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(کےنڈریہ ویسٹویڈالٹ)

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کولپٹ

Prof. Mazhar Asif

Vice Chancellor



پروفیسر مازہر آصف

شیخ الجامعہ

Vice Chancellor's Message

It gives me great pleasure to learn that the Faculty of Education is bringing out another issue of "Jamia Journal of Education" on the theme "Policy Initiatives in Education." I extend my warm congratulations to the editorial team, faculty members, and contributors for their sustained efforts in maintaining this important academic publication over the years.

Educational policies play a central role in shaping the vision and direction of educational systems, influencing access, quality, equity, and innovation in teaching and learning. At a time when education is witnessing significant reforms and transformations, scholarly engagement with policy initiatives becomes particularly important. A research journal on this theme shall provide a valuable platform for academicians and researchers to critically examine policy developments and contribute to informed discourse in the field of education.

I commend the Faculty of Education for nurturing a vibrant research culture and for consistently encouraging faculty members and scholars to engage in meaningful academic inquiry. The continued publication of this journal reflects the Faculty's commitment, especially the Dean, Faculty of Education, in advancing knowledge and fostering intellectual dialogue on contemporary educational issues.

I hope that this issue will stimulate thoughtful discussions and serve as a useful resource for researchers, policymakers, educators, and students alike.

I convey my best wishes to the editorial board and contributors for the success of this publication and for many more impactful editions in the years to come.

(Prof. Mazhar Asif)
Vice Chancellor

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پروفیسر محمد مہتاب عالم رضوی
مُسَجِّل

Prof. Md. Mahtab Alam Rizvi

Registrar



From the Desk of the Registrar

The Jamia Journal of Education, published regularly by the Faculty of Education, Jamia Millia Islamia. The journal covers relevant and contemporary themes related to national and international importance. The theme of the current issue is Policy Initiatives in Education. At this point, this is a very relevant theme to research and analyse. The Government of India has taken many policy-level initiatives, both leading up to the National Education Policy 2020 and following that. All these initiatives of the Government will have a lasting impact on the education of the country for decades to come. There is a need for rigorous research to examine how these initiatives will contribute to achieving the vision of Viksit Bharat as envisaged by the Government, to identify where additional inputs are required and of what kind, and, more broadly, to clarify the roadmap ahead. It is also time to take stock of the different policies over time that has shaped our education so far, at different levels – school education, higher education, and teacher education. Further, the scholarly debate and critical analysis are essential to understanding implementation challenges and improving outcomes. However, such critiques must be grounded in empiricism and presented with a sound academic base.

The publications in the Jamia Journal of Education by the Faculty of Education have always been relevant to the times. Their articles have been academically sound and well-researched. I am sure this present volume, under the able leadership of the Dean, will raise the bar higher in terms of the quality of work.

My best wishes to the Dean, Prof. Anita Rastogi, and her dedicated and hardworking team on the publication of this latest issue of the Journal.


(Prof. Md. Mahtab Alam Rizvi)
Registrar

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Prof. Anita Rastogi

Dean



From the Desk of Editor-in-Chief

I am pleased to introduce this issue of Jamia Journal of Education dedicated to the theme of "Policy Initiatives in Education". In today's rapidly changing world, marked by technological advancements and rising socio-economic concerns, education system across the globe has undergone major transformation. Educational policies occupy an important place in shaping the direction and perspectives of education. Policies help in restructuring and redefining how we teach, learn, and collaborate. This issue of the Journal pays close attention to the transformative role of educational policies which not only serve as guiding frame works but also act as catalysts for promoting equity, access, innovation, and social progress.

This issue includes research articles addressing various aspects of policy initiatives in education including issues of access, equity and quality; public-private partnership; inclusive education; pedagogical practices; teacher education; mental health and well-being; socio-emotional learning; occupational self-efficacy; language education; art-integrated learning, and digital integration. These articles remind us that effective policy is dynamic and responsive that is shaped by constructive dialogues and collaborations.

As an editor-in-chief, I extend my sincere appreciation to the authors for their scholarly contributions. I express my heartfelt gratitude to the reviewers for their constructive feedback on each paper; the editorial team for their commitment to academic excellence; the language editing team for their unwavering support; the publication team; and all the staff whose dedication has made publication of this issue possible.

It is expected that this issue will not only expand the academic understanding of researchers, practitioners, and policy makers, but also inspire them to engage in constructive dialogue, continued research, and collaborative action towards building more equal, diverse, and an inclusive education system.

Anita Rastogi

Prof. Anita Rastogi
Editor-in-Chief

EDITORIAL

In the past decade our education system has witnessed a number of significant policy initiatives, both prior to and subsequent to the introduction of the National Policy of Education 2020. These initiatives aim at achieving the broader vision of building a knowledge driven and equitable nation under the vision of Viksit Bharat. With the unfolding of these initiatives, there arises a need for careful scholarly engagement to assess their progress, impact and challenges.

The current issue of the journal titled “Policy Initiatives in Education”, which is interdisciplinary in nature, seeks to cover the policy initiatives in the key areas of NEP 2020 across the various stages of education. This edition has twenty eight articles that cover various key areas of NEP 2020, beginning with papers related to policy, its impacts and challenges in higher education. Shahid Jamal’s paper discusses access, equity, and quality in the policy. Iram and Sarita critically analyse the NEP 2020 with respect to transformation in higher education. Waseem and Gunjan provide a perspective on outcome-based learning in transforming higher education. Danish, Himanshi, and Vivek critique privatization trends and their impact on society. Ishita, Swagatika, and Dipanshu examine the implementation of the Academic Bank of Credit through a historical lens. Sana and Jessy highlight the key dimensions of foundational stage reforms and related policy initiatives. Yoshita presents a review of the policy and practice with reference to vocational education in Indian schools. Maria and Eram analyse the NEP 2020 and RPWD Act, 2016 with reference to special education. Mahima and Vijay identify the gaps in teacher education for inclusive classrooms. Nisar, Ambrin, Aerum, and Jasim compare the teacher education programs in India and the global south. Rabia, Savita, and Sneh provide a comparative perspective of the professional standards for teachers across diverse educational systems. Ritika and Pooja offers a reflective perspective on equitable and inclusive learning environments. Aquib, Saubia, and Mohd. Mamur Ali explore the ways of harnessing the power of assistive technology. Sana, Mumtaz, and Mohd Faijullah present a critical review of sexuality education policies for students with disabilities. Nayab, in her paper, draws attention to gaps in education for the visually impaired in the policy. Namra and Naziya discuss the initiatives and interventions in policy to understand students’ mental health and well-being. Nida and Raisa Khan delve into prospective teachers' understanding of psychological needs in education, focusing on well-being. Rupam and Nilima discuss the policy’s translation into practice, with reference to language education. Huma and Girish analyse the language textbooks in the light of the values enshrined in NEP 2020.

Romila discusses how foundational numeracy skills can be integrated with environmental exploration. Peeyush and Indrani analyse school board sample papers using a standard-based approach. Pratheesh reviews how critical thinking and creativity can be developed with the help of the OBE framework. Zara and Raisa Khan explore art integration as a means of professional development of future teachers. Neha Goyal highlights the role of digital tools in enhancing vocational education. Sudhansu explores the importance of training the trainers to strengthen health education and HIV counseling. Kulsuma analyses the NISHTHA program critically. Neeti explores the promising opportunities of employment for Urdu language teachers. Ramesh and Ravindra present the career outlook of students studying in STEM School of Maharashtra.

We hope that this issue will deepen our collective understanding of the National Education Policy 2020 and stimulate sustained scholarly discourse on its related issues, challenges, opportunities and long term implications.

Editors

Public Policy on Higher Education in India: Access, Equity and Quality

Shahid Jamal¹

Abstract

Public policy plays a central role in the growth and development of a nation by providing a framework to address emerging socio-economic challenges. As a crucial social institution, education consistently remains a key area of policy focus. Public policy helps in shaping the direction, inclusivity, and quality of education at all levels. Given the benefits of the demographic dividend at the present time in India, the policy focus needs to shift primarily towards higher education. A world-class higher education system is a prerequisite for a nation's prosperity in the modern competitive knowledge economy, as it equips the young population with the knowledge and skill sets demanded by modern industries.

Unfortunately, higher education in India today stands at a critical juncture, influenced by sweeping policy reforms and the transformative potential of digital technologies. This paper critically examines India's higher education policies, with a focus on equity, access, and quality. Through an analysis of historical trends, policy frameworks, and comparative insights from other nations, the paper highlights key challenges and suggests policy-level interventions to ensure a more inclusive and future-ready higher education ecosystem.

Keywords: Higher Education, Policy, Demographic Dividend, Access, Quality, Equity

1. Introduction

India's higher education sector, the third largest in the world, has undergone significant changes over the decades, driven by both internal demands and global influences (Agarwal, 2006). As India aims to position itself as a knowledge economy aligned with the vision of Viksit Bharat 2047, public policy must address persistent challenges of access, equity, and quality.

According to Altbach (2012)², India needs to develop a higher education system that is "rationally organized and differentiated in order to ensure that the increasingly diverse needs of higher education can be rationally met". Towards this end the government needs to implement policies and allocate funds to make sure different institutions focus on their unique missions, collectively helping people achieve their dreams while meeting national priorities.

Higher education in India faces complex challenges, with three key issues highlighted by Bhoite (2009). First, limited access which prevents many from pursuing higher education. Second, opportunities in higher education are unevenly distributed, creating inequities across social

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groups. Third, the low-quality education in many higher education institutions has even worsened these problems as these institutions produce graduates who lack skill sets required in the industries. These issues can only be addressed through policy initiatives which must target to expand access, ensure equity, and raise the quality of higher education. This paper explores how public policy can help in reimagining higher education in India, with lessons drawn from other Global South nations.

Considering the fundamental challenges faced by the higher education system today there is an urgent need to rethink public policy in this area. While much of this problem is related to lack of vision, inadequate number of qualified faculty members available to teach and pursue research, poor governance models, and archaic regulatory structures, there is a lack of global consciousness among various stakeholders in higher education, which is worthy of serious examination (Kumar, 2017).

2. Historical Overview of Higher Education Policy in India

The evolution of public policy in higher education in India can be broadly categorized into three phases including the post-independence era nation-building, the liberalization era, and the contemporary era.

2.1. Post-independence Era (1950s-1980s)

This period was marked by its significant development and state-led expansion, focusing on building institutions. Policies were deeply influenced by Nehruvian socialism and the idea of knowledge as a public good. The new India had inherited the poor education system particularly the poor higher education system from the British. Higher education institutions were very few. It was like a drop in the ocean. The state was running short of human resources to catalyze the socio-economic development. Professional and technical education was needed to build industries and infrastructure which compelled the government to establish institutions like IITs and IIMs. The emphasis was on elitist education to serve the needs of a modernizing state (Tilak, 1993).

An effective and comprehensive policy formulation was quintessential to revamp the higher education system in post-independence era. With independence the objective and structure of higher education in India have undergone with a paradigm shift. Therefore, with lots of deliberations and discussions new policy measures have been taken into consideration. Since independence a series of policy measures have been formulated and implemented from time to time to address the new challenges of higher education.

2.1.1. Radhakrishnan Commission (1948-49)

After independence, the first major commission to study the condition of the universities in India was the Radhakrishnan Commission (also known as the University Education Commission) constituted in 1948-49. Suggestions put forth by the Commission highlighted the urgent need for revamping the administration of the universities as well as the standards of teaching and examination. Dongerkery (1967), points out that most of the recommendations made by the commission was not implemented. Despite the commission talks at length about improving the standards of teaching and examination, very little effort was made in this direction.

