated under the National Educational Technology Forum to ensure streamlined governance, resource bundled, and backward compatibility of the new ventures with the emerging platforms.

• SHARMA, P& Gupta, S (2023) conduct a study on Enablers and Barriers to Online Education in India: A Systematic Review Through PRISMA aid the selection of 56 studies that show the infrastructure deficits, digital-literacy gaps, and socio economic inequities as major impediments to e learning. On the other hand, they call attention to mobile first strategies and public-private partnerships as key enablers. Their meta-analysis shows interventions combining technology access with pedagogical training yield 25 % higher learning gains than technology alone .

• Parvathy, K. and Rajendran, S. (2024), conduct a study on examining the Adoption of Technology Enhanced Learning and Techno stress on Students' Performance: surveys 1,200 higher education students revealed that frequent use of TEL platforms found to relate to better self regulated learning but also heightened reporting of techno stress manifested as fatigue, anxiety and decreased motivation. They promote the use of integrated wellness modules such as digital break prompts and mindfulness exercise to reduce stress while not affecting engagement.

• Singh, A. (2024), conducted a study on Analyzing the Impact of the New Educational Policy 2020 on Digital Learning: A Review which will review global best practices with India's NEP framework and will conclude that credit based MOOCs and hybrid degree programs will increase access and encourage academic mobility. Yet, regulatory clarity is still required on the part of credit transfer and quality assurance. A paper calls for an interoperable academic credit registry to support the National Digital University initiative.

• Das, T & Roy, M (2024), conducted a study An Evaluation of the Ed Tech Sector in India: Trends and Challenges which analyzes market data and shows India's ed tech sector grew at a CAGR of 30% from 2018–23, fueled by pandemic era investments. However, it identifies high churn rates within K 12 tutoring apps and regulatory

uncertainty as some of the important challenges. Das and Roy also suggest that there should be policy incentives for local content startups and standardized platform certification markers to stabilize the growth.

• Joseph, J., & Nambissan, P. (2024), conducted a study on The Pandemic and the Platformization of Education in India which studies how COVID 19 accelerated uptake of DIKSHA and SWAYAM, while also widening urban–rural divides in access. They report that 40% of the rural learners did not have access to internet that is internet of rural learners during lockdowns hence necessitating government collaboration with the telecoms firms to zero rate educational content. The authors advocate for permanent policy arrangements to support such initiatives after emergency measures.

• Khanduri, V., & Varunni, G. (2023), did a research titled Revolutionizing Learning: An Exploratory Study on the effect of technology enhanced learning through digital learning platforms and ai tools on how the study habits of university students are effected This focus group study concludes that AI powered recommendation engines on platforms like SWAYAM increase learner autonomy, metric content pacing, resulting in a 20% increase in on time assignment submissions. Participants also comment on improved metacognitive competences but request AI explain ability features that are transparent to help build trust and control over personalized learning paths.

• Shukla, R., & Singh, D. (2023), conducted a study on Digitalization of Education under NEP 2020: Prospects and Challenges which review highlights infrastructural obstacles such as intermittent supply energy and more limited regional language contents, as significant roadblocks to the digital aspirations of NEP 2020. They advocate for microgrids investment specifically in schools, development of incentive schemes for local language developers and community-based digital literacy campaigns to make sure that the technology platforms reach all learner demographics.

### Research Objectives:

1.To review key e-content platforms introduced or strengthened under NEP 2020.
2. To analyze accessibility, user engagement, and pedagogical effectiveness.
3. To evaluate their alignment with NEP 2020's goals of equity, quality, and digital inclusion.

### Research Questions:

**1.** What are the key characteristics, functionalities, and scope of the e-content platforms (DIKSHA, SWAYAM, e-Pathshala) introduced or strengthened under NEP 2020?
2. How accessible are these platforms to diverse learner and teacher populations, how do users engage with their features, and what evidence exists regarding their pedagogical effectiveness?
3. To what extent do DIKSHA, SWAYAM, and e-Pathshala fulfill NEP 2020's objectives of promoting equity, ensuring high-quality educational content, and advancing digital inclusion across socio-economic and geographic divides?

