LTU Journal of Advanced Computing & Engineering (LTU-JACE)

ISSN: 3102-0801 (Print)
Volume 1. Issue 1

LTU-JACE 2026 VOL.1 (1):

AI as a Global Equalizer: How NEP 2020 Can Leverage Artificial Intelligence to Bridge Educational Disparities

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Received: 7 December 2025 / Accepted: 1 February 2026 / Published: 1 March 2026

Abstract

This paper examines the potential of the National Education Policy (NEP) 2020 to transform South Asia's educational landscape by integrating Artificial Intelligence (AI) to address systemic inequities. Despite rising literacy rates, the region faces deep seated structural divides rooted in geography, gender, and socio-economic status that traditional, "one-size-fits-all" teaching models fail to resolve. The study argues that AI can operationalize the core pillars of NEP 2020 such as universal foundational literacy, multilingualism, and inclusive education for Socio-Economic Disadvantaged Groups (SEDGs) through technologies like adaptive learning platforms, Natural Language Processing for mother-tongue instruction, and predictive analytics for early intervention. By proposing a phased implementation roadmap (2025-2030), the authors emphasize a "human-in-the-loop" approach that prioritizes bridging the digital divide and mitigating algorithmic bias, ultimately positioning AI as a scalable tool to democratize quality education and foster social transformation.

Keywords: *Artificial Intelligence, Educational Equity, Adaptive Learning, Digital Transformation, Socio-Economic.*

1. Introduction

1.1 The Twin Revolutions in Education

1.1.1 The Persistent Challenge of Educational Disparity

The education system in South Asia is among the world's largest, serving over 340 million learners across many unevenly distributed social and geographic systems. Some very positive trends can be found in the latest indicators. For example, the 2023 - 24 PLFS Report indicates that the National Literacy Rate has risen from 74% in 2011 to 80.9% today. The rise in this aggregate number of literate people is encouraging; however, it masks a complicated and fractured education system based upon multiple factors: region, gender and economic status. The real challenge is structural; the system remains dominated by a traditional, uniform education model despite operating in a region of the world with the highest degree of diversity. As a result, learners arrive to classrooms from very different linguistical and cultural backgrounds, come from many different home environments, and learn at very different speeds. Yet the system treats all learners equally. As a result, many of these learners will likely fall behind in the class and not be able to achieve their full academic potential. While student enrollment has increased, learning outcomes remain% very low and a significant percentage of students fail to develop foundational skills.

The disparities manifest in several critical areas:

a. Urban–Rural Divide: Urban areas show a literacy rate of 88.9 percent, while rural areas report only a literacy rate of 77.5 percent, representing a difference of more than 11 percentage points. The difference between urban and rural literacy rates is not simply a statistical anomaly; instead, it shows the persistent disparities in access to qualified educators, educational facilities and internet access that have historically been provided at greater rates to urban centres than to rural areas.

b. Gender Gap: The percentage of males who are literate (87.2%) is significantly higher than the percentage of females who are literate (74.6%) in India, with a difference of 12.6 percentage points. However, in some states, i.e. Rajasthan, this gap increases to an alarming 20.1%. These social norms and expectations regarding women's roles in the household, together with concerns about safety, early marriage, etc., have kept girls from participating equally with boys in education even with formalized policies supporting gender parity.

c. Regional Disparities: The performance of states varies greatly in terms of educational attainment. Mizoram has one of the highest literacy rates of any state in India (98.2%); whereas Bihar remains one of the lowest (74.3%). These differences illustrate two key findings: i) in parts of northeastern India where there are higher levels of educational attainment, there are many examples of effective community engagement and strong local government; and (ii) that policy decisions alone cannot produce strong educational attainment without institutional capacity and social cohesion.

Table 1: Literacy Rate Disparities in South Asia (PLFS 2023-24)*

Indicator	National Average	Top Performer	Bottom Performer
Overall Literacy (Age 7+)	80.9%	Mizoram (98.2%)	Bihar (74.3%)
Male Literacy	87.2%	Mizoram (99.2%)	Bihar (82.3%)
Female Literacy	74.6%	Mizoram (97.0%)	Bihar (66.1%)
Urban Literacy	88.9%	Likely high-performing states/UTs like Chandigarh and Kerala	--
Rural Literacy	77.5%	--	--

The combination of these disparities combined with the above-mentioned two reinforcing constraints is exacerbated by a lack of qualified teachers and poorly developed infrastructure in rural and underserved areas. Compounding these issues, the digital divide created additional barriers to formal education for many students during the COVID-19 pandemic. A lack of access to reliable internet service or personal devices effectively rendered students without both, unable to participate in formal learning, pushing already vulnerable groups even further to the margins.

1.1.2 A Paradigm Shift: The National Education Policy 2020

The National Education Policy (NEP) 2020 is an attempt to create significant reform to South Asia's education system based on the social and economic inequality that exists in this part of the world at the time of writing. Developed under Dr. K. Kasturirangan's direction, the NEP proposes to create a cohesive vision for the future of education within South Asia, including elevating this region to the status of a "knowledge society," which is equitable and vibrant.

While NEP 2020 has a far-reaching scope, the real distinction between it and previous educational reform initiatives is its fundamental philosophical change. Instead of traditional curriculum systems designed around fixed pathways and rote memorization, the NEP establishes a new framework for education that emphasizes flexible, holistic, and interdisciplinary learning environments. Equity is embedded into the design of the policy rather than being viewed as an additional component to an existing educational framework.

Five interrelated goals anchor this shift:

a. Access: Quality education; specifically, consideration of students from Socio-Economic Disadvantaged Groups (SEDGs).

b. Equity: Using research-based strategies to close the long-standing achievement gap and access to higher-learning institutions through targeted, evidence-based intervention strategies.

c. Quality: Developing critical thinking, creativity, and character rather than emphasizing rote memorization.

d. Affordability: Reducing the financial barriers to education and all levels of education.

e. Accountability: Providing comprehensive means to measure Learning Outcomes and Performance of Educational Institutions.

The fifth anniversary of NEP 2020, from a policy perspective, will be viewed as a time when policymakers refer to their position as being on a "path of strength, rootedness and stability" with continued focus on establishing foundational systems supporting future growth. There are some initial visible initiatives having been developed, including the establishment of the Academic Bank of Credits, creation of flexible entry/exit opportunities and formal incorporation of the South Asian Knowledge System (IKS) into higher education in India. However, scale will continue to present a significant challenge.

1.1.3 The Emergence of a Powerful Tool: Artificial Intelligence

Using these technologies, educators have the capability of creating dynamic systems, which allow for learner reactions based on individual learning behaviours instead of responding to learners' behaviours uniformly. For example, AI-powered platforms for education can create personalized learning experiences by observing student performance in real time and adapting content equitably to those students simultaneously.

Intelligent adaptive tutoring systems can give a high percentage of one-on-one support to students, even in places where teachers are not available. Moreover, the ability to have automation in the administrative process will save educators significant time regarding grading and scheduling, allowing their attention to be focused on instructional and student mentorship. Accessibility tools will include the ability for translation in real-time, providing text-to-speech capabilities and various other tools, and expand the opportunities for learners with disabilities and also to learners who come from linguistically diverse backgrounds.