2.1.2. The University Grants Commission (1956)

University Grants Commission is a statutory body under Department of Higher Education, Ministry of Education, Government of India. It was set up by an Act of Parliament in 1956. And

the purpose behind the formation was primarily the coordination, determination and maintenance of standards of higher education in India.¹The commission acts between the government and higher education institutions. Therefore, it should act in the advisory capacity to the government but with the passage of time it has reduced itself mere a body taking directives from the government.

2.1.3. The Education Commission (1964-66)

The most comprehensive suggestion on improving and overhauling the entire edifice of the education system from pre-primary to higher education came in the form of Education Commission Report (also known as Kothari Commission Report) in 1966. The report contains a detailed discussion of several aspects of higher education including the language of instruction, flexible graduate and undergraduate programs, equalization of educational opportunity and university autonomy. Most of the suggestions made by the Commission (1964-66) have yet to be implemented (Gopalakrishnan, 1973).

2.1.4. Planning Commission

The Planning Commission of India was established after three years of independence in 1950 with an aim to catalyse India's social and economic development through the formulation and implementation of five-year plan. The commission continued to function until 2014, when it was replaced by the newly formed commission called the National Institution for Transforming India (NITI Aayog).

According to Naik (1968), "the first three Five-Year Plans adopted the comprehensive rather than the selective approach to planning. They tried to do something in every sector and thereby avoided the difficult task of assigning priorities." However, the education sector particularly higher education sector saw a rapid transformation due to these plans. At the end of the First Plan. Sky-rocketing enrolments and unplanned growth of colleges resulted in large scale unemployment and underemployment among university graduates (Gopalakrishnan, 1973). But the fact of the matter is that the costly incidence of unemployment among university graduates may be substantially reduced if admissions to higher education were regulated with reference to the national needs (Laska, 1968).

There is no denying the fact that the process of comprehensive social and economic development of India during the early and most challenging phase of post independent India was started only through the Planning Commission. Yet, the common criticism of planning in India has been that the decisions taken by the Planning Commission seldom percolate down to the institutional level and as such implementation becomes difficult (Gopalakrishnan, 1973).

Planning for the educational development of such a vast country like India is a monumental challenge. Planners must set priorities among competing sectors and define clear and achievable goals and targets. Most of the problems of higher education persist till day due to the casual approach at the policy implementation stage. Moreover, the educational planner has on the whole, been far less successful in planning programmes of qualitative improvement than those of expansion. The suggestions of all the commissions discussed above were comprehensive and relevant though but it got compromised at the implementation stage. It seems that we are good at policy formulation, but we often fall short when it comes to implementation.

Myrdal's analysis of South Asian Countries not only corroborates it but also helps us to understand and figure out the primary reason behind the failure of educational policies in India. He remarked that "the South Asian Countries are all 'soft states' both in that policies decided on are often not enforced, if they are enacted at all, and in that the authorities, even when framing policies are reluctant to place obligations on people . . . By 'democratic planning' is meant not only, and not even primarily, that policies should be decided on by democratic political procedures but that they should, as far as possible be implemented with the co-operation and shared responsibility of local and sectional communities."

2.2. Liberalization and Expansion (1990s-2010s)

There was a paradigm shift in the higher education sector during this phase. With economic liberalization, private players were increasingly allowed entry into the education sector, leading to massification. Policies focused more on access, but quality and equity were often compromised (Altbach, 2005). The rise of private universities and deemed institutions marked a significant policy shift. Patel (2004) highlights two opposing perspectives within Indian academia on the issue of privatisation in education. The first perspective supports private control, arguing that "the state no longer has funds for higher education" and that private initiatives could enhance "accountability and efficiency in the management of colleges and universities, which are in a state of complete decay." Conversely, critics challenge this view, asserting that "the state has funds but lacks the political will to mobilise and utilise them in the best interest of the public." One of the critics, Kumar (2004), argues that "if the black economy, accounting for 40 percent of GDP, is tapped and taxed, the state would have sufficient funds to invest in education."

It has been observed that with the entry of private players in the higher education sector, the government became complacent, leaving the private sector to take the lead. The government reduced its budgetary allocation to higher education and showed little interest in expanding the network of public universities. This negligence by the government affected higher education at two levels. First, the quality of higher education was compromised, and second, it became increasingly unaffordable for the masses leading to inequalities in higher education sector.

It seems that in higher education sector, the greater the expansion, the more exclusive it has become. As a result, it has become inaccessible to the marginalized sections of Indian society. Tilak (2004) stated that "although equity has been continuously promoted in educational sector, still higher education is not accessible to the poorest section of India."

Tilak (2015) observes that "heavy reliance on private sector and cost recovery measures may not help in ensuring inclusive growth in higher education; they may actually work in negative direction. Sustainable inclusive growth may be possible only with strong and vibrant public higher education systems with liberal public funding."

2.3. Contemporary Reforms (2010s-present)

The contemporary era is the era of digital transformation. Therefore, public policy pertaining to higher education cannot be imagined without the inclusion of digital perspectives. It is also important to understand that the digital transformation in higher education is not just about adopting technology but about rethinking the entire academic ecosystem.

Considering the contemporary need for change in the education sector, particularly in higher education, the National Education Policy (NEP) 2020 suggests significant reforms to the entire education system. NEP 2020 policy document marks a paradigmatic shift with its focus on holistic education, multidisciplinary institutions, and digital infrastructure. However, there are certain

impediments to it. The prominent among them is the digital divide. A recent National Statistical Office survey highlights a significant digital divide in India, with only 28.5% of youth aged 15 to 29 able to perform basic internet tasks such as emailing and online transactions. The digital divide is particularly evident between urban and rural populations, as well as between males and females.

Digital Literacy between 15-29 Age Group in India			
Region	Male (%)	Female (%)	Person (%)
Urban	47.7	36.5	42.6
Rural	28.1	14.5	22
All	34.2	21.6	28.5

Source: National Statistical Office (NSO)

This digital divide is a huge barrier, which prevents many young people from fully utilizing technology for learning, communication, and engagement in the digital economy. The digital transformation must be inclusive and for this the disparities in digital infrastructure needed to be mitigated otherwise it risks deepening existing educational inequities.

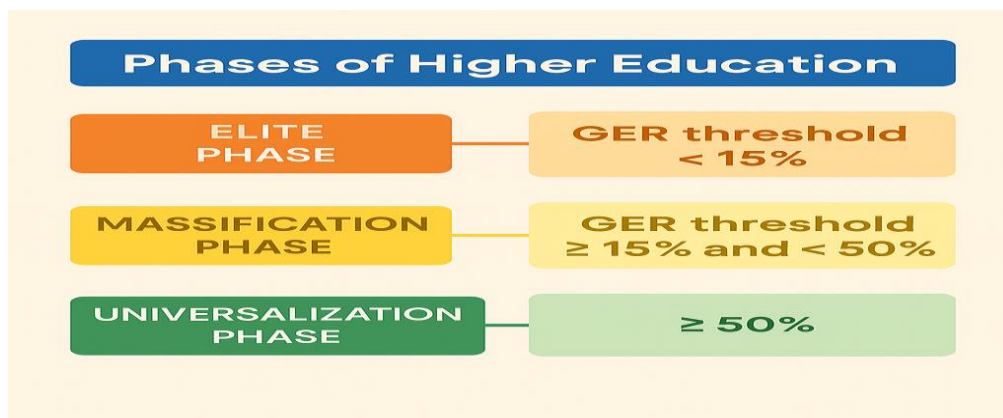
Since 2010, India's higher education sector has undergone major reforms aimed at improving quality, access, and global competitiveness. Initiatives like Rashtriya Uchchatar Shiksha Abhiyan (RUSA) focused on performance-based funding, while the National Institutional Ranking Framework (NIRF) introduced transparent rankings. Schemes such as Institutes of Eminence (IoE) and the establishment of the Higher Education Financing Agency (HEFA) further pushed for excellence and infrastructure development.

The approval of the National Education Policy (NEP) 2020 marked a transformative shift with flexible degree structures, multidisciplinary education, and regulatory overhaul through the proposed Higher Education Commission of India (HECI). Recent initiatives like the National Digital University and Four-Year Undergraduate Programmes (FYUP) aim to widen access and enhance research capacity. By 2025, with the operationalization of HECI and strengthening of the National Research Foundation (NRF), India aspires to position its higher education system on par with global standards.

The higher education reforms introduced between 2010 and 2025, though ambitious, fall short when critically viewed through the lens of access, equity, and quality. Access remains limited for large sections of rural and marginalized populations, as structural and financial barriers continue to restrict their entry into higher education. Equity, despite being emphasized, has not been substantially achieved, with the benefits of reforms often concentrated in urban and elite institutions. In terms of quality, although frameworks like NIRF and the push for multidisciplinary education aim to uplift standards, many institutions still struggle with inadequate infrastructure, shortage of qualified faculty, and lack of research focus. Without stronger mechanisms to ensure inclusive growth and consistent quality, the reforms risk widening the existing educational divide.

3. Equity and Access in Higher Education

According to All India Survey on Higher education (AISHE, 2020-2021) the Gross Enrolment Ratio (GER) in higher education has improved from 19.4% in 2010 to over 28.4% in 2020, but disparities among various social categories persist. It is therefore important to understand that public policy pertaining to higher education is grappled with the dual goals of expanding access while ensuring equity.



Phases of Higher Education

Trow (2007) has conceptualised the growth and development of higher education into three distinct phases: elite, mass, and universal. His analysis is based on the Gross Enrolment Ratio (GER) in higher education for any given country. According to his perspective, a nation enters the elite phase of higher education when the gross enrolment ratio (GER) falls below 15 percent, progresses to a phase of massification with a GER exceeding 15 percent, and attains a state of universalization when the GER reaches the above 50 percent benchmark. According to this analysis, India's higher education sector, with a GER of 28.4 per cent in the 2021-22 period (AISHE), is situated in the nascent phase of massification.

NEP 2020 targets to increase the Gross Enrolment Ratio (GER) in higher education to 50% by 2035 but we are still on halfway mark. The target is achievable but the pace on which we are moving and the direction towards we heading is not even satisfactory. In almost eight decades of independence, we somehow managed to achieve only 28.4 % GER in higher education. How come this possible that we will achieve the rest 21.6% GER in just one decade? Although NEP provides the guidelines, but these guidelines seem ineffective due to the huge inequities in the sector.

Inequities in access to higher education are found not only among different social groups but also in the form of gender gaps and at the regional level. To ensure equity in higher education, disparities at levels and among all groups are needed to be mitigated through an effective policy intervention. For this, existing policies need to be revised, and new policies need to be formulated.

There are certain aspects which are needed to be primarily taken into consideration while framing policies to minimise disparities in higher education. These aspects are not only significant in terms of mitigating disparities in higher education but also help in ensuring equity and quality in higher education system.

3.1. Disparities among Social Groups: Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Classes (OBC), and religious minorities continue to face structural barriers. Reservation policies have enabled entry but not necessarily ensured retention and success (Deshpande, 2013). There is a need for intersectional approaches that consider caste, gender, and economic status together.

Table 1: Gross Enrolment Ratio (GER) in Higher Education by Social Category (2020)

Category	GER (%)
General	35.2
SC	23.4
ST	18.0
OBC	28.3
Female (Overall)	27.3

Source: All India Survey on Higher Education (AISHE) 2020-21

3.2. Gender Gaps: In India, several policy initiatives have been launched to bridge gender gaps in higher education, including schemes such as scholarships for girls namely Indira Gandhi scholarship for single girl child under UGC and Pragati scholarship scheme for girls under AICTE, and the establishment of women's universities and colleges. Policies have encouraged greater female enrolment, particularly in traditionally male-dominated fields like engineering and sciences, through targeted reservations, financial incentives, and outreach efforts.