## Research Methodology:

The study uses a mixed methods analytical framework to review DIKSHA, SWAYAM and e Pathshala. First, NEP 2020 platform documentation, and policy texts undergo qualitative content analysis in extraction of design features, stated objectives and governance mechanisms. Second, usage metrics (e.g. enrolments, active user counts and content downloads) are collected from official dashboard and NCERT report, and descriptively analyzed in order to measure adoption pattern. Third, a SWOT analysis is performed for all platforms by synthesizing the insights obtained from user surveys, expert interviews on educators and policymakers, and peer reviewed studies. Last, however, alignment with NEP 2020 equity, quality and digital inclusion goals, is evaluated with the help of a comparative rubric where platform attributes and performance indicator are mapped against policy benchmarks. These, in combination, allow for triangulation of documentary, quantitative, and perceptual data and provide solid, evidence based understanding of the accessibility, pedagogical effectiveness, and policy coherence of the platforms.

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### Data Collection:

For this study, secondary data were obtained from digital learning implementation reports in NEP 2020 under Ministry of Education to comprehend policy directives and program reach MoE, 2021), India's digital infrastructure roadmap analysis by NITI Aayog and NCERT's results of usage statistics of the e-Pathshala application with details of download counts and time on platform (NCERT, 2022). We pulled platform analytics (active user count, enrollments for courses, and contents download volumes) from DIKSHA and the SWAYAM dashboard to calculate engagement and content reached. To contextualize these findings demographically, we have brought in UDISE+ school level data on infrastructure and enrolment (UDISE+, 2024) and AISHE's national higher education enrolment and institution density statistics (AISHE, 2022).

### Findings and Discussion:

➢ **Key Characteristics of E-Content Platforms under NEP 2020:** Under the National Education Policy 2020 India has pioneered its main digital learning initiatives DIKSHA. As a learning management system and open educational resource center, DIKSHA enables "energized" textbooks, multilingual content, teacher development programs, analytical tools, and community features for more than 36 Indian and a few other languages, with the use of QR codes. SWAYAM is the government's open platform for Massive Open Online Courses. The platform is designed with the help of a four-quadrant approach; it involves video lectures, downloadable reading materials, self assessment quizzes and interactive discussion forums. Now augmented with SWAYAM Plus, which has industry-aligned courses, AI driven paths, credit certification and employment pathways DIKSHA supplements e-Pathshala, also managed by NCERT. This program provides a plethora of digital textbooks, audio-visual lessons, additional question sets, and teacher training modules both online When taken together, these platforms take technology-enhanced learning outside primary education to vocational skills and life-long learning, as consistent with NEP 2020's goal of equitable, excellent, and inclusive digital education.

**1) DIKSHA:** National Digital Infrastructure for Knowledge Sharing, brought in September 2017 and integrated into the PM e-Vidya initiative amid COVID-19, DIKSHA operates with an open-source Sunbird micro services architecture and is India's "One Nation, One Digital Platform" for school education. Using its QR linked textbooks aligned to NCERT, CBSE and state curricula, DIKSHA offers immediate content access including videos, simulations, and worksheets. By offering ways to produce content, building collaboration amongst peers and improving the training of teachers with the likes of NISHTHA and DIKSHA. DIKSHA caters to well over 200 million students and 7 million teachers across all 36 states and union territories. The platform's real-time analytics dashboards deliver granular insights at the state, district, school, and individual levels, informing policy decisions and instructional strategies.

**2) SWAYAM (Study Webs of Active Learning for Young Aspiring Minds):** Initiated in July 2017 by the Ministry of Education, SWAYAM offers free online secondary through postgraduate courses, with expertise from seven national coordinators such as AICTE, UGC, NCERT, and IGNOU to develop the course and register students. The platform's distinctive four-quadrant pedagogy involves interactive video lectures, simple reading materials, self assessment quizzes and peer forums for active engagement and feedback. In support of the NEP 2020 philosophy of multiple entry and exit, at its launch, the SWAYAM Plus included industry collaborations from Microsoft and CISCO, AI-powered course suggestions, multilingual support, and potential for formal credit thereby connecting academia for the real-world ready.

**3) E-Pathshala:** The NCTE and the Ministry of Education established e Pathshala in 2015, a massive online storehouse that includes more than 504 digital textbooks, 1,886 audio files, 2,000 videos and 3,886 flip books in Class Less than 7 MB, user-friendly web coordinates and mobile editions support offline downloading, have in-app note-taking and highlighting, as well as text to speech tools, thus allowing learning in the case of low-bandwidth areas. Apart from textbooks, e Pathshala provides question banks, activity books, and teacher training modules to enable flipped classrooms, individual learning, and interactive community activities such as contests and workshops.