It is important to note that rather than replacing teachers, AI will enhance teachers' ability to guide their students by providing teachers with data to support their professional judgement. This will give the educator the power to address issues sooner, to teach more accurately, and to better support their learner(s). "Human-in-

the-loop" training emphasizes that there are many ways for a teacher to provide support to their learners. It is impossible for an algorithm to provide a learner with mentorship, motivation and emotional support. As such, these roles will always be part of the education process.

1.1.4 Thesis Statement

The chapter presents an argument for how South Asia can leverage AI, through NEP 2020, to overcome previous limitations, by creating a more accessible, customized and competitive system of education. AI is no longer just a technical enhancement, but as we align AI with policies centered on equity, it becomes a platform for social transformation.

Table 2: Synergistic Framework of NEP 2020 and AI in Education

NEP 2020 Goal	Corresponding AI Application	Potential Impact
Personalized Learning	Adaptive Learning Platforms	Tailors education to individual student's pace and style.
Equity & Inclusion	AI-powered Translation & Accessibility Tools	Breaks down language and disability barriers.
Teacher Empowerment	Automation of Administrative Tasks	Frees up teacher time for instruction and mentorship.
Competency-Based Assessment	AI-Driven Analytics and Feedback	Provides real-time, targeted feedback on student understanding.
Lifelong Learning	AI-Enabled Skill Development Platforms	Offers personalized reskilling and upskilling pathways.

This type of systemic change means that a new model does not only address the inequities within the education systems in South Asia; rather, it provides a framework that can easily be adjusted by other countries experiencing similar size, diversity and inequities to their respective education systems, as well as an opportunity for continuous improvement.

2. The NEP 2020 Framework: A Blueprint for Equitable Transformation

Instead of viewing the National Education Policy 2020 as simply another update to an existing policy, we should instead view it as a complete re-imagining of the education system in South Asia. The idea behind the National Education Policy (NEP) 2020 is that the educational disadvantage faced by certain groups is not due to the individual's lack of ability or intelligence, but rather a result of the inequitable nature of our

existing systems that produce such inequalities through both design and lack of resources. Therefore, since inequities are produced by these systems, these systems need to be completely redesigned and rebuilt to eliminate any potential sources of inequity.

The NEP 2020 accomplishes this goal through the establishment of extensive and interrelated pillars which are designed specifically to identify and eliminate the major sources of inequality for students: Early Learning, Language, Rigid Curricula, Teacher Professionalism, and Access to Opportunity. In addition, each of these pillars can also serve as a point where Artificial Intelligence can be utilized to take advantage of the power of AI in order to provide maximum benefit to the student population and educational system beyond the capabilities of traditional administrative processes.

2.1 Key Pillars Relevant to Bridging Disparities

2.1.1 Universal Foundational Literacy and Numeracy: The Critical First Step

The Policy expresses the position that Foundational Literacy and Numeracy (FLN) should not only be a long term expectation but also is the priority of the policy. In fact, the NEP 2020 specifically identifies FLN as being "an urgent and necessary prerequisite for all learning" (MHRD 2020). The NEP 2020 recognizes that FLN is the foundation upon which all subsequent interventions occur, and this commitment is demonstrated through the NIPUN Bharat (National Initiative for Proficiency in Reading with Understanding and Numeracy) Mission.

The need for urgency in FLN is supported by data. For example, the ASER 2023 report indicates that, as early as Grade 5, only 42.8% of students are able to read at the level of a Grade 2 student (ASER Centre 2023). The inability to exhibit FLN is not just a curriculum concern, it is a systemic alarm. The presence of weak FLN skills creates an environment in which the focus of instructional delivery is on coverage, rather than a focus on the actual instruction of students, making it more about learning than teaching.

The shift from content-based instruction to competency-based education is a core theme of the NEP 2020 and provides an inherent expectation of continual or fine-tuned assessment and monitoring of student achievement for every learner in every classroom. In the current structure of classroom assessment as a basis for institutional accountability across the nation, this increase in expectation would simply overwhelm traditional forms of student assessment and for the purposes of remediation. However, AI driven adaptive learning platforms address this dilemma and the need for increased capacity to both diagnose students' diagnostic gaps/needs with respect to Reading with Understanding and Numeracy, and subsequently deliver additional targeted practice for real-time remediation, allowing mastery based progression to go from rhetoric to practice (Baker & Inventado, 2014).

2.1.2 Flexible and Multidisciplinary Learning: Moving Away from Rigid Streams

The Policy revamps the educational system, drastically changing from legacy structural systems by replacing the rigid 10+2 model with a flexible 5+3+3+4 curricular framework, which allows for the delaying of early academic streaming and allows for the opportunity for the multidisciplinary exploration of a subject by not limiting learners to the rigid educational framework and allowing for Physics to be part of the same curricular framework as Music or History to be part of the same curricular framework as Computer Science. This flexible conceptual approach to the curriculum is aligned with the contemporary understandings of Cognition, Creativity, and Employability.

However, this new curricular framework introduces greater complexity for learners, as they will have to navigate through an expanded choice space for courses; schools will need to maintain multiple types of pathways for learners; and, the assessments will need to account for the non-linear progression of learners through their curricular pathway.

The use of AI-powered recommendation systems to provide learners with the best course combinations for their individual learning paths is essential, not simply a convenience. Through the analysis of student aptitude, interest, and changing labor market information, AI-powered recommendation systems will provide guidance for learners to put together the best subject combinations to take for their career interests. The recommendations provided by AI recommendation systems could be transformative for students from marginalized populations who may not have access to professional career guidance.

2.1.3. Multilingualism and the Power of Language: Education in the Mother Tongue

The NEP 2020 has placed a focus on language as an important part of equity. The policy has stated that instruction, when possible, will be conducted in a student's home language or mother tongue through Grade 5, and in the native tongue, ideally through Grade 8 and beyond (MHRD, 2020). This initiative was taken in response to decades of evidence showing the negative cognitive impacts placed on first-time generations in a language that is not their mother tongue.

The reason for establishing this policy is to address the lack of high-quality curricular content, training for teachers and assessment materials that exists in many South Asian languages, which will provide the same challenges for instructional support and implementation.

AI—specifically NLP and generative AI—can quickly and easily provide organizations with value by allowing them to create large quantities of instructional content in many local languages through the use of translation, transcreation and

generation capabilities associated with these technologies (UNESCO, 2021). In addition, speech recognition tools will support early readers by providing immediate feedback regarding the pronunciation of words in their mother tongue, thereby allowing them to improve fluency, as well as comprehension. AI, therefore, does not just enable multilingual education - it puts in place support systems for multilingual education to become operational.

2.1.4. Equitable and Inclusive Education: Focus on SEDGs

The National Education Policy (NEP) 2020's approach to equity does not consider equity as merely an abstract idea. The NEP has made a clear identification of the various Socio-Economically Disadvantaged Groups (SEDGs). SEDGs include: (i) girls; (ii) children or youths living in rural economies; (iii) children with disabilities; and (iv) children from impoverished households and families; and requires specific and targeted forms of support such as Gender Inclusion Funds and Special Education Zones to address the systematic barriers to participation faced by many SEDGs within the country (MHRD, 2020).