Despite these efforts, several limitations persist. While policies focus on increasing enrolment, they often overlook crucial aspects such as retention, academic success, and post-graduation career opportunities for women. It is also important to note that while female enrolment has improved, representation in STEM fields and leadership roles remains low (Subrahmanian, 2005). Moreover, Societal barriers, early marriages, limited mentorship, and safety concerns continue to impede women's full participation.

3.3. Geographical Disparities: While the disparities among social groups and gender gaps have been time and again addressed through the different policy intervention, but the geographical disparities are yet to be addressed effectively. The migration of student from low educational opportunity region to high educational opportunity region is the sad reality. Migration of students is not only a case of individual academic pursuit but also a reflection of broader structural and regional disparities in the higher education system in India. Rural-urban divides, regional imbalances, and infrastructural gaps hinder equitable access (Agarwal, 2006). The proliferation of private institutions in urban areas has further multiplied these divides. To address the regional disparities in higher education India needs to establish Special Education Zones particularly in those areas which lacks quality higher education institutions. Kumar (2015) proposed this idea of SEZs almost a decade ago in the specific context of building world-class universities. However, it is imperative to first fix the fundamental problems of higher education before going global.

Equity in terms of access to higher education institutions has been primarily overlooked during the privatisation wave in post 1990s. The mushrooming of the private higher education

institutions in post liberalisation era opened avenues for the students belonging to the affluent class only who could easily bear the skyrocketing tuition fee of these institutions. However, the door of these institutions remained closed for the students belonging to the marginalised sections of the society.

It has been observed in the study conducted by Jeffery et al. (2005) that “the process of privatisation has accelerated during the 1990s and may compensate somewhat for the shortfall in state provision. However, it does not redress inequities in access.”

4. Quality in Higher Education

Quality in Indian higher education remains a persistent concern despite expanding enrolments and institutional diversification. Quality encompasses not only academic standards but also the relevance of curricula, research output, employability of graduates, and student experience. The word ‘quality’ means many things but in the context of higher educational outcomes, it means paying attention to the student experience and graduate outcomes that are sensitive to the aspirations of our students, expectations of our societies, and the economic needs of our times (Kumar, 2017).

SDG 4 aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. All sustainable development goals are expected to be achieved by the year 2030. Education is seen as a most fulfilling means to achieve these developmental goals. The achievement of educational milestones will have dramatic implications for achieving sustainable development not only spurring improvements in the socio-economic, political, technological and environmental spheres, but also strengthening the country’s democratic attributes and well-being of the society (Chauhan, 2017).

There has been a tremendous expansion of higher education institutions in India since independence particularly in the post 1990s phase. Now, we have a large number of universities and colleges than ever before. This huge expansion has on one hand created educational opportunities for the growing young population of the country but on the other hand it has also raised questions related to quality. There is a debate going on as to whether this expansion has come at the cost of inevitable compromise with the quality of higher education. Quality is a major concern in higher education institutions today.

5. Higher Education System in India: A Comparative Insights

The very idea of looking at the higher education system in India in a comparative way is basically to understand and analyse where India’s higher education system stands today globally. It does not only allow us for self-reflexivity but also to adopt the best practices in higher education institutions across the globe. Moreover, by doing it, one can discern the directions for reform in order to put the university system in a competitive advantage for an emerging knowledge society (Menon, 2017).

India has a proud history in higher education particularly in ancient India our higher education institutions have attracted students from across the globe but unfortunately, in modern time, our higher education system lost its global significance. This is exemplified by the fact that not many higher education institutions feature in annual world university rankings like the Times Higher Education World University Rankings or the QS World University Rankings (Kumar, 2017). This is a matter of grave concern but in the words of Menon (2017), “this need not be a factor in assessing the performance of our universities because of the diversities in policies and approaches and anticipated outcomes of university education in India. Nonetheless, in

globalising world, it is necessary to make comparisons, however irrelevant in the past, because of its implications to economy, trade and investment for the future.”

Indian universities produce world-class scientists, doctors, and engineers; however, our higher education institutions are not rated as world-class. They lack global competitiveness and therefore fail to secure high positions in global rankings. This highlights the dichotomy between the excellence of Indian graduates and the poor global standing of their institutions. A well-thought-out policy intervention can address it effectively and enhance the global competitiveness of Indian higher education.

6. Persistent Challenges and Gaps

Despite progressive reforms, several challenges persist:

6.1. Funding Constraints: Public expenditure on higher education as a percentage of GDP remains below 1.5%, much lower than the global average (World Bank, 2022). This limits capacity expansion, research funding, and infrastructure development.

6.2. Lack of Quality Assurance: Accreditation remains uneven, and many institutions struggle to meet quality benchmarks (NAAC, 2020). The reliance on quantitative metrics has often ignored contextual realities.

6.3. Faculty Shortages: There is a significant shortfall of qualified teachers, particularly in new and rural institutions. Vacancies in central universities have consistently remained above 30% (AISHE, 2021).

7. Policy Recommendations

To build a resilient and inclusive higher education ecosystem, the following interventions are necessary:

7.1. Bridging the Digital Divide: Invest in digital infrastructure, subsidized internet, and capacity building in rural areas. Public-private partnerships can enhance technological penetration.

7.2. Enhancing Financial Aid: Expand need-based scholarships, implement income-contingent loan schemes, and strengthen support systems for first-generation learners.

7.3. Promoting Research and Innovation: Strengthen research funding, incentivize collaboration with industry, and support interdisciplinary studies. National Research Foundation (NRF) should focus on socially relevant research.

7.4. Governance Reforms: Streamline regulatory bodies and promote transparency in decision-making. Institutional governance should include student and faculty voices.

7.5. Monitoring and Evaluation: Establish outcome-based metrics to assess the effectiveness of policies, focusing on inclusion, equity, and learning outcomes rather than inputs.

8. Conclusion

Higher education in India is at a transformative point. As the nation aspires to become a global knowledge hub by 2047, public policy must serve as the anchor that ensures inclusive growth, innovation, and resilience. Drawing from domestic experiences and global best practices, India can reimagine and reshape its higher education system to meet the challenges and aspirations of the 21st century. Policy must move beyond rhetoric to action, backed by evidence and stakeholder engagement.

This paper only focuses on the three aspects of higher education system including access, equity and quality however there are plenty of other issues which needs to be addressed without any further prolongment. Some of the prominent areas where policy makers are required to engage actively by drawing effective policies include restructuring the curriculum, faculty recruitment, Technological gap, governance and most importantly the funding. A comprehensive policy framework can accommodate all these aspects of higher education to make India a shining star in the modern knowledge economy. India is in a win-win situation both in terms of demographic dividend and the huge network of higher education institutions. Which also gives India an edge over other countries of the world. It is therefore required that India must steal this opportunity before it is too late.

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Transforming Indian Higher Education: A Critical Analysis of the National Education Policy 2020

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Abstract

Educational policy is the collection of laws and rules that direct the operation of education, including the determination of what people are actually to learn in schools. They are in place to see that all students receive an equitable and quality education, and they are responsive to the needs of diverse populations – and the requirements and restrictions that is attached to how learning will take place and how schooling will be managed in a country or region. Without an education policy, it would be difficult to ensure that education systems are meeting the needs of all learners and preparing them for success in the 21st century. Before the Government of India released the National Education Policy on July 29, 2020, about 30 years had passed since the last policy was implemented. The updated approach introduces significant enhancements in school and higher education to match India's educational system with modern world standards. The principal aims of the approach are to furnish students with crucial flexibility in career planning; synchronise education with future labour market requirements; and deliver technology-enhanced learning. In this paper, a comprehensive review has been presented that highlights the salient features of the National Education Policy in the context of higher education, which includes four major domains: learner-centric education, digital learning and leveraging technology, academic research and internationalisation, and industry-institute collaboration. It also attempts to review the influence of provisions mentioned in NEP on youth and governance.

Keywords: National Education Policy 2020 & Higher Education

Introduction

According to UDISE+, there are 24.8 to 26 crore students enrolled in the academic year 2023-24, out of which 4.3 crore students are enrolled in higher education in India. From this data, it could be estimated that each year approximately 5 million students get enrolment in the higher education institutions at various levels in different universities or other higher educational institutions. The contribution of higher education to the nation's economy and sustenance of means of livelihood is very significant. Higher education, likewise, plays an important and no less crucial role in enhancing the quality of life of the people of India and the country as per the Constitution, which describes India as a democratic, just, equitable, and humane society and an independent, integrated, self-reliant nation with freedom, justice, equality, and fraternity

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ensuring the dignity of every individual. The purpose of higher education is to act as a center for the development of ideas and discoveries that not only assist individuals in becoming more enlightened but also contribute to the advancement of the nation in fields such as social, cultural, artistic, scientific, technological, and economic. India is moving on the path of the fourth Industrial Revolution, which enhances the employment opportunities that require more Indian youngsters with creative skills and a multidisciplinary approach.

Almost 30 years had elapsed since the earlier policy was enacted prior to the Government of India's declaration of the National Education Policy on July 29, 2020. During this period, the world has seen significant transformation, as has India regarding youth ambitions and the labour market. The new policy implements transformative improvements in school and higher education to align India's educational system with contemporary global practices. The primary objectives of the strategy are to provide students with essential flexibility in career planning, align education with future workplace demands, and offer technology-enhanced education. To meet the requirements of the 21st century, higher education aims to inculcate in individuals to possess deeper interest in multiple specialised areas. At the community level, higher education must be able to develop socially conscious youth who can uplift the nation's citizens. To achieve such crucial goals, the National Education Policy, 2020, has delineated necessary steps while emphasising higher education by including different provisions.

India is facing multiple challenges in the attainment of 21st century goals and meeting the global goals through higher education. Several colleges run only a single programme, while it is important to have a multidisciplinary approach to meet the global needs. Currently, higher education in India is fragmented due to number of colleges and universities, which has different enrolment ratios. For instance, more than 20% of colleges have enrolment figures below 100, whereas merely 4% of colleges exceed an enrolment of 3000 (AISHE 2016-17). On the other hand, a number of smaller colleges do not have sufficient teaching faculty which again hampers the integrity of higher education. The colleges that have faculty do not conduct transparent research; one can imagine the knowledge creation and innovation that could be led by young innovative minds. With that there are many fake colleges which are running; while excellent colleges and universities are in academic and financial crunch. Overcoming these challenges, it was required to have policy on higher education too. In India, it is needed to put first universal access to quality education in order to fully leverage its demographic potential and boost the nation's talent and resources.

The policy envisages academic flexibility in Higher Education to accommodate the diverse needs of a student including multiple points of entry and exit. If a student is studying a four-year undergraduate course, he or she may choose to receive a certification after one year, diploma after two years and degree after three years.

Students may re-enter the programme from their previous point of departure, at the same or a different institute, even if they exit before completing the entire term of the programme. A digital database for academic credits has been proposed. This will facilitate the monitoring of the student's advancement in higher education. Such flexibility will give students numerous opportunities to advance their careers while remaining equipped to address any unexpected life events that may need a temporary hiatus from their studies. Permitting higher education institutions to provide multidisciplinary courses is a notable advancement expected to benefit students. This method allows students to integrate their studies based on personal interests, which may differ from the conventional subject combinations we are familiar with. This level of choice and flexibility will foster predicted advances in future workplaces and enhance youth

ambitions. While the policy's transformative improvements are essential for modernising the educational system, its execution is expected to be challenging. Implementing the policy initiatives will need substantial investments in infrastructure, technology, and educator training. As rote memorisation yields to conceptual learning, the transformation in educational practices will require the development of new pedagogical training for educators (Ghani & Anwar, 2022).