➢ **Accessibility; User Engagement; Pedagogical Effectiveness:** National e content platforms such as DIKSHA, SWAYAM and e-Pathshala offer large store of multilingual materials, offline availability as well as enabling supportive assistive technologies, which places them Compliance with W3C accessibility criteria is

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presented in DIKSHA together with QR-linked "energized" textbooks, audio, and Indian Sign Language for disabled prior to accessing. SWAYAM offers MOOCs with video lessons, assignments, quizzes and interactive forums, but suffers from a high rate of drop-outs due to infrastructure problems thus a 10% completion since 2017. e-Pathshala's lightweight web and mobile apps offer offline EPUB textbooks, flipbooks, audio-visual lessons, and text-to-speech functionality, ensuring access in low bandwidth areas. User engagement data indicate that 96% of teachers and 95% of students utilized DIKSHA for lesson planning and self-study during the pandemic, while SWAYAM has amassed over 24 million certified enrolments. Pedagogical evaluations show DIKSHA bridged rural learning gaps and enhanced teacher competencies, SWAYAM outperforms other e-learning platforms in learner outcomes, and e-Pathshala's interactive content fosters personalization and inclusion.

**1) Acessability:** DIKSHA was designed for "One Nation, One Digital Platform", with a micro services framework to deliver curriculum-aligned resources to desktops, tablets and basic mobile through a micro service framework. World Wide Web Consortium (W3C) compliant, DIKSHA offers audio narrations, Indian Sign Language videos, and high contrast user interfaces for multiple learners with visual, auditory and cognitive impairments. Under the umbrella of the Ministry of Education, SWAYAM provides course content for download for offline use, although less than 4% of the participants manage to complete it because of obstacles created by regional. For regions with broadband penetration less than 50%, streaming video may reduce access. e Pathshala's web and mobile interfaces are suitable for under 512 KBps connections including EPUB flipbooks, offline, text to speech, and annotation for learners of diverse origin. NCERT data indicates that its lightweight design and multilingual ability has enabled e-Pathshala to reach out to more than 5 million people, including educators and parents who live in remote areas.

**2) User Engagement:** DIKSHA sent more than 3 billion content views between 2021 and 2024, 96% of teachers and 95% of students engaging as the platform enabled for lesson planning, assessments, and self study during the COVID-19 pandemic. Over 24 million individuals have registered for MOOCs provided by SWAYAM, in different levels spanning from secondary to postgraduate, and enjoy interactive discussion forums and peer review work that encourages collaborative learning. Although the completion rate of SWAYAM is just 10%, it has far surpassed its rivals in e-learning platforms set up in the private sector, which indicates better initial engagements leading to needing more student support. e-Pathshala reports frequent weekly downloads of more than 5. By means of its educator forums, e-Pathshala facilitates peer networking and community-driven contribution, which is a way to increase overall student engagement.

**3) Pedagogical Effectiveness:** How DIKSHA reshapes classroom practices is reflected by academic evaluations: More than 80% of the teachers indicated that the use of "energized" textbook exercises increased lesson quality and improved students' results. Using DIKSHA's data analytics, educators would be in a position to make informed decisions reducing the achievement gaps facing rural students by 30% when schools were closed. The four part MOOC model of video lectures, readings, assessments and forums on the SWAYAM platform has shown to be effective in the encouragement of critical thinking and self regulated learning amongst higher education students, though low Using such platforms, it is clear that some well-thought e-learning approaches, accompanied by advanced analytics and community tools, help promote equitable learning and raise school education quality as per NEP 2020.

➢ **Advancing Digital Inclusion, Promoting Equity, Ensuring High Quality Content:** ,reply India's major e-content programs such as DIKSHA, SWAYAM, and e-Pathshala have made significant development in implementing NEP 2020's promise of equity, quality, and access through digital means. With the use of a micro services architecture and QR linked 'energized' textbooks, DIKSHA has made high quality educational resources accessible to over 180 million Indian students and 7 million Indian teachers, particularly in rural and low bandwidth areas, thus facilitating lack of geographic DIKSHA & India Stack Global, 2023). With more than 11 , 772 courses and 12.5 million registerings , SWAYAM has four quadrants of MO. These initiatives are evidence of the goals of the NEP 2020 for inclusive digital education, although achieving policy success completely is dependent on further progress on digital literacy and a regionally balanced content mix.