Despite the use of technology, the identification of the at-risk population traditionally has been reliant on lagging indicator data, meaning that it has often been able to identify the risk of disengagement/Aid (at times, after the fact). With the advent of Artificial Intelligence (AI)-enabled predictive analytics technologies, there are now methods to predict this risk sooner. Predictive analytics can be used to recognise patterns in learner attendance, engagement and assessment data, and when specific behaviours might signify the likelihood of disengagement (Baker & Inventado, 2014). Additionally, AI-powered assistive technology solutions such as speech-to-text tools, text-to-speech readers, and sign language avatars have the potential to change the means of providing classroom access for learners with disabilities from a model of accommodation to one of full classroom equity (Bhattacharjee, 2024).

2.1.5. Lifelong Learning (LLL) and Vocational Integration

According to NEP 2020, the two-decade timeline of initial education theory and practice is being shifted because of rapid technological change and the fact that skills have a very short shelf life today. As such, Lifelong Learning (LLL) is thought of as a necessary element and part of a more extensive education process as opposed to being just a new educational policy element. By including vocational education beginning at middle school age, the intent is to incorporate a LLL approach into the overall educational system.

AI is being utilized as an enabling component that is scaling the way in which LLL can be achieved. AI-based platforms will allow users to identify and track existing competencies and skills that are missing, along with recommended learning pathways for continuing education based upon the future employment demands identified by labor market projection sources, such as the World Economic Forum.

2.1.6. Robust Digital Infrastructure: The Role of DIKSHA and NETF

Smart technology is at the heart of this policy and includes DIKSHA (Digital Infrastructure for Knowledge Sharing) opportunities, as well as the proposed National Educational Technology Forum (NETF) (MHRD, 2020) DIKSHA serves as a central location for all forms of content, assessment, and teacher resources.

While intelligent systems can help support and direct growth, without them, the scale becomes only useless sound. With the advent of Artificial Intelligence (AI), DIKSHA could evolve from a passive archive to a dynamic feedback-loop-based learning ecosystem featuring appropriate recommendation systems, and providing tutoring and analytics capabilities built into the learning experience. NETF would provide the basis for an ethical approach to the development and use of intelligent systems aligned with the principles of equity, privacy, and accountability, as well as other frameworks designed to govern ethical AI development (Nguyen et al., 2023 and UNESCO, 2021).

3. AI in Action: Strategic Applications to Fulfil NEP 2020's Vision

While AI is an Operational tool for the NEP 2020 as a Policy Directive, the operational effectiveness of AI cannot be evaluated based solely on its application to Education. Instead, as regards to Education, the effective application of AI technology will require a concerted effort to identify specific applications that will effectively address South Asia's persistent, underlying Educational Failures. In the following section, we will review AI applications that fit directly with NEP 2020's goals, which will provide tangible mechanisms by which NEP 2020 policies can be translated into action.

3.1 Personalized and Adaptive Learning Pathways

Problem: Conventional classrooms are structured based on the belief that every student is an average learner; however, this is not true. Each student learns at different rates, develops a different grasp of concepts, and reacts to varying signals from their teachers in diverse ways. The one-size-fits-all model punishes both groups of students: the slower learners lose interest, while the quicker learners remain stagnant.

AI Solution & NEP Alignment: Adaptive Learning Technology addresses the issue at the source by employing machine-learning algorithms trained on the student interaction data to create and manage levels of content difficulty, sequencing, and pace of individual students based on their performance. If a student is having trouble with fractions, the solution is not to give them a reduced score; instead, the system provides support through visual explanations, additional practice or prerequisite concepts associated with fractions. Likewise, if the student has mastered the content through demonstrated performance, the system should offer an opportunity for acceleration rather than forcing the student to go back over the material they have already demonstrated competency in.

a. This directly achieves NEP 2020's goal of foundational literacy and numeracy by ensuring each child builds core competencies at their own pace.
b. It embodies the policy's vision for student-centric, flexible learning that recognizes and nurtures the unique capabilities of each student.

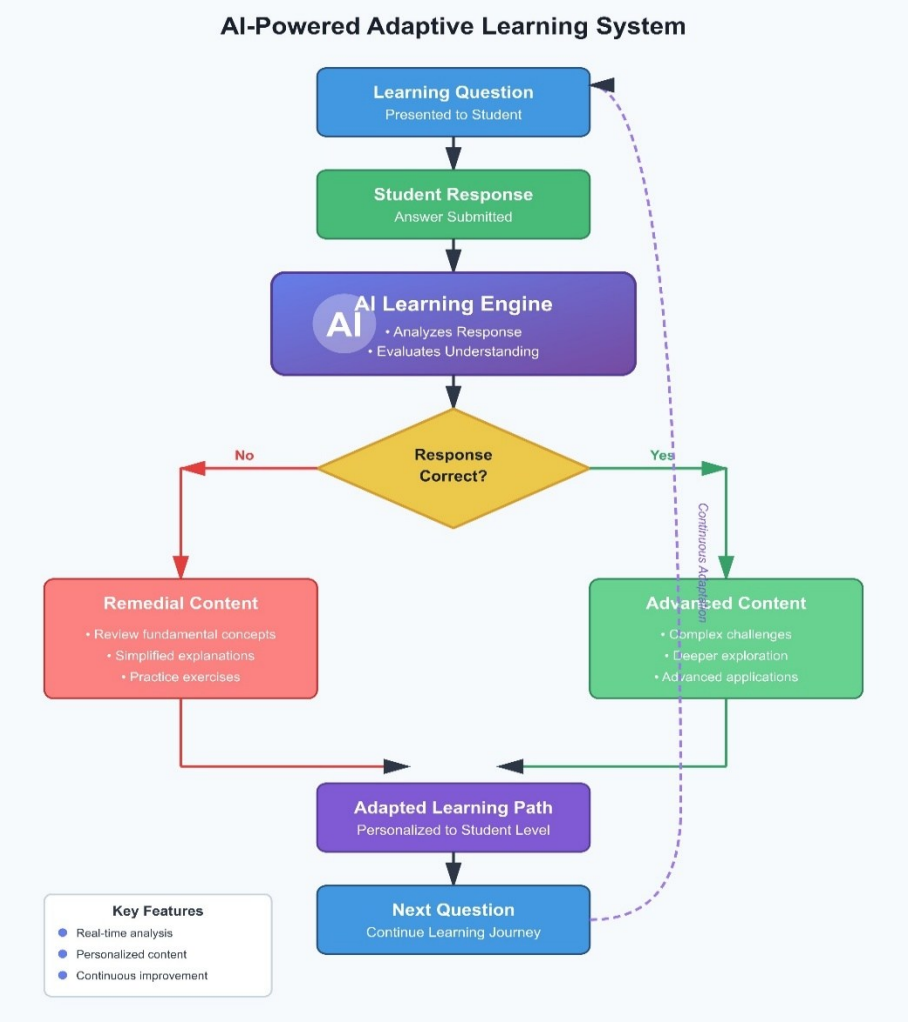

Figure 1: Adaptive Learning Flowchart

3.2 Breaking Language Barriers

Problem: In South Asia, the language is very underappreciated in terms of how it influences education; there appears to be a mismatch between how it has been formulated in policies with its actual implementation in schools. The lack of good quality local language learning materials and well-trained teaching professionals hinders students' understanding, especially in the first few years of their education.