The Necessity of Reform in Indian Higher Education

The reforms proposed by the National Education Policy (NEP) 2020 address longstanding challenges in Indian higher education. Data and trends before NEP 2020 show structural fragmentation, inflexible curricula, and misalignment with the global economy. These factors called for an overhaul of policy.

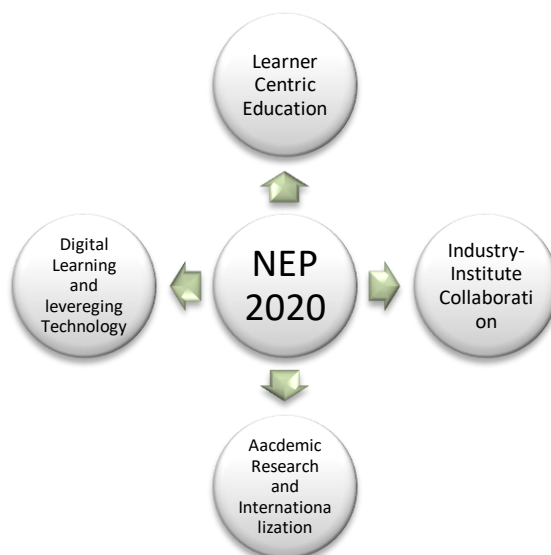
The higher education system was inefficient and fragmented. There were over 40,000 colleges and more than 1,000 universities, but the sector stayed uneven. AISHE 2016-17 found that over 20% of colleges enrolled fewer than 100 students, and only 4% had more than 3,000. The spread of small, unsustainable institutions wasted resources and caused a shortage of qualified faculty, which hurt educational quality and integrity (Sharma, 2020).

The pre-NEP 2020 structure was notoriously rigid, forcing students into early and restrictive siloes of Science, Commerce, and Humanities. This model stifled the creativity and multidisciplinary thinking essential for a modern, knowledge-based economy (Jacob, 2015). Consequently, the system failed to equip graduates with the adaptable skill sets demanded by the evolving labour market, leading to a significant skills gap (World Bank, 2019; Jadhav, 2023). Lack of curricular flexibility kept students from matching education to interests or job demands, widening the skills gap. Jadhav (2023) notes the pre-NEP system valued rote memorisation over critical thinking and skills, leaving many graduates unemployable despite their degrees.

The research and innovation ecosystem was weak. Most Higher Education Institutions (HEIs) acted as teaching colleges. They lacked resources and culture for quality research. India fell behind in knowledge generation and international innovation. Regulatory bodies like UGC and AICTE overlapped, creating complex compliance and limiting autonomy and innovation (National Education Policy Fails to Impress n.d.). The regulatory landscape before NEP 2020 was fragmented and burdensome, characterised by multiple overlapping bodies. This created a complex 'labyrinth' of compliance (Kapur & Mehta, 2017) that stifled institutional autonomy and hindered innovation. Such over-regulation is widely recognised as a barrier to performance and responsiveness in higher education systems globally (Enders et al., 2013).

Challenges in access, equity, and quality persisted. The Gross Enrolment Ratio (GER) rose but remained below global standards. Students from rural and disadvantaged backgrounds faced maximum barriers. Substandard institutions coexisted with top universities facing funding shortages. This mix pointed to a crisis in quality assurance and governance.

Fragmentation, rigidity, poor research, complex regulation, and unequal access made reform urgent. NEP 2020 was vital, not optional. It aimed to turn Indian higher education into an integrated, outcome-oriented system. The policy's goal was to empower youth and solve current challenges.



Salient features of Higher Education mentioned in NEP

Single regulatory body for higher education: NEP is for creation of Higher Education Commission of India, a single regulator, to oversee the sector barring legal and medical education.

Multiple entry and exit programme: There are going to be multiple entry and exit for the students who want to exit the course in the middle. Their credits will be banked via ABC. Guidelines for Multiple Entry and Exit in Academic Programmes offered is the HEIs/ Strengthening Rashtriya Uchchatar Shiksha Abhiyan (RUSA) – (29.07.2021) Paving way for student mobility between or within degree-granting HEIs and enabling learners to choose their learning trajectory. This will give a push to GER, by enabling provision of flexibility in curricula, new courses and competent based field of studies, discipline specific specialization and encashment of the accumulation of credits on the student resuming his/her programmes of study. It has been adopted by a large number of Universities / HEIs.

Tech based option for adult learning: Quality technology-based options for Learning and Education of adults like Apps, online courses /modules, telecast through satellite-based TV channels, online books, ICT enabled libraries, and Adult Education Centers etc. will be developed. e-ERP based Solution for Governance of HEIs from admission to degree issuance – SAMARTH: Smarter Automation Engine for Universities Ministry of Education has sponsored an ICT initiative to transform the way we manage education in universities and other Higher Education Institutions by implementing an automation engine for the prescribed processes. It will assist HEIs in their administration and student management, starting with admission up to the award of degree. Presently, 1249 Universities and HEIs have come onboard, covering 27 States and 4 UTs. 7 The state higher education departments are also being onboarded. The policy's push for digital learning through platforms like SAMARTH and regional language e-courses is a critical modernisation step. Effective technology integration is a key differentiator in 21st-century education (Selwyn, 2016), moving beyond mere access to enabling smarter governance and personalised learning. This aligns with global trends in Educational Technology, including the exploration of AI applications to enhance the learning experience (Zawacki-Richter et al., 2019)

E-courses in regional languages: Planning, teaching, and learning will be based on technology -- including assessment -- technology-based analytics, and e-content and a teacher training program. The e-content would be in regional languages, initially 8 major languages – Kannada, Odia, Bengali, etc. to be in sync with the e-courses already initiated in Hindi and English versions. Higher Educational Institutions (HEIs) with NAAC accreditation score of 3.01 on a 4-point scale, or in case of universities, at least Category 'A', can apply to offer ODL programmes having been Institute of National Ranking Framework (NIRF) top 100 or included in ARIIA rankings at least once in the preceding two years. HEI with NAAC Score 3.26 and above or securing rank below 100 in NIRF in the University category at least two times in the preceding three cycles are eligible to offer Online Programmes without prior approval. HEIs in existence for at least 3 years and having NAAC accreditation score of 3.01 on a 4-point scale or in the Top-100 in NIRF ranking in at least one category, subject to NIRF ranking being available and declared on NIRF site, during the last two years, are eligible to apply under the scheme for the introduction of Online Programmes. Ninety-five (71 recognised and 24 Category-I HEIs) HEIs are recognised ODL institutions having the right to run 1149 ODL programmes. 66 universities are approved / authorised to offer 371 online programs.

Foreign universities in India: A new law permits the world's top 100 foreign colleges to establish campuses in India. In addition, the government is creating two new bodies focused on heritage restoration and mountain medicine to promote Indian traditions. According to a document from the Ministry of Human Resource Development, these foreign universities will receive special dispensations regarding regulatory, governance, and content norms, comparable to those granted to other autonomous institutions in India. The initiative aims to enhance international academic collaboration, achieve academic and research excellence in Indian higher education institutions, and provide students with international exposure, multidisciplinary education, and globally relevant curricula to improve employability. The policy is also expected to attract foreign students and elevate the status of Indian universities, as internationalisation is a significant parameter in global rankings. Indian higher education institutions must be accredited by the National Assessment and Accreditation Council (NAAC) or an equivalent agency with a minimum score of 3.01 out of 4, or be ranked in the top 1000 of the Times Higher Education or QS World University Rankings, or in the top 100 of the National Institutional Ranking Framework (NIRF) in the university category to be eligible. *Foreign higher education institutions must be ranked in the top 1000* in either the Times Higher Education or QS World University Rankings. Currently, 49 universities or higher education institutions in India offer such programs out of a total of 230.

Single entrance exam for all colleges: The National Testing Agency (NTA) will conduct a common entrance examination for all Higher Educational Institutes. Participation in the examination will be optional. HECI (Higher Education Council of India) will be established to regulate higher education. The aim of the council will be to improve the gross enrolment ratio. HECI would have 4 verticals:

- a) **National Higher Education Regulatory Council (NHERC)** to regulate higher education which would include teacher education but would not include medical and legal education.
- b) **National Accreditation Council (NAC)** a "meta-accrediting" institution.
- c) **Higher Education Grants Council (HEGC)** This new framework for grants, loans, and funding to universities and colleges will replace the existing National Council for Teacher Education, All India Council for Technical Education, and University Grants Commission.

- d) **General Education Council (GEC)** develop "graduate attributes" i.e., the outcomes intended learning. The NOKUT will also ensure the development and NHEQF and the release of a National Higher Education Qualification Framework (NHEQF) 10.11.2023 - It is a development, classification and recognition tool for the settings and follow-up from learners (students), assessment and quality assurance of education, grading and reporting at the levels from 4.5 to to 8 (1 yr. UG to Doctoral programme).

Provisions of NEP Higher Education on Indian Youth and Governance

The National Education Policy 2020 implements substantial reforms within India's higher education sector. These reforms affect both the current student population and the administrative frameworks governing higher education.

Indian Youth

- *Increased Flexibility and Choice:* NEP promotes a flexible, multidisciplinary approach to education. This allows students to customize their learning paths, choose from a wider range of subjects, and even pursue multiple degrees simultaneously. (Shukla et al., 2023) This flexibility caters to diverse interests and career aspirations, potentially leading to greater student satisfaction and engagement (Jadhav, 2023).
- *Focus on Skill Development:* The policy emphasizes skill development and experiential learning, integrating internships, apprenticeships, and research projects into the curriculum. (NEP 2020 Actionable Points, 2020) This focus aims to make graduates more employable and better equipped for the evolving job market. (Jadhav, 2023). NEP 2020's emphasis on skill development and experiential learning directly addresses the persistent 'skills gap' identified by industry. Research shows that employers highly value soft skills and practical experience, which are strong predictors of graduate employability (Succi & Canovi, 2020; Finch et al., 2016). By integrating these elements, the policy aims to create a workforce that is not only knowledgeable but also readily adaptable to the changing nature of work (Schwab, 2016)
- *Holistic Development:* NEP moves beyond rote learning and promotes holistic development by incorporating areas like community engagement, environmental education, and value-based education. (NEP 2020 Actionable Points, 2020) This aims to create well-rounded individuals with a strong sense of social responsibility.
- *Improved Access and Equity:* The policy aims to increase access to higher education through various initiatives, including online learning platforms and flexible entry and exit points. This can benefit students from diverse backgrounds and socioeconomic strata. (Shukla et al., 2023)

Governance

- *Restructuring of Regulatory Bodies:* The National Education Policy (NEP) proposes establishing a single regulator, the Higher Education Commission of India, to streamline the regulatory landscape and address over-regulation (Sharma, 2020). This reform is intended to simplify administrative processes and enhance efficiency within the higher education sector.
- *Emphasis on Quality Assurance:* The policy emphasizes quality assurance through accreditation and assessment reforms. (Sharma, 2020) This focus on quality aims to enhance the credibility and global recognition of Indian higher education institutions.