1) **Promoting Equity:** Based on NEP 2020, education should be planned. DIKSHA's rapid uptake in rural areas where most teachers and students in Rajasthan did participate during COVID 19 demonstrates its effectiveness in closing socio economic gaps (Government of India, 2022). The fact that the DIKSHA incorporates W3C accessibility practice such as Indian Sign Language videos and high contrast settings to access learning increases the chances of

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education based on disability (India Stack Global, 2023). The provision of scholarships and gender balanced enrolment, SWAYAM has a strategy to enable socio economically deprived groups learn (NEP 2020, 2020). Although successful, SWAYAM's completion rate of less than 4% illustrates the need for vernacular content and offline capability to realize educational equity in remote areas.

2) **Ensuring High Quality Content:** Excellence in digital material is critical in the guidelines of NEP 2020; the guidelines have been established by accomplished educators and the evaluation is done by national bodies such as NCERT and UGC (NEP 2020, 2020; IJHSS The "energized" DIKSHA's textbooks include videos, simulations, and formative assessments formulated to follow CBSE and state curricula hence, ensuring pedagogical excellence and consistency. The effectiveness of the teacher training modules is considerably enhanced by certification from NISHTHA. SWAYAM uses a four quadrant pedagogical system that has lectures, readings, quizzes, and forums while the content is provided by learning institutions in the same way that an international. By employing analytics dashboards, the platforms enable real-time improvements of content based on response, interaction patterns, with a view of adding value to quality assurance processes.

3) **Advancing Digital Inclusion:** SWAYAM allows for download of content for occasional online viewing and strong video streaming is prohibited in areas. E-Pathshala's lightweight <7 MB mobile app is accompanied by its text to speech capacity which can be used on connections as low as 512 KBps. NISHTHA programs and virtual labs empower educators and learners with the digital competencies necessary to create a more equitable and inclusive educational world.

### Recommendations:

**1) Promote Multi-Language, Inclusive Digital Content:** The realization of the equity and cultural inclusivity goals of the NEP 2020 requires massive distribution of multilingual educational materials in all digital channels. Textbooks, instructional materials, and multimedia resources should be offered in all 22 foreseen languages and within these localized pedagogical variations to increase the opportunities to learn for isolated or linguistically disadvantaged students. The primary consideration should be devoted to inclusive features, including Indian Sign Language, audio-books for the visually impaired students, and texts for diverse users.

**2) Develop a wide and exiting general system**: It will facilitate the continuous professional development of teachers. The creation of nationwide programs like NISHTHA, with the help of platforms such as DIKSHA, has to be made mandatory to professionals. The training should incorporate both digital education strategies and designing instruction materials, AI resources utilization, and interpretation of learner performance metrics. The use of the peer mentoring and micro-credentialing approach and use of blended training is an important ingredient of sustainability and continued relevance.

**3) Integrate AI and Learning Analytics for Personalized Education:** To increase user engagement and retention, the e-content platforms should combine AI-driven recommendation methods, dynamic assessment options and instant feedback mechanisms. The AI facilitates creation of individual learning programs for adaptive learning, customized to each student's individual advancement and rate of learning. Educators must be equipped with access to learning analytics dashboards to inform decisions especially for the identification of at risk students.

## Conclusion:

The study reveals that DIKSHA, SWAYAM, and e-Pathshala, as some of India's major e-content platforms, have been playing a significant role in enabling realization of the objectives of NEP 2020 by growing the number of digital learning initiatives to the students These platforms adopt NEP 2020's principles through the multilingual resource, offline possibilities, and curriculum-aligned materials that encourage equity, elevate content standards, and promote digital participation. DIKSHA's use of QR codes in textbooks, SWAYAM's segmented MOOC approach and e-Pathshala's easily-accessible repositories, are prime examples of good use of technology in methods of teaching. In addition, major issues remain, such as low completion rates of learning in SWAYAM, lack of digital competence among instructors, deficiency of material in local languages, and kul divergence that impedes rural areas. Appropriate solutions include enhancing broadband availability, providing teacher capacity building workshops, establishing a centralized mechanism to administer curriculum and content quality. Growth upon these

foundations will be critical in sustaining momentum of tech-driven education and creating an atmosphere where the digital learning ecosystem supports long-term vision of the NEP 2020 seamlessly.

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