AI Solution & NEP Alignment: AI-Based Translators and Natural Language Processors Provide Scalability While Traditional Methods Fail to Scale. Using AI-based Real-Time Translation, Textbooks, Lectures, and Assessments Can Be Instantly Translated into Multiple Languages Throughout South Asia Eliminating Many of the

Existing Constraints Associated with Centralized Content Production. Learners Will Be Able to Interact with Digital Systems Using Their Mother Tongue Using NLP Interfaces Thus Reducing the Cognitive Load on Learners and Enhancing Engagement.

Speech Recognition Technology Takes This A Step Further by Giving Users Immediate Feedback on Their Pronunciations. Using AI to Provide Immediate Pronunciation Feedback for Local Languages Will Help Students in Their Early Reading Development and This Intervention Is Directly Aligned with the NEP 2020 Mandate on Mother-Tongue Instruction.

Overall, the Combination of these Technologies Not Only Supports Multilingual Education but Also Establishes the Structural Capability for Linguistic Inclusivity.

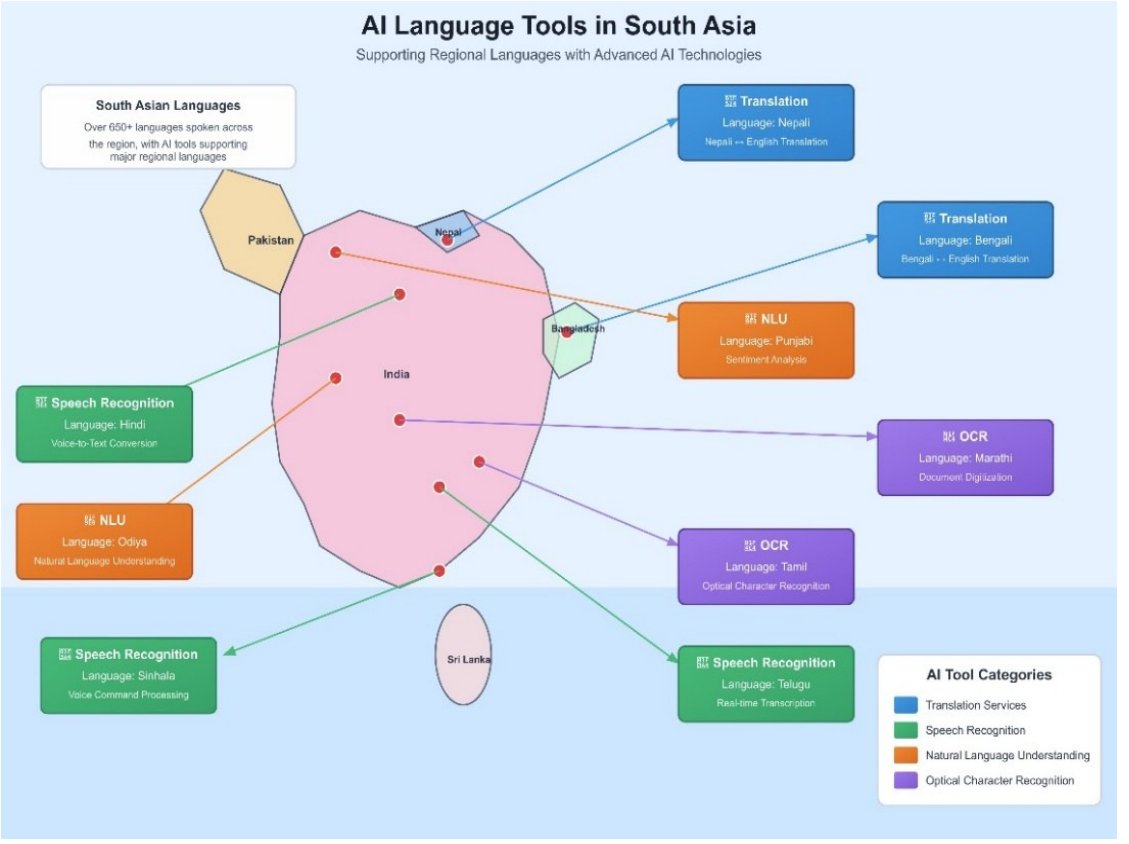

Figure 2: South Asia AI Map

3.3 Intelligent Tutoring and Scaffolding Support

Problem: A high student-teacher ratio, especially in rural or under-served areas, results in little individualized attention except for a few cases. Students frequently experience difficulties with their studies when outside of class but receive little or no assistance. These students often build up their learning gaps without any noticeable signs or clues.

AI Solution & NEP Alignment: Chatbots and other AI advancements can serve as on-demand tutors for students. Students can get immediate feedback, guidance and assistance on conceptual questions, and all in a timely manner by using these tools.

Chatbots and other AI systems should not be seen as replacements for the teacher, but rather a way to absorb a lot of the lower-level repetitive instruction that takes up significant amounts of time for teachers.

Therefore, because of this redistribution of instruction, all students will receive academic assistance consistently, no matter where they live or what their socioeconomic status is, while teachers will be able to devote their time to more complex instructional activities, such as developing concepts, mentoring, and organizing the classroom settings. Thus, when developed properly, an AI tutor will serve as a multiplier for teachers, supporting and enhancing the goals of NEP 2020 for equitable access for all students, without increasing the teacher's workload or the number of human resources necessary to perform the tutoring function.

Table 3: AI Tutoring vs. Traditional Support

Feature	**Traditional After-School Support**	**AI-Powered Intelligent Tutoring System**
Availability	Limited hours	24/7, on-demand
Scalability	Limited by human resource availability	Virtually unlimited, can serve millions simultaneously
Personalization	Generic, group-focused	Highly personalized based on individual learning gaps
Cost	Can be prohibitively expensive for many families	Highly cost-effective at scale
Consistency	Varies by tutor	Consistent, standardized quality of instruction

3.4. Democratizing Access to Expert Teachers and Content

Problem: Access to quality education continues to be determined by geographic location. The availability of specialized subjects, experienced teachers, and access to enriched teaching and learning resources continues to be concentrated in urban areas, which reinforces the traditional gap between urban and rural areas.

AI Solution & NEP Alignment: Platforms such as DIKSHA (Digital Infrastructure for Knowledge Sharing) develop recommendation algorithms by analyzing the content available through their systems and identifying curated, high-quality content that meets the specific requirements of each learner's course of study, learning level and specific history of previous learning. Instead of searching through a huge, potentially overwhelming amount of material manually, students and educators receive resources like videos, simulations, modules to practice what they learned and so on that will help them complete their current teaching.