- *Increased Autonomy for Institutions:* NEP grants greater autonomy to higher education institutions in areas like curriculum design, academic collaborations, and resource management. This can foster innovation and responsiveness to local needs. (2016)
- *Challenges in Implementation:* While the NEP outlines ambitious goals, its successful implementation faces challenges (Jadhav, 2023). Effective coordination between various stakeholders, adequate funding, and addressing potential disparities in implementation are crucial for realizing the policy's vision (Mittal, 2016)

Conclusion

The NEP-2020, long awaited, has drawn broad, quite comprehensive contours for the way forward to revamp the country's educational map. With significant proposals to shift the focus of education to the anticipated policy, it aims at completely overhauling the Indian higher education system and turning it into one that benefits both the local workforce and global requirements of the 21st century. The policy thrusts in India over the years have been more focused on access, expansion and specialisation with limited attention on capability development and holistic growth. The NEP-2020 could go beyond past practices and focus on quality, skill development and multi-disciplinarity as the key drivers to improve student learning outcomes. One of the piece's accomplishments is to artfully demonstrate that higher education is more than just human resource development for the economy, by considering such elements as the future role of graduation and dropout rates, the degree of flexibility for students' entry and exit, and provision of skill courses so that our youth are ready to take on an ever-changing world of work. The learner-centered policy is also expressed as a progressive, creative, and democratic policy. The duty of implementation is now left in the hands of the implementers, to bear out in practice what is contained in the Policy in terms of its spirit and the letter of its provisions. It is only through a statistical approach to the entire gamut of Indian higher education that we can see the scale of the challenge and its indication of crisis on so many fronts, from the GER (Gross Enrolment Ratio), to the global ratings for universities.

In view of the above, the National Education Policy (NEP) 2020 not only provides practical and effective solutions to most of the problems and issues of higher education in the country but also sets the stage for meeting future requirements. It signals the importance of education to the human development of this country and the quality of educational experiences that this nation will need to give to its young people in order to prepare them for the future. This also highlights the value of education more generally. For the Policy to be effectively implemented, universities need guidance and recommendations. The most difficult challenge is now to strategically enact the policy. In this regard, it is important to forge a specific action plan and make it easy to implement. The Association of Indian Universities adopted varied approaches to propose out-of-box solutions for the operationalisation of the Policy on Higher Education. NEP 2020 represents a necessary and ambitious attempt to align Indian higher education with both global best practices and 21st-century demands. Its success, however, hinges on navigating the complex implementation challenges that accompany large-scale systemic reform (Altbach & de Wit, 2020). Strategic execution, adequate funding, and continuous evaluation will be critical to realizing the policy's vision of a more equitable, high-quality, and globally competitive education system.

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Policy Initiatives in India Supporting Outcome-Based Learning: A Higher Education Perspective

Waseem Zahra¹ & Gunjan Rautela²

Abstract

Outcome-Based Learning (OBL) has become a key component of higher education reform efforts internationally, moving toward measurable competencies, accountability, and student-centred teaching. In India, numerous policy initiatives are promoting OBL, including the National Education Policy (NEP) 2020, which advocates for a holistic, flexible, and outcome-oriented system of education. The University Grants Commission (UGC) has developed and implemented the Learning Outcomes-based Curriculum Framework (LOCF) and the Choice-Based Credit System (CBCS), ensuring that the curriculum focuses on competencies rather than content alone. Other professional bodies, such as the All-India Council for Technical Education (AICTE) and the National Council for Teacher Education (NCTE), have also incorporated outcome-based frameworks into their respective disciplines. Accreditation bodies, such as the National Board of Accreditation (NBA) and the National Assessment and Accreditation Council (NAAC), assess institutions based on their ability to define and demonstrate learning outcomes. Other reforms, such as the Academic Bank of Credits (ABC) and the National Credit Framework (NCrF), support the expansion of OBL. This paper examines how these initiatives establish a multi-layered ecosystem for implementing OBL in Indian higher education, as well as the opportunities and challenges associated with integrating policies with classroom practices.

Keywords: Outcome-Based Learning (OBL), Policy, Initiatives, Higher Education, NEP 2020, Challenges, Opportunities

Introduction

In the twenty-first century, higher education has transitioned globally from a teacher-centred model to a learner-centred model, where accountability and measured outcomes are emphasized (Biggs & Tang, 2011). Earlier, education was primarily a means of passing on knowledge, and learning focused more on the development of the cognitive domain. However, today, education encompasses the all-round development of an individual, and learning emphasizes the capacity building and development of skills, abilities, and attitudes that students require to excel in both their professional and personal lives. Outcome-Based Learning (OBL) is a teaching approach that emphasizes what students are expected to learn and acquire, enabling them to become capable of meeting professional demands after completing their studies. The success of education is measured by how successfully these learning outcomes are achieved

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(Spady, 1994). India, with one of the largest higher education systems in the world, faces unique challenges in terms of quality, equity, and relevance in its education system. The government has taken numerous policy initiatives to align higher education with the ideas of Outcome-Based Learning (OBL). They have instituted large-scale policies, such as the National Education Policy (NEP) 2020, as well as regulatory and accreditation frameworks to operationalize OBL as an institutional and disciplinary strategy (Tilak, 2021).

Understanding Outcome-Based Learning

Outcome-Based Learning (OBL) is an educational approach that focuses on what learners are expected to achieve at the end of a learning process, rather than what teachers teach. In essence, teaching, learning, and assessments are organized around defined outcomes, i.e., the skills, knowledge, attitudes, or competencies students are expected to acquire. Whereas traditional practice focuses on "What will I teach?", OBL focuses on "What should students be able to do after they learn this?" (Spady, 1994). This change in focus means that learning becomes more student-centred, where learners are engaged in achieving satisfactory outcomes that are meaningful.

In OBL, levels of outcomes are established. The higher-level outcomes are referred to as Programme Outcomes (POs), which describe the broad abilities that all students are expected to acquire, for example, problem-solving, communication, and ethical responsibility. The next level considers programme-specific outcomes (PSOs). This is where discipline-related skills are focused on. For instance, engineering students may be expected to develop specific abilities within the programme, such as designing systems, whereas education students should be able to apply pedagogical theories within classrooms. The next level is course outcomes (COs), which describe what a student should be able to do upon completing a particular subject (Biggs & Tang, 2011). This organized hierarchy links classroom learning to larger outcomes and professional and personal development goals. Another important aspect of OBL is that it focuses on measurable outcomes. The outcomes presented are explicit in terms of what is expected and clearly indicate the assessment of how students have attained these outcomes. For example, OBL would say "Students will be able to explain the process of photosynthesis and apply it to a real-world example" vs. "Students will understand photosynthesis". These outcomes are directly derived from Bloom's Taxonomy; for example, the levels of cognitive learning range from remembering to understanding, encompassing applying, analysing, evaluating, and creating (Anderson & Krathwohl, 2001). In this context, OBL can be utilized by educators to develop learning tasks and assessments that require a higher level of thinking than mere memorization.

The use of outcome-based learning (OBL) changes the focus of teachers and students. In OBL, teachers become facilitators and guides. They create learning experiences to help learners achieve outcomes. In OBL, students assume greater responsibility for their learning through active participation, practicing skills, and applying knowledge in real-world contexts (Killen, 2007). OBL fundamentally changes assessment processes. Assessment in OBL is not limited to tests of recall, as students must demonstrate competencies. Assessments can include written examinations, practical projects, case studies, portfolios or problem-solving tasks to measure learning outcomes. OBL has implications for quality assurance in education. There are accreditation bodies worldwide that evaluate institutions and programmes against outcome-based criteria, such as the National Board of Accreditation (NBA) in India. Quality assurance is essential to ensure that graduates from the education sector possess the necessary competencies required for employability in the job market and the needs of society (NBA, 2021).

Policy Support for Outcome-Based Learning in Indian Higher Education

1. National Education Policy (NEP) 2020: The NEP 2020 is arguably one of the most significant reform documents of recent decades. It envisions a holistic, multidisciplinary, and flexible education system with a strong emphasis on competencies and learning outcomes (Government of India, 2020). Key features include:

- Focus on critical thinking, creativity, and problem-solving
- Focus on competency-based education at all levels
- Multiple entry and exit points supported by a credit-based system
- Fostering experiential learning, internships, and skills development
- Developing the National Higher Education Qualification Framework (NHEQF) that allows all education qualifications in India to meet nationally and internationally accepted outcomes.

In moving away from rote learning towards constructivist approaches, NEP 2020 advocates an outcome-driven system where institutions clearly articulate what learners should know and be able to do by the end of their programmes.

2. University Grants Commission (UGC) Initiatives: UGC has played a pivotal role in bringing NEP's vision into action through various measures:

- **Learning Outcomes-based Curriculum Framework (LOCF):** The Learning Outcomes-based Curriculum Framework (LOCF) of UGC requires higher education institutions to specify outcomes using Bloom's Taxonomy. Programme Outcomes and Course Outcomes must be stated in detail at varying cognitive levels, ensuring that students not only recall knowledge but also apply, analyse, and create it. These alignments provide a solid foundation for constructive learning and making the outcomes measurable/assessable (UGC, 2019).
- **Choice-Based Credit System (CBCS):** The CBCS ensures flexibility and mobility for students, while also mandating courses to include explicit learning outcomes.

These measures make outcome-oriented learning mandatory for universities and colleges, as mandated by the UGC (UGC, 2022).

3. Academic Bank of Credits (ABC) and National Credit Framework (NCrF): The Academic Bank of Credits (ABC) offers students the opportunity to earn, accumulate, and transfer credits between institutions. These credits are generally attached to courses that have learning outcomes, i.e., there must be a specified outcome. The National Credit Framework (NCrF) recognizes and connects general education, vocational education, and skill training, based on defined learning outcomes at different credit levels. The ABC and NCrF work together to operationalize OBL, ensuring that credit mobility is based on 'competencies achieved' (UGC, 2022).

4. AICTE and Outcome-Based Education: The All-India Council for Technical Education (AICTE) has mandated that OBE should be practiced in technical and professional education. AICTE's model curriculum outlines graduate attributes and has COs that use POs as the mapping framework for assessment reforms in line with OBL principles. AICTE has also published guidelines for examination reforms that emphasize higher-order thinking and application skills, which must also be evaluated (AICTE, 2017).

5. Competency-Based Medical Education (CBME) by NMC: The National Medical Commission (NMC) launched Competency-Based Medical Education (CBME) for its MBBS curriculum in 2019.

Within this framework, specific competencies that graduates should demonstrate, encompassing knowledge, skills, attitudes, and ethics, are defined (NMC, 2019). CBME is a practical application of OBL in a professional education setting, ensuring that medical graduates are not only knowledgeable but also demonstrate the application of their learning in clinical settings.

6. Accreditation Agencies: NBA and NAAC:

- **National Board of Accreditation (NBA):** The NBA accreditation for technical programmes has been based on OBE since 2013. Institutions are required to demonstrate attainment of POs and COs, and use assessment data to improve the programme as part of the OBE process (NBA, 2021).
- **National Assessment and Accreditation Council (NAAC):** NAAC's Revised Accreditation Framework (RAF) has a strong emphasis on outcome orientation. Evidence of outcome achievement is required in areas such as teaching-learning and evaluation, student outcomes, and employability (NAAC, 2022). These accreditations systems give a strong motivation for institutions to engage in OBL, making a clear link between quality certification and consistently demonstrating outcomes.

7. National Skills Qualifications Framework (NSQF): The NSQF is a competency-based framework that organizes qualifications into levels defined by learning outcomes. It covers vocational education, skills development, and formal education to ensure vertical mobility, based on competencies (MSDE, 2013). The NSQF's descriptors based on outcomes align with OBL principles, making it an essential policy framework.

8. Teacher Education, NCTE, and Teacher Education Regulations: The NCTE has reconstructed teacher education programmes, especially the Integrated Teacher Education Programme (ITEP), around well-defined teacher competencies and outcomes that align teacher preparation with OBL. These programmes ensure that pupil teachers are prepared to design and assess these outcomes effectively (NCTE, 2021).

9. RUSA and PM-USHA: The *Rashtriya Uchchatar Shiksha Abhiyan* (RUSA) scheme and the *Pradhan Mantri Uchchatar Shiksha Abhiyan* (PM-USHA) provide funding for quality enhancement and institutional reform. RUSA and PM-USHA provide support for adopting OBL approaches, faculty development, curriculum improvement, and infrastructure upgrades for outcome-based teaching, learning, and assessment (MHRD, 2013; MoE, 2023).

Overview of Key National and Institutional Policies Promoting OBL in India

India has developed a multi-layered policy ecosystem that supports OBL at national, institutional, and disciplinary levels. The following table provides an overview of the major initiatives:

Table 1: Policy Initiatives in India Supporting Outcome-Based Learning

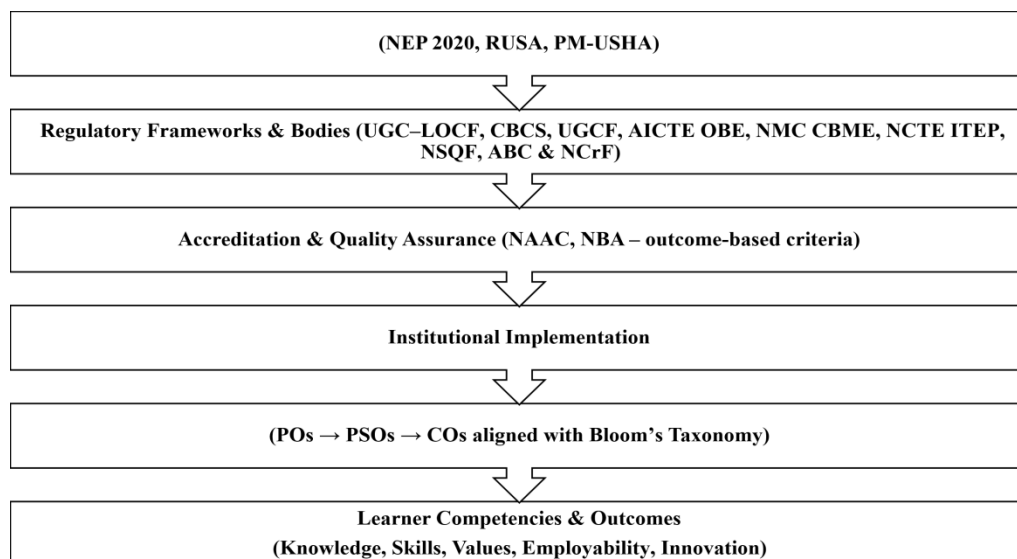
Policy/Framework	Implementing Body	Focus/Key Features	Link to OBL
National Education Policy (NEP) 2020	Ministry of Education	Competency-based, flexible, multidisciplinary education; critical thinking and creativity; multiple entry-exit options	Establishes national vision for outcome-oriented curricula and assessments
Learning Outcomes-based Curriculum Framework (LOCF) & Choice-Based Credit System	University Grants Commission (UGC)	Curricular flexibility, credit system, and measurable learning outcomes	Requires clear articulation of POs, PSOs, and COs for every programme and course

(CBCS)			
Academic Bank of Credits (ABC) & National Credit Framework (NCrF)	UGC/Ministry of Education	Credit transfer and accumulation based on defined competencies and outcomes	Makes credits dependent on demonstrable attainment of outcomes
Undergraduate Curriculum Framework (UGCf 2022)	UGC	Revised UG structure aligned with NEP 2020	Operationalizes outcome-based and competency-driven reforms at the UG level.
Outcome-Based Education (OBE) Guidelines	AICTE	Technical/professional programmes aligned with graduate attributes; assessment reforms	Mandates mapping of COs to POs and attainment reporting
Competency-Based Medical Education (CBME)	National Medical Commission (NMC)	The MBBS curriculum has been redesigned around competencies	Demonstrates OBL through observable medical skills and outcomes
Accreditation Criteria (RAF, Outcome-based Accreditation)	NAAC & NBA	Quality evaluation based on learning outcomes, graduate attributes, and attainment data	Accreditation is linked to the demonstration of achievement of outcomes.
National Skills Qualifications Framework (NSQF)	Ministry of Skill Development & Entrepreneurship	Defines qualification levels in terms of learning outcomes	Aligns vocational and higher education with competency-based outcomes
Integrated Teacher Education Programme (ITEP) & NCTE Regulations	National Council for Teacher Education (NCTE)	Competency-based teacher preparation	Embeds outcome orientation in teacher education and practicum
RUSA & PM-USHA	Central/State Governments	Institutional funding, quality improvement, and faculty development	Supports implementation of outcome-based reforms and capacity building

Policies Pathway for Outcome-Based Learning in India

Policy initiatives in India establish a structured pathway for implementing Outcome-Based Learning (OBL). At the national level, policies such as NEP 2020 and RUSA establish the vision for competency-based education. These are operationalized through regulatory frameworks like UGC-LOCF, CBCS, AICTE's OBE model, NMC's CBME, and NCTE's ITEP. Accreditation bodies, such as NAAC and NBA, then ensure quality by assessing the attainment of outcomes. At the institutional level, OBL is implemented through structured, predefined POs, PSOs, and COs, which are aligned with Bloom's Taxonomy levels. This ensures that students develop a combination of lower-order thinking skills (LOTS) and higher-order thinking skills (HOTS), preparing them for both academic and professional success.

Figure 1: Self-created figure depicting the Flow of Policy Initiatives Supporting Outcome-Based Learning in India



Challenges in Implementation

While the support for OBL from a policy perspective is strong in India, the implementation of OBL has faced multiple challenges. Faculty across institutes often lack formal training in designing and assessing outcomes, resulting in inconsistent practices (Joshi & Paivandi, 2021). The resistance to change from conventional teaching modes and the limited resources available in a system remain barriers to the adoption of OBL. Assessment systems are still examination-driven, which contradicts the ability to assess authentic assessments that demonstrate competencies (Mukhopadhyay, 2020). Furthermore, there is significant variation in the capacity of institutions across central, state, and private universities, which has resulted in inconsistent adoption of OBL and raises concerns about equity. In the absence of a strong monitoring and evaluation system with periodic feedback loops, OBL may become a thinning formality instead of a transformational practice.

Opportunities and Way Forward

Even with the barriers mentioned, there are significant opportunities to strengthen OBL in India's higher education system. There are digital platforms and national systems, such as SWAYAM and the National Digital Library, where learning resources can be integrated with outcome-based frameworks (NEP, 2020). The NBA and NAAC both continue to implement accreditation reforms that promote quality enhancement, continuous improvement, and initiatives such as PM-USHA, which provide funding for capacity building (Mukhopadhyay, 2020). Building interest in collegial collaboration, considering global standards and frameworks, can advance India's OBL practices from good practice to excellent practice (Tilak, 2021). The way forward will require systematic and well-planned faculty development, robust outcome-based assessment practices,

and, most importantly, stronger alignment between industry needs and curriculum outcomes to enhance both employability and innovation.

Conclusion

Recent policy initiatives in India have established a strong foundation for Outcome-Based Learning in higher education. Bloom's Taxonomy is integrated into outcome-based frameworks, ensuring that the learning outcomes address a broad range of cognitive skills, from lower-order to higher-order cognitive skills. The systematic linking of these policies, such as NEP 2020 and UGC LOCF, has the potential to shift the focus from memory-based learning to outcome-based learning that prioritizes knowledge, skills, and competencies which promote creativity, innovation, and problem-solving as a means to compete on the global stage (Anderson & Krathwohl, 2001). The regulatory bodies, accreditation bodies, and professional councils have laid the foundations for outcome orientation in every discipline. Additionally, various support schemes have been introduced at the institutional level to promote implementation of the OBL initiative; however, the implementation of these initiatives can be an effective and efficient way to achieve faculty development, readiness of institutions, and assess the effectiveness of the requisite systems. Once these are addressed, the Indian education system will be in a much better position to harness OBL into a higher education system that is genuinely accountable to deliver the outcomes of higher education, an equitable education, and lead by example as to how knowledge, skills, and competencies in higher education can compete with education around the globe.

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Public-Private Partnerships in Education Policy: A Conceptual Critique of Privatization Trends and their Socio-Political Impact

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Abstract

Public-Private Partnerships (PPPs) have become prominent and notable in education policy debates as approaches to ease fiscal pressure, widen access, and improve efficiency. PPPs are commonly portrayed and supported by national governments and international organizations as solutions to both resource scarcity and quality gaps. This paper develops a conceptual critique of PPPs in schooling, focusing on the privatizing tendencies they encode and their broader socio-political effects. This paper analyses public-private partnerships (PPPs) in education, questioning their benefits and how they affect fairness, accountability, and democracy. The present study uses global ideas and Indian policies like the National Education Policy (NEP) 2020, Rashtriya Madhyamik Shiksha Abhiyan (RMSA), and Sarva Shiksha Abhiyan (SSA), to suggest other ways to keep education a public good. It argues that although PPPs may relieve resource shortages in the short term, they risk commodifying education, intensifying inequality, and eroding the social and democratic purposes of schooling. The paper concludes by also outlining policy options that reinforce public systems, install safeguards within hybrid models, and reassert the status of education as a right and a linchpin of democracy.

Keywords: Public-Private Partnership, Education Policy, Privatisation, Equity, Accountability, Socio-Political Impact, Policy Reform

Introduction

Over the past three decades, education policy worldwide has been reshaped by globalisation, economic liberalisation, and the influence of international financial institutions. Within this evolving context, public-private partnerships (PPPs) have emerged as a key policy instrument to meet rising educational demand and public resource constraints (Abdul et al., 2024). Advocates present PPPs as innovative models that combine the efficiency and investment capacity of the private sector with the legitimacy and social responsibility of the public sector. While promising gains in access, quality, and cost-sharing, PPPs also provoke debates about effectiveness, sustainability, and the implications for education as a public good (Loukili & El Hamma, 2025).

In India, the growth of PPPs is closely linked to post-1990s economic reforms and a shift in the role of the State from provider to facilitator. Initiatives such as Sarva Shiksha Abhiyan (SSA), Rashtriya Madhyamik Shiksha Abhiyan (RMSA), and diverse state level experiments have adopted PPP frameworks across areas ranging from infrastructure and remedial education to

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voucher schemes. The National Education Policy (NEP) 2020 further endorses diversified funding and collaboration with private actors to support digital learning, vocational education, and teacher development. Though framed as pragmatic responses to fiscal and quality pressures, these measures raise serious concerns about equity, accountability, and the ideological direction of reform (Achungura et al., 2024).

Importantly, PPPs represent more than resource mobilisation; they signal a gradual shift toward privatisation. Beyond fee-based schooling, privatisation reframes education as a market-driven enterprise shaped by competition, consumer choice, and performance indicators (Fabre & Straub, 2023). This shift risks weakening the constitutional vision of free and equitable education, often intensifying inequalities and eroding democratic accountability.

This paper offers a conceptual critique of PPPs, situating them within global and Indian contexts. It argues that while PPPs may deliver short-term benefits, their longer-term effects on inclusion, justice, and democratic responsibility remain deeply problematic. The analysis interrogates core assumptions, traces socio-political consequences, and explores alternatives that strengthen public education without compromising its foundational values.

Theoretical and Policy Background

Public - Private Partnerships (PPPs) in education denote policy arrangements in which the state works with private actors to deliver educational services, develop infrastructure, or design financing mechanisms. The theoretical premise of PPPs rests on shared responsibility: the public sector supplies legitimacy, regulation, and equity, while the private sector brings resources, efficiency, and innovation. In practice, however, PPPs have become closely associated with a neoliberal discourse that treats education less as a public right and more as a domain for market-oriented reform (Verger et al., 2020).

PPPs in education appear in multiple forms. Infrastructure-based PPPs involve private investment to construct and maintain school buildings or digital facilities, with governments often repaying costs through long-term contracts. Service-delivery PPPs shift management of schools or ancillary services (such as teacher training or midday meals) to private providers. Voucher schemes furnish families with government-funded vouchers to enroll their children in private schools of choice, while charter schools are publicly funded yet independently managed institutions, most prevalent in Western contexts (Tong et al., 2023). These typologies illustrate the varied routes through which private actors enter the public education sphere. Internationally, organisations such as the OECD, World Bank, and UNESCO promote PPPs as pragmatic responses to educational challenges. The World Bank, for example, advances PPPs to expand access in resource-constrained settings, while the OECD highlights innovation and accountability mechanisms. Yet, UNESCO cautions against excessive privatization, underscoring risks to equity and inclusiveness.

In India, PPPs have been trailed under flagship schemes like Sarva Shiksha Abhiyan (SSA) and Rashtriya Madhyamik Shiksha Abhiyan (RMSA), where private partners supported infrastructure, remedial education, and teacher training. The National Education Policy (NEP) 2020 further endorses partnerships for digital education, vocational training, and research. Several states, including Rajasthan, Andhra Pradesh, and Gujarat, have piloted PPP models, reflecting the growing policy reliance on private participation in education.

Rationale behind PPPs

The rising prominence of PPPs in education policy is commonly justified on grounds of efficiency, innovation, and resource mobilisation. Proponents contend that PPPs import managerial expertise, flexibility, and technological capability from the private sector into education systems, often criticised for bureaucratic delays, rigidity, and limited innovation (Baibulatova, 2023). By engaging private actors in domains such as school management, teacher training, curriculum design, and infrastructure development, governments expect more responsive and adaptable service delivery. This efficiency-oriented logic sustains much of the enthusiasm for PPPs across both developed and developing contexts (Rumiantsev et al., 2024). A parallel argument centres on cost sharing. Governments, especially in the Global South, face persistent fiscal constraints that limit their capacity to provide universal, high-quality education. Rising demand, combined with competing budgetary pressures in sectors like health and defence, has widened the gap between public resources and educational needs (Ali et al., 2024). PPPs are posited as mechanisms to bridge this gap by leveraging private finance and investment. By distributing financial responsibility, PPPs are expected to expand access, particularly in underserved regions where state capacity and funding are insufficient (Barrera-Osorio et al., 2012). PPPs are frequently promoted as vehicles for advancing universal education goals by mobilising private capacity to reach marginalised or geographically dispersed communities (Muhammad et al., 2025). Voucher programs and low-fee private school models, for example, are defended as tools to broaden choices for families who might otherwise be excluded from formal systems (Shakeel et al., 2021). In this framing, PPPs are presented not only as cost-efficient arrangements but also as instruments of democratisation, offering parents greater agency in selecting educational opportunities for their children. The policy rationale for PPPs is intertwined with broader economic reforms and globalisation. Since the 1990s, neoliberal strategies emphasising deregulation, liberalisation, and privatisation have been advanced as pathways to modernisation. Education, traditionally conceived as a public responsibility, has come under increasing pressure to align with market logics, competitiveness, and global labour demands. PPPs thus emerged as a policy device consonant with this neoliberal framework, positioning education simultaneously as a social investment and an economic imperative (Rosenau, 2022). International organisations have been pivotal in legitimising and disseminating PPPs. The World Bank has consistently advocated PPPs as instruments for efficiency and accountability in education reform, often associating loans and aid with the adoption of such models. The IMF, through structural adjustment programs, indirectly encouraged privatisation and private participation in social sectors (Blanton et al., 2015). While OECD analyses highlight PPPs as drivers of innovation and performance benchmarking, UNESCO adopts a more cautious stance, insisting that partnerships must not erode equity or the principle of education as a human right. Collectively, these global discourses have reinforced the appeal of PPPs as viable policy tools, particularly in resource-constrained settings such as India (Glavič, 2020).

Yet, the case for PPPs warrants careful scrutiny. The very logic that renders PPPs attractive from a policy perspective raises concerns about implications for equity, accountability, and the public purpose of education. Cost-sharing may ease fiscal pressures, but it can also shift responsibility away from the state; efficiency and innovation may yield short-term gains, yet risk subordinating educational aims to market criteria. Moreover, the endorsement of PPPs by global institutions often reflects wider neoliberal priorities rather than locally grounded educational agendas (Castelblanco et al., 2024). For these reasons, the rationale behind PPPs, however compelling on the surface, must be examined critically for the privatisation trends it normalises and the socio-

political consequences it entails. This calls for a conceptual critique that assesses not only the promises of PPPs but also their limits and contradictions.

Conceptual Critique of Privatisation Trends

Public - Private Partnerships (PPPs) in education are often framed as pragmatic answers to enduring problems of access, finance, and quality. Yet beneath the rhetoric of efficiency and innovation lies a broader privatisation trend with significant conceptual and socio-political implications (Solheim-Kile et al., 2019). In education, privatisation refers not only to the growth of private schools but also to the steady infusion of market logics such as competition, consumer choice, and profit orientation into a sphere historically treated as a public good (Verger et al., 2016). A critical reading of PPPs suggests that, while they may patch structural gaps in the short term, they also risk reshaping the very foundations of education.

Equity and Access

One of the strongest critiques of PPP-driven privatisation concerns equity. Proponents claim that PPPs widen access through vouchers and low-cost private schools. However, evidence frequently shows these mechanisms intensify existing inequalities. Low-income families may still find private options unaffordable or gain entry only to lower-quality schools, reproducing disadvantage (Härmä, 2009). Market-based models also tend to favour urban, resource-rich settings, leaving rural and marginalised groups underserved. In practice, PPPs can widen the divide between privileged and disadvantaged communities, undermining the constitutional promise of universal and equitable education (Dey & Bandyopadhyay, 2018; Rowe & Perry, 2019).

Quality of Education

Quality is another contested terrain. Private actors may bring innovation, technology, and alternative pedagogy, but a strong tilt toward cost-efficiency often produces trade-offs. Many PPP schools rely on contract teachers with lower pay and limited training, raising concerns about professional standards and long-term learning outcomes (Braaten et al., 2017). Emphasis on measurable outputs such as test scores and performance indicators can narrow the curriculum and sideline arts, values, and civic learning (Zeide & Nissenbaum, 2018). Thus, although PPPs claim quality gains, they risk reducing education to a utilitarian project aligned primarily with market demand.

Accountability and Governance

Accountability poses further challenges. Public education is answerable to citizens through democratic oversight. Under PPPs, accountability fragments. Private providers may prioritize financial sustainability or reputation over holistic development of learner (Berrone et al., 2019). Regulation often lags, leaving gaps in monitoring and enforcement. This raises a core question: who ensures that private partners uphold inclusivity, equity, and social justice? Without robust governance and transparent safeguards, PPPs can erode public trust and shift responsibility away from the state.

Commercialisation of Education

These problems reflect a wider drift toward commercialisation. PPPs advance a policy stance in which education becomes commodified, purchased as a service rather than guaranteed as a right (Fabre & Straub, 2023). Commodification distorts the intrinsic purposes of education and reinforces consumerist attitudes among families and learners. Schools turn into arenas for

competition, branding, and cost recovery rather than spaces for holistic growth and democratic engagement. Reducing education to an economic transaction fundamentally challenges its role as a transformative social institution (Stilwell, 2003).

Socio-Cultural Implications

Privatisation trends also carry deep socio-cultural effects. Market-led models may privilege English-medium or “globalised” curricula aligned with middle-class aspirations, while marginalising local languages, indigenous knowledge, and culturally rooted pedagogy. The result can be a homogenised education landscape detached from local realities. PPP-oriented reforms may also weaken community participation as decision-making shifts from local stakeholders to private actors and contractual bureaucracies, ultimately undermining social cohesion and the democratic ethos public education should sustain (Eden et al., 2024).

Critical Reflection

In sum, PPPs present a paradox. They promise efficiency, access, and innovation, yet their privatising logic often undercuts equity, inclusion, and public accountability. Conceptually, they mirror neoliberal policy priorities that elevate market efficiency over social justice. The danger lies not only in expanding private provision but also in subtly redefining the purpose of education from a right and a social good to a commodity aligned with economic objectives (Fabre & Straub, 2023). Without critical re-examination and strong regulation, PPPs risk deepening the very crises they purport to solve, leaving public education weakened and fragmented.

Socio-Political Implications of PPPs

The spread of Public - Private Partnerships (PPPs) in education cannot be read merely as a technocratic fix for fiscal shortfalls or administrative delays. It signals a wider socio-political reconfiguration in how states, communities, and institutions imagine education (Forrer et al., 2010). PPPs mark a shift in the role of state from primary guarantor of education as a public right to a facilitator that outsources functions to private actors. This reorientation carries far-reaching consequences for social justice, class relations, and the democratic character of schooling.

Social Justice and Inclusivity

Education has long been treated as a pathway to mobility, equity, and inclusion. Yet PPP-led models frequently reproduce hierarchies rather than dismantle them. Market instruments such as vouchers or fee subsidies tend to support those already equipped with resources and information to navigate private options, while marginalised groups remain excluded. The resulting stratification weakens the redistributive role of public systems and sustains layered inequalities across caste, class, gender, and region (Verger et al., 2020).

Class Stratification and Inequality

A visible socio-political outcome of privatisation is the amplification of class divisions in schooling. PPPs generate parallel tracks in which advantaged families access superior facilities and pedagogies while disadvantaged communities are steered towards underfunded or lower-quality provisions. This dual system fragments the social fabric, limits cross-class interaction and entrenches socio-economic segregation. Over time, such differentiation undermines the ideal of education as a unifying and democratizing institution (Gutiérrez & Carrasco, 2021; Rumberger & Palardy, 2005).

Political Economy of Education Reforms

PPPs are also symptomatic of a broader political economy shaped by neoliberal reform. The entry of private providers is never value-neutral; it reflects the influence of corporate interests, international financial institutions, and market-oriented ideologies. Policy agendas increasingly foreground efficiency, accountability, and competitiveness over wider developmental aims (Deuel, 2021). As private stakeholders gain voice in curricula, pedagogy, and priorities, education risks being aligned more with labourmarket imperatives than with holistic nation-building, altering the contours of citizenship and democracy.

Erosion of Democratic Accountability

PPPs often relocate decision-making outside traditional democratic arenas. Choices about school management, curriculum, and resource allocation are frequently mediated through contracts, metrics, and bureaucratic negotiations rather than participatory forums of teachers, parents, and communities. This technocratic governance weakens local ownership and dilutes accountability to citizens. In effect, PPPs shift education from the sphere of collective rights into the logic of managerial compliance (Ali et al., 2024).

Implications for the Public Good

At a deeper level, PPPs unsettle the public character of education. When schooling is reimagined as an economic commodity rather than a social right, its roles in nurturing critical inquiry, democratic participation, and cultural continuity recede. Education risks becoming an instrument of economic policy rather than a cornerstone of democratic life. The long-term effect is a narrowed vision that weakens emancipatory aims of education and compresses its purposes to primarily economic functions (Verger et al., 2020).