Through this process, digital platforms are able to transition from passive, "dumb" repositories of information to intelligent distribution systems which provide access to expertise based on connectivity rather than geographical location. This supports the principle of access and equity outlined in the NEP 2020.

3.5. Data-Driven Insights for Early Intervention and System Management

Problem: Historically, a reactive approach has been utilized in educational systems. As learning failures are often recognized only after they become evident (e.g., dropouts), it is usually too late, making remediation both costly and frequently ineffective. Furthermore, administrator access to updated insight on systemic weaknesses is limited. Instead, they rely upon fragmented indicators developed by individual teachers.

AI Solution & NEP Alignment: The application of predictive analytics will change how we intervene with students based on their behaviour over time. By examining student attendance, engagement, and performance over time, AI predictive models provide early identification of at-risk students who would benefit from targeted support. On a broader scale, predictive analytics identify the common areas where curriculum development has been stymied, consistent student misunderstandings, and the areas in need of teacher professional development support.

With this new capability, the accountability component of NEP 2020 is enhanced, enabling data-informed decision-making across all levels of classroom, school and administrative.

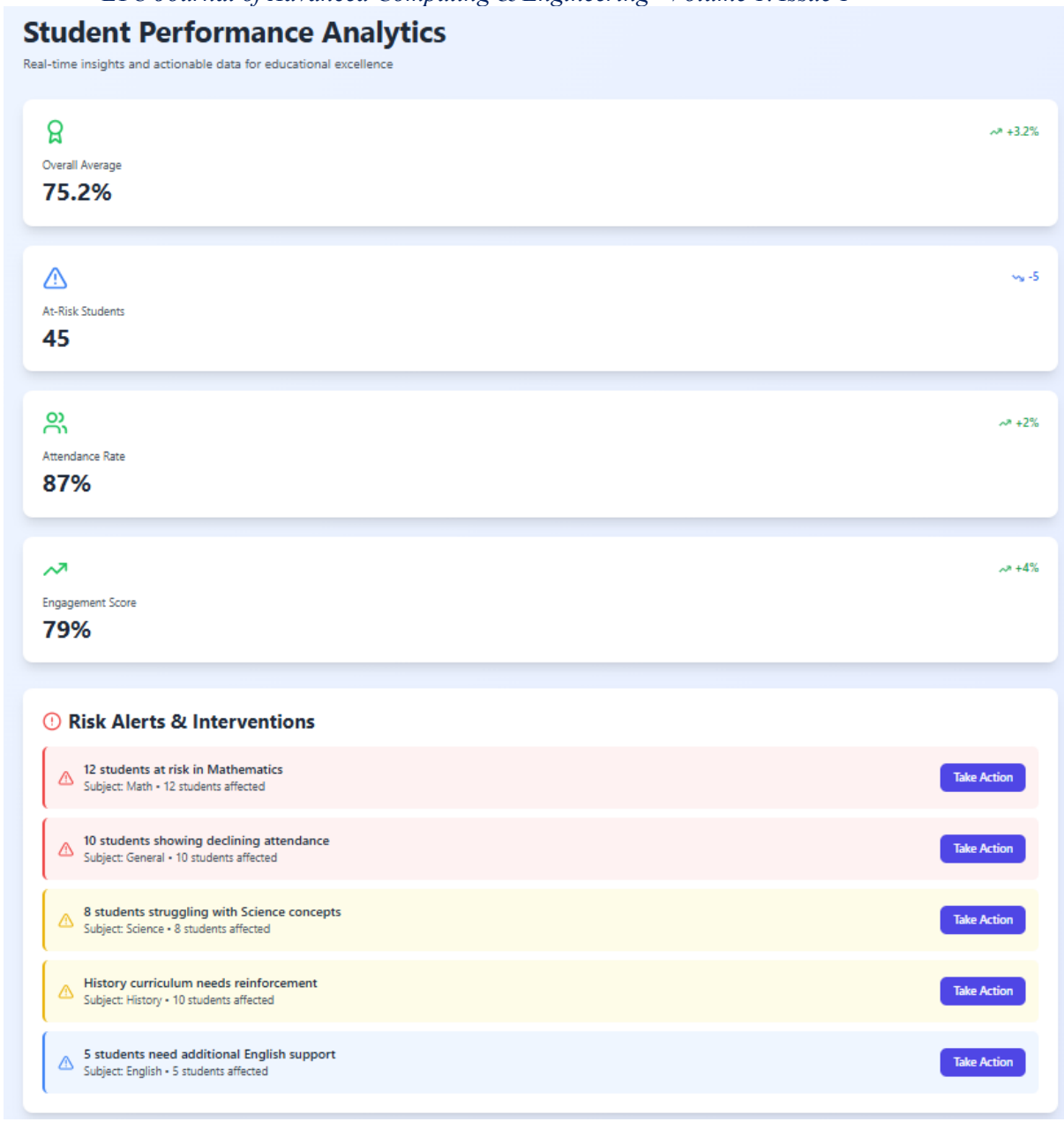

Figure 3: Sample Student Performance Dashboard

3.6. Revolutionizing Vocational Education and Skill Development

Problem: There continues to be a significant gap between what employers need in terms of workforce readiness and what education provides. Graduates tend to be qualified but not sufficiently skilled for the current, rapidly changing technological landscape.

AI Solution & NEP Alignment: AI-based platforms for developing skills are designed to solve this convergence problem. With data from current employment trends, AI can provide recommendations for pathways towards a vocation that is tailored to a specific skill set and will meet the future's employment demands. In addition to identifying

possible career choices based on skill sets, AI also offers interest-based, aptitude tests, and the opportunity to explore high growth areas of employment, such as AI, data analytics, and mechatronics.

The use of AI to provide vocational training opportunities is a direct result of the NEP 2020 focus on vocational integration and the idea that employability should be integrated throughout the entire education process, not just treated as an issue to be addressed after a student graduates.

4. Navigating the Chasm: Challenges and Ethical Imperatives

Artificial Intelligence (AI) can deliver benefits to education; however, those benefits will not be automatic and will not happen unless appropriate safeguards are established. Without careful deployment of AI, we risk exacerbating pre-existing inequalities. In South Asia, where deep-seated structural inequities exist, the risks associated with these developments are real and immediate. Therefore, engaging with these challenges vigorously is not just an option; it is essential to successfully implement credible AI-enabled educational reforms in accordance with the goals established under the National Education Policy (NEP) 2020.

4.1. The Digital Divide: The Foundational Fault Line

The most fundamental constraint facing the integration of AI technology lies in the uncertainty of power supply and internet connectivity, as both are required for AI to operate to its fullest potential. In many regions of South Asia, there is no solid infrastructure for reliable access to electricity or high-speed internet service; therefore, many areas lack a reliable technology foundation upon which to build an AI-enabled education system.

For example, in many rural areas, access to the internet is sporadic, if not completely absent. The ASER 2023 report on foundational learning in rural areas highlights how the need for access to digital learning tools must be met within the context of the existing inequity in the educational system. Thus, without investment focused on addressing existing inequities, AI-enabled education will perpetuate and deepen, rather than reduce, disparities between urban and rural areas.

Access to technology is another major challenge to implementing AI technology in education. Even in areas where access to the internet is available, most households can only afford to purchase one smartphone per household, resulting in fragmented and limited access to learning opportunities. As such, even the most sophisticated AI tutoring system cannot compensate for the lack of available technology resources or the absence of consistent access to digital learning tools. When the implementation of technology is not accompanied by the investment needed to ensure continuous access and an affordable technology, success will be very limited and the impact of technology will vary widely across regions and demographics.

Table 4: Dimensions of the Digital Divide in South Asian Education

Dimension	Urban/Affluent Context	Rural / Underserved Context	Impact on AI in Education
Connectivity	High-speed, reliable broadband	Intermittent or no internet; reliance on mobile data	Disrupts streaming, real-time interaction with AI platforms, and data syncing.
Device Access	Multiple devices per household; personal laptops/tablets	Shared family smartphone; often outdated models	Limits exposure to complex educational software; makes learning intermittent and fragmented.
Digital Literacy	Higher familiarity with digital interfaces and navigation	Lower comfort levels; may view technology with skepticism	Creates a usability barrier; students struggle to interact with the platform itself.

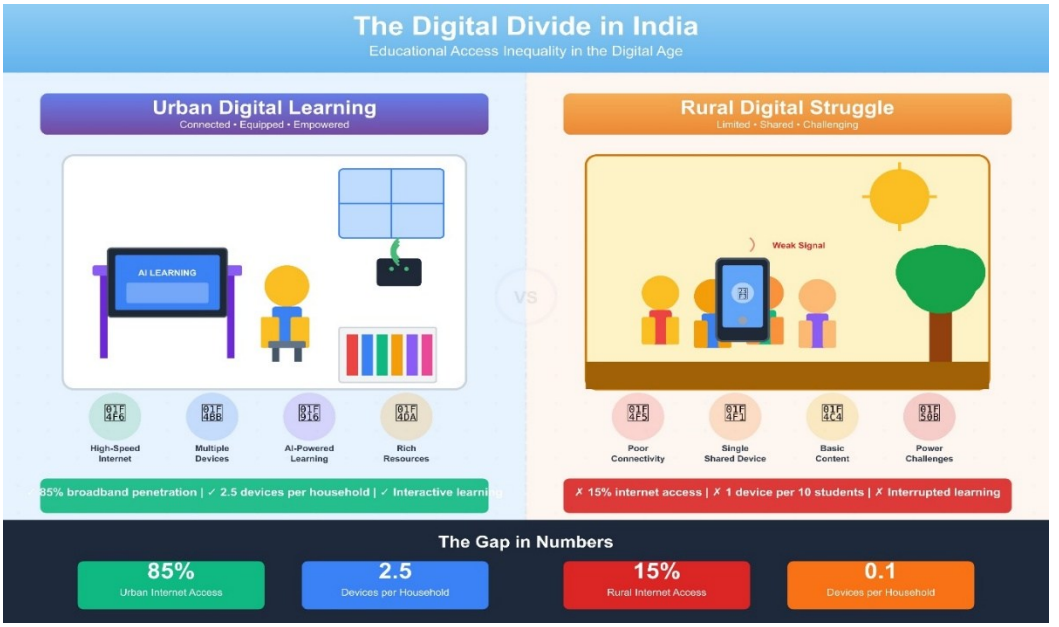

Figure 4: Digital Divide Infographic

4.2. Algorithmic Bias: The Perpetuation of Inequality

The assumptions embedded within AI training data are inherited by the created system. Therefore, when a model uses data that reflects historical inequalities, social

prejudices, or culture-non-specific viewpoints, the model creates a more extensive version of such respective prejudice or discrimination (i.e., it creates scaling).

Large AI systems are mainly built from English-speaking (and, Western-centric) based datasets. Thus, when they are utilized in South Asia, they may misinterpret the environment and be incapable of appreciating and properly interpreting knowledge systems, as well as equating their output to the lives of the South Asians.

For example, if a young woman with an educational background based in a rural society were to logically create a premise based on her experiences and actions, the algorithms would not be able to measure it correctly, which could cause an implicit penalty for her rationale because it is not based on urban norms.

Bias can lead to truly detrimental outcomes in applications that have substantial risk exposure, such as in the area of guiding careers. In situations where AI systems are trained using data from historical records of enlisting students or hiring employees, there may be subtle biases that may encourage girls away from STEM fields. Additionally, there may be additional subtle recommendations towards students who belong to lower income demographics away from elite careers. Ultimately, we can conclude that the results produced from the systems create a serious contradiction to the ethical guideline of Justice, which dictates that any AI-created systems need to actively work against and/or combat structural injustice and oppression rather than replicate it.

4.3. Data Privacy and Security: Protecting the Student

The use of AI in education relies heavily on the continued collection of data; performance metrics, behaviours towards learning, errors made in class and the history of engagement. In essence, when all of these elements are aggregated together they form one of the most comprehensive datasets concerning children and young adults that has ever been created. However, with the aggregation of sensitive information such as this comes risk.

Centralised repositories of information become high-value targets for cybercriminals seeking to steal personal information and potentially have devastating effects on the life of the student if the sensitive information falls into the wrong hands. Beyond the risk of a data breach, there are many unanswered questions regarding ownership of that data and the consent needed to access it. Who owns the data about the student learning process? How long does that organisation keep the data? When, and under what circumstances, can that organisation share the data?

With the introduction of the proposed Digital Personal Data Protection Act in South Asia – which represents a step in the right direction in terms of privacy, protection of the individual and accountability – there remains a significant lack of clarity regarding how to enforce this legislation within the context of education and educational

technology. Ethical AI Frameworks universally identify Privacy, Data Protection and Transparency as essential elements of any ethical AI Framework and a lack of credible protections and enforcement will result in a loss of faith (the world's most valuable commodity) in large-scale educational reform

4.4. The Teacher-AI Symbiosis: Redefining Roles, Not Replacing Them

The fear of being displaced is one of the most highly emotional responses to AI technologies in education. However, the real issue surrounding AI's impact on education is not about being replaced by AI but rather realigning how we think about education.

Many educators lack the necessary knowledge and experience to effectively work with AI. They do not have enough experience with AI tools, are not adequately trained in how to effectively implement them into their classrooms, and do not have a clear understanding of what is expected of them when using AI tools in their classrooms. This lack of experience, training, and understanding creates more technophobia than it does to promote techno philia or the adoption of AI tools.

When AI tools are introduced into a teacher's classroom without being integrated with best pedagogical practice, teachers feel as though technology is complicating their lives rather than assisting their instructional strategies.

According to the NEP 2020, there must be a fundamental shift in the role of the teacher—the traditional role of the teacher as an expert providing knowledge to the classroom. AI tools will automate many administrative tasks, provide constant and continuous feedback about student progress, and assist educators in delivering individualized instruction, but the functions of AI cannot replace the functions of human judgment, empathy, mentorship, and all of those other human characteristics that we associate with quality teaching.

Ultimately, the integration of AI into education, and more broadly, into the fabric of our society, cannot be achieved unless we promote continued professional development for educators.