The socio-political implications of PPPs underscore what is at stake in current reforms. Beyond questions of cost or efficiency, PPPs reshape relationships between state, society, and schooling. They risk reinforcing inequality, hollowing democratic accountability, and redefining education as a private commodity. To protect the role of education in social justice and democratic citizenship, PPPs must be critically re-examined, and the primacy of public responsibility reaffirmed in education policy (Davies, 2017).

Policy Alternatives and Way Forward

The critique of Public - Private Partnerships (PPPs) does not imply that private participation in education should be entirely rejected. The task is to design frameworks that preserve education as a public good while responsibly integrating private contributions (Rosenau, 2022). Policy options must balance efficiency with equity, and innovation with accountability, ensuring that the public purpose of education remains intact.

Strengthening Public Education Systems

The most sustainable alternative to overreliance on PPPs is the revitalisation of public education itself. Greater investment in government schools, stronger teacher recruitment and training, and improved infrastructure can limit dependence on private actors (Anastasopoulou et al., 2024). Policies should secure universal access to quality public schooling, so parents choose government schools out of confidence rather than compulsion. Reinforcing local governance bodies, such as School Management Committees, can enable participatory decision-making and community accountability.

Hybrid Models with Safeguards

Where collaboration with the private sector is necessary, it must operate within a robust regulatory architecture. Hybrid models can draw on private expertise for innovation, technology integration, or specialised training while the state retains authority over access, curriculum, and equity protections (Ezeh et al., 2024). Clear performance benchmarks, contract transparency, and effective grievance redressal should be mandatory to prevent profiteering or erosion of quality.

Accountability and Regulation

A central priority is building strong accountability systems for PPP initiatives. Independent monitoring bodies, including civil society, parents, and educators, can help ensure that partnerships advance social justice goals. Regulation should extend beyond financial compliance to include inclusivity, teacher welfare, and curricular relevance (Hatch, 2013). Such oversight can align efficiency with broader democratic and developmental aims.

Community Participation and Decentralisation

Rather than outsourcing responsibilities to distant private entities, policy can deepen community participation in schooling. Local communities are best placed to identify contextual needs, cultural priorities, and inclusion gaps. Decentralised governance, coupled with capacity-building for local institutions, can strengthen ownership and accountability at the grassroots without commodifying education (McGinn & Street, 1986).

Reasserting Education as a Right

The way forward requires reaffirming education as a fundamental right and public good. Policy discourse must resist reducing education to a commodity or a mere input to economic growth. By situating education within the wider goals of democracy, equity, and human development, governments can ensure that any private role complements, rather than displaces, public responsibility (Souto-Manning & Winn, 2019).

The path ahead is not wholesale rejection of partnerships but careful recalibration. Private participation can supplement, never replace, the central role of the state in guaranteeing equitable, quality education. Only by reasserting public responsibility, embedding strong regulatory safeguards, and engaging communities in governance can education remain true to its purpose as both a democratic right and a vehicle of social transformation.

Conclusion

Public - Private Partnerships in education now hold a conspicuous place in contemporary policy debates, cast as remedies for problems of access, quality, and finance. Though the case for PPPs invokes efficiency, innovation, and cost-sharing, a tighter conceptual reading exposes internal tensions. Such arrangements frequently blur the line between public obligation and private interest, fostering commercialisation, uneven access, and diluted democratic oversight. Far from neutral, technocratic instruments, they mirror a broader neoliberal pivot in education policy that elevates market rationality above social justice and inclusion. These contradictions complicate claims that PPPs are pragmatic solutions. The socio-political stakes of this trajectory are considerable. PPPs can entrench class stratification, constrict curricula to economic imperatives, and reframe education from a shared good into a purchasable commodity. Such shifts threaten the emancipatory and democratic promise of schooling, weakening its roles in advancing equity, sustaining culture, and cultivating citizenship. Without careful regulation and redirection, PPPs

may exacerbate the very problems they purport to fix. The way forward lies in strengthening public systems, designing hybrid models with stringent safeguards, and embedding robust accountability and transparent public oversight throughout. Community participation and decentralised governance should be prioritised so that any partnership, where necessary, operates within frameworks that protect equity and inclusion. Ultimately, education must remain anchored in its constitutional and ethical vision as a right, a social good, and a pillar of democratic life. Only then can policy initiatives truly balance innovation with justice, ensuring that the promise of education is not surrendered to the imperatives of privatisation.

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A Historical Lens on Modern Policy: The Evolution and Implementation of the Academic Bank of Credits in India

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Abstract

This paper gives an overview of conceptual analysis of the Academic Bank of Credits (ABC), flagship policy of the government of India after the coming of NEP 2020. It asserts that ABC has the potential to shift the academia from a rigid institution centric framework to a more flexible learner directed framework where students can exercise the freedom of creating a personalized learning pathway which aligns with their unique traits. The ABC works on the digital ecosystem constituting of Digilocker, National Academic depository and APAAR ID. ABC will act as the “single verifiable source of truth” for academic archives which will remove the fear of losing documents, streamline academic process and make paperless administration a reality. The ABC has been compared with ECTS of Europe and U.S. Semester Credit Hours to get an idea of current practices across the world. The article also discusses the challenges in implementation of this ambitious project in a diverse and large nation like India which suffers from digital divide. The article concludes that ABC is a wonderful tool which can empower learners and the faculty in ensuring holistic development of learners in knowledge economy of the 21st century.

Keywords: Academic Bank of Credits, Higher education, Credit transfer, NEP 2020, Policy initiatives in education, University Grants Commission

Introduction

"The Academic Bank of Credit Scheme is a cornerstone of NEP 2020, aiming to revolutionize higher education by promoting flexibility and inclusivity."

— M. Jagadesh Kumar, Chairman, University Grants Commission (UGC)

The Academic Bank of Credits (ABC) denotes a systemic change in India's tertiary education framework, breaking away from strict, institution centric prototypes towards a learner led structure. This paper maps the development of this policy in India. It points out the role of ABC as a cornerstone of the National Education Policy (Ministry of Education, Government of India, 2020), executing the National Credit Framework (NCrF) through a consolidated digital architecture that consists of Digilocker, APAAR ID, and the National Academic Repository (NAD). The objectives of ABC are bold and synchronised with international standards – fostering lifelong

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learning, transparency and academic mobility, and multidisciplinary education- its application has met operational and strategic obstacles. There is institutional resistance from top institutions like the Indian Institutes of technology (IITs) and Indian Institute of Management (IIM) which are concerned about the degradation of institutional autonomy and academic benchmarks. A lack of standardisation, administrative complexities and the challenge of digital divide make the implementation a complicated process. The Kothari commission did not encourage a credit-based system, its focus on modernisation and national productivity led the theoretical underpinnings for a dynamic education system. Several decades later, the National Knowledge Commission (NKC) tried to transform India into a knowledge economy by improving access to information, revitalising institutions and making a world class digital learning system (George, 2024). The concept of ABC was technology driven answer to old-school data management systems. The National Credit framework (NCrF) is a theoretical framework that provides ABC its objectives and organisation. The NCrF is an overarching structure that assists in innovative and adaptable curricular structures, and inclusion of skilling and vocational education in to academics. A table showing the timeline of the Academic Bank of Credit has been given below.

Table 1 Timeline (classes, 2025)

Year	Event
2020	NEP 2020 announced
2021	UGC (Establishment and Operation of Academic Bank of Credits in Higher Education) Regulations, 2021
2021	Official launch of ABC by the PM during NEP 2020 anniversary
2022	UGC formally announced ABC Regulations, 2021
2022	Launch of National Credit Framework (NCrF)
2024	UGC mandated onboarding of all universities & colleges to ABC
2025	3.86 crore students and 21,115 HEIs registered

The Academic Bank of Credits

The Academic bank of Credits is a virtual academic service apparatus set up by the University Grants Commission (UGC). The University Grants Commission (UGC) officially notified the "University Grants Commission (Establishment and Operation of Academic Bank of Credit in Higher Education) Regulations, 2021" on July 28, 2021. This regulation provided the legal and administrative framework for the establishment and operation of the ABC (Kumar, 2022). Its main function is to serve as a safe "credit bank" where academic attainments are virtually registered, archived, amassed, shifted, and reclaimed (Aithal, 2019). This is a deliberate and ideological transition from an analogue filing system to a consolidated digital archive. The platform is designed and supported by the National e-Governance Division (NeGD) of the Ministry of Electronics and Information Technology (MeitY) under the Digilocker framework. This planned choice helps ABC to exploit the widely adopted technology to guarantee compatibility with and giving a "single verifiable source of truth" for educational transcripts. ABC connects a student's scholastic history to their digital identity which is validated through Aadhaar. Table 1 explains the ABC digital ecosystem in brief.

Table 2 ABC Ecosystem in brief.

COMPONENT	MAIN FUNCTION	ROLE IN THE DIGITAL ECOSYSTEM
APAAR ID	It is a singular, perpetual 12 digit	It is essential to a learner's scholastic

	long digital identity for each student.	history as all other components of the digital academic ecosystem are connected to it. It is linked to Aadhaar and Digilocker account.
DIGILOCKER	It is a safe cloud-based document wallet for all Indians.	It is the main access point for learners to oversee and store their academic documents and manage their ABC account. Digilocker is equivalent to original hardcopy of documents which in effect gives a trusted virtual alternative.
ACADEMIC BANK OF CREDITS(ABC)	It is a virtual apparatus for retaining all academic credits earned by a pupil which can be transferred or redeemed as per the need.	This platform stores credits for a student which is marked by APAAR ID.
NATIONAL ACADEMIC DEPOSITORY (NAD)	It keeps certificates, credits, degrees, diplomas and marksheets.	It is the backbone of the ABC. NAD is a 24X7 virtual storehouse of all scholastic awards. Digilocker is an exclusive repository for NAD as per Ministry of Education.

A press release from the Ministry of Education highlights the launch of the ABC by the Prime Minister in 2021. It was introduced to facilitate flexible and lifelong learning, break disciplinary silos, and provide multiple entries and exit points for students (Sontakke, 2022). The operational and legal foundations for the ABC are given by the UGC regulations 2021, which was notified in the gazette of India on July 28, 2021. ABC is applicable to all colleges and universities under the ambit of AICTE, NCTE, and UGC which fosters “Highly flexible, student centric facility.” There is an important provision within the regulations which stipulate that students must get at least 50% of the credits, needed for a formal degree from their “Parent Institution”, which is the organisation where they are originally enrolled. The rest of the credits for elective papers can be received from other registered educational institutions. This subsection is an important mechanism for ensuring balance in academic mobility and integrity of core curriculum. The ABC system promises several benefits one of them is lifelong learning and mobility where students are allowed to take academic breaks with no fear of using their hard-earned credits (Kumar, 2024). The multiple entry and exit points are useful for learners who face unpredictable interruptions due to personal, professional, or financial reasons. This permits them to restart their educational journey with no compulsion to repeat the courses completed by them. Another benefit of ABC system is that of streamlining the academic progress of students. The academic records are kept safely in a digital repository which is centralised in nature (Namdev & Gawas, 2023). This effectively puts an end to the apprehension of lost mark sheets, make admissions easy and document verification. It also facilitates academic growth by making certain that every valid credit is recognised in time. This portability and transparency of scholastic record is a seminal step towards reaching the global standard. Lastly unprecedented flexibility for students is possible through ABC because it proffers the liberty to pick out courses that match with their interest which may be offered by other institutions. This is useful for making of personalised learning paths which can be multidisciplinary in nature. For example, a student can mix aeronautical engineering with hospitality management or theatre, thus, making a degree which shows her idiosyncratic

passions. ABC offers a safety net