4.5. Cost and Implementation Logistics: The Question of Scalability

The implementation of AI systems is not as simple as developing a piece of software to address an identified need. The total cost of AI systems goes far beyond the software development phase, including the purchase of hardware or devices; obtaining connection subsidies to allow individuals to access the Internet of Things (IoT); translating all content into multiple languages; establishing a network of servers to enable AI systems; ongoing maintenance and operation of AI systems; and so on.

Assuming that costs are incurred at the national level, the cost of deploying AI systems at this level would be significant. Therefore, public funding alone may not be sufficient and, consequently, many countries may have to rely on Public-Private

Partnerships (PPPs) to fund this initiative. However, these partnerships must be structured carefully, ensuring that commercial motivations do not overrule educational goals, and that student data cannot be sold for profit.

The experience of companies like Vedantu and Eruditus provides insight into the potential and limitations of the private sector's ability to scale; while initial operational experiences can inform the development of efficient and effective educational models via AI, it would be inappropriate to insert profit-driven models into public school systems without consideration for equity.

5. A Proposed Roadmap for Integration

To close the gap between educational technology aspirations and the realities of education, many things are required beyond being excited about technology. Countries need to sequence actions carefully and limit themselves, while at the same time learn from institutions that have gone before them. Rushing the deployment of any type of technology can create inequity; however, taking a slow yet thoughtful approach makes it possible to correct issues prior to scaling. Therefore, it is imperative that the introduction of AI takes place in accordance with a phased implementation plan within the NEP 2020, and focuses on developing the same Technical Capacity, Institutional Trust, and Human Readiness concurrently.

5.1. Phase 1: Foundation and Piloting (Short-Term: 2025–2027)

Phase One's aim is to create a stable foundation rather than one that can be expanded upon later --- there are steps that must be taken to establish the infrastructure, ethics and institutions needed for the responsible use of AI.

5.1.1. Strengthen Digital Infrastructure in Partnership with States.

The most important requirement prior to any form of ICTC (Information Communication Technology Connectivity) implementation, is connectivity. Therefore, it is crucial to collaborate with state governments in order to connect all secondary and higher secondary schools in their respective areas to the BharatNet Optical Fiber Network. In addition, block Level Digital Hubs must be established in order to facilitate access outside of regular school hours, especially in the underserved parts of the community. Finally, targeted device subsidy programs for students who come from socio-economically disadvantaged groups (SEDGs) should also be implemented in order to ensure that simple access does not remain a theoretical phenomenon, but instead becomes a practical reality.

5.1.2. Initiate Localized Pilot Projects.

Instead of introducing one-size-fits-all AI products throughout the country, Phase 1 of AI for Learning focuses on implementing localised pilots that allow for testing FlN (Foundational Literacy & Numeracy) solutions in very different linguistic/geographic

areas. For instance, piloting a speech-enabled reading tool in Tamil in Tamil Nadu would make sense, whereas doing so with the same tool in Hindi would fit better in an area such as Uttar Pradesh. In addition to gauging the pilot project's success in terms of improved student performance, each pilot will likely also require evaluation for its usability to teachers, adoption by teachers, and cost/effectiveness within the scaled system.

5.1.3. Develop Robust Data Privacy and Ethical AI Guidelines.

In this stage, the NETF plays a pivotal part. NETF will put into action a National Framework of Ethics and Responsibility with the help of the Global Standards as presented by EDUCAUSE's AI guidelines and the recommendations from UNESCO. This framework will fit the unique cultural context of South Asia. As a given, Legitimate use of AI requires the completion of a variety of Algorithmic Audits, appropriate data ownership protocol, and open communication on grievance and dispute resolution methods all come together in creating an effective ethical framework.

Table 5 : Phase 1 - Foundation and Piloting (2025-2027)*

Key Action	Primary Stakeholders	Success Metrics
Strengthen Infrastructure	Central & State Govts, BSNL, Private Telecom	50,000 schools connected with high-speed internet; 1 million devices distributed under subsidy schemes.
Launch FLN Pilots	NETF, DIKSHA, State SCERTs, EdTech Partners	Improved FLN scores by 15% in pilot districts; development of effective implementation playbooks for 5 South Asian languages.
Establish Ethical Framework	NETF, Ministry of Education, Legal Experts, Child Rights Bodies	Publication and formal adoption of the "National Framework for Ethical AI in Education"; establishment of an audit and grievance-redressal mechanism.

5.2. Phase 2: Scaling and Capacity Building (Medium-Term: 2028-2030)

Once basic systems are tested and found to be successful, the second phase begins to look at expanded scope and human capability.

5.2.1. Integrate Proven AI Tools into National Platforms.

Pilot tools that have demonstrated success must be integrated directly into DIKSHA; for example, Adaptive Learning Modules, AI-Translation engines and Predictive Analytics Dashboards all of these pilot tools will eventually become widely used

beyond the pilot phase. By integrating these tools into DIKSHA, DIKSHA will become a single source to access multiple systems, which prevents the creation of disparate and vendor-specific platforms for each type of tool.

5.2.2. Launch Massive Teacher Training Programs.

The failure to develop human capacity rather than assuming its existence is one reason that technology initiation fails. A nationwide initiative to support teachers in the area of "AI-Augmented Teaching" should be focused on ongoing professional development rather than one-off event style workshops. The use of a blended delivery method, using both online modules via DIKSHA and in-person master trainer programs, will assist teachers in using AI-generated insights to provide evidence-based instruction in meaningful contexts in their classrooms.

5.2.3. Foster Public–Private Partnerships for Innovation.

To grow equitable AI solutions, continual development is necessary. Dedicated funding to develop innovation, together with sponsorship by government and Corporate Social Responsibility (CSR), will allow new start-ups and research teams to create affordable and offline-first vernacular AI that takes advantage of the region's tech talent and ties into the educational goals of the populace and the businesses that operate in that region.

5.3. Phase 3: Systemic Transformation and Global Leadership (Long-Term: 2031 and Beyond)

Finally, the vision for the tertiary institution is that AI will not be seen as something extra; rather, AI will form an integral part of education during its entirety.

5.3.1. Full Integration of AI-Driven, Personalized Pathways.

From early childhood through vocational training and lifelong learning, learning pathways will continue to adapt, with AI systems supporting individual transitions, reskilling and credential accumulation. The vision of NEP 2020 is to create a flexible, learner-centric ecosystem that will provide for both individual ambition and societal need.

5.3.2. Establish South Asia as a Global Leader in Equitable, Low-Cost EdTech.

South Asia can use the approach of facing the challenges of scale, diversity and equity for themselves, instead of utilizing only the education technology produced from other countries, and instead develop their own educational technologies as producers of educational technologies. Solutions designed for low-bandwidth environments and diverse languages can then be used throughout the Global South and help South Asia to transform their reform efforts into global leadership.

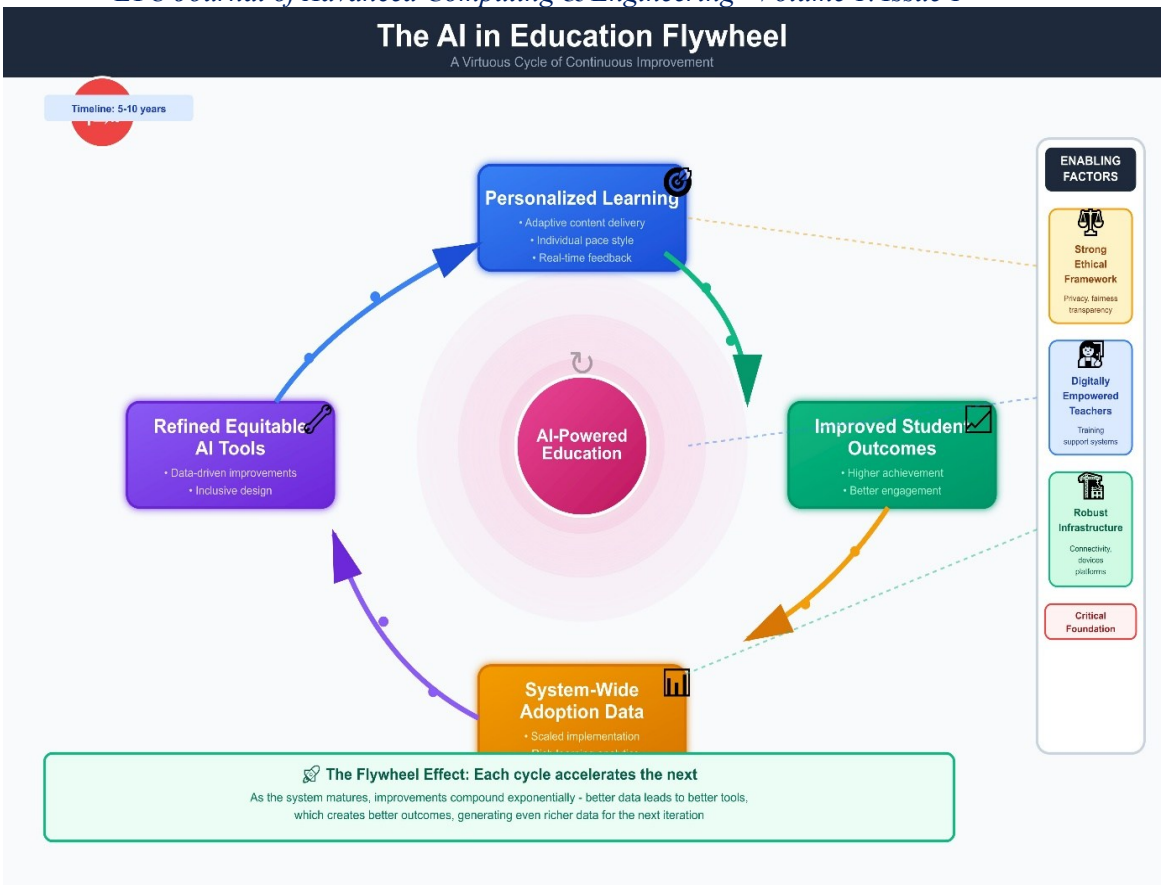

Figure 5: AI Education Flywheel

6. Conclusion: Towards an Equitable Educational Future

6.1. Recapitulation: A Synergistic Blueprint for Transformation

This chapter outlined a convergence that has occurred and is consequential to both the current time frame and to education in South Asia: the Education Equity Vision of the NEP 2020 Committee and the Capability of Artificial Intelligence. The National Education Policy 2020 has provided the foundational architecture for educational equity and has identified and corrected the previous structural barriers and historical exclusions that have shaped South Asia's education system with an emphasis on access, equity, quality, affordability, and accountability (MHRD, 2020). However, the National Education Policy 2020 does not provide an implementation mechanism with the capability to be implemented on the scale and diversity that is warranted by the policy.

AI does not replace education policy; rather, AI provides an enabling capability to the education policy. Adaptive learning platforms enable the translation of the personalized education aspiration into practical application. The use of Natural Language Processing (NLP) tools facilitates the movement of multilingualism from a pedagogical ideal to the ability to implement multilinguism at scale. Digital Platforms like DIKSHA equip teachers and educators with expert instructional materials, and

the use of predictive analytics adds timeliness and accuracy to interventions and governance actions(Baker & Inventado, 2014, UNESCO, 2021, Bhattacharjee, 2024 and LearnQoch 2024). This does not result in technological determinism; rather, it is the result of the use of computational intelligence to enhance the implementation of education policy

6.3. A Global Model: South Asia's Blueprint for the World

The influence of this merger (technology and education) will be global in nature. Countries in the Global South have to deal with similar issues as South Asia: a large number of persons living in the area, many languages, great differences in how rich or poor people are throughout the region, and a limited amount of money to spend on education.

There are three main points to take away from this merger. First, technology must be connected to strong and fair policies in order for it to work effectively; the NEP 2020 will ensure that A.I.(Artificial Intelligence) is used for the right reasons and not just for profit. Second, the fact that A.I. has been created for the low-end, local language, and offline markets will fill a void that currently exists in the worldwide market for education products, many of which are designed for use in wealthy markets (South AsiaAI 2024). Third, by continuing to discuss ethical issues such as bias, privacy, and transparency as the technology scales, South Asia has set an example for others; there is no need for scale to be achieved at the cost of doing what is right (Nguyen et al., 2023 and UNESCO, 2021).

By using this method, the South Asian education community is able to move from being a consumer of Western Education Technology to becoming a producer of education technology that is scalable and contextualized for the Global South. In so doing, the South Asian Education Community has created a new way to think about the ancient idea of "Vasudhaiva Kutumbakam" — that the world is one big family.

6.4. A Final Vision: Education as the Great Equalizer

Integrating Artificial Intelligence (AI) in the New Education Policy (NEP) 2020 isn't just seen as a technical challenge; it is a moral responsibility. Integrating AI into education reaffirms that all students, regardless of their origin (e.g., birthplace, language, gender, income), have an equal opportunity to reach their potential.

Imagine two students starting their day: one female student living in Odisha's remote village and one male student attending an elite school in New Delhi. Each is using a personalized learning dashboard and receiving adaptive learning content based on previous academic performance from the artificial intelligence (AI) system.

While both students have access to the same national knowledge database (DIKSHA), translated and contextualized according to their needs, the female student is receiving foundational numeracy support in her native language of Odia; the male student is

using advanced scientific simulations. The AI-generated insights provided to the teachers of both students enable these professionals to make timely, informed decisions where human judgment is critical.

Although the students are not starting off on a completely level playing field, the difference is that they both have access to the same tools that will allow them to achieve academic success.

The potential of Artificial Intelligence (AI) to level the playing field worldwide is great. With good governance, ethical restrictions, and a focus on human-centered pedagogy, AI will allow education systems to view all learners as individuals rather than averages of learners. With the right policies and leveling the playing field with a focus on the above-mentioned developments, South Asia can turn the scale of its population into an asset rather than a hindrance and can move toward an education system that is not only bigger but is also a more equitable and smarter and genuinely inclusive system.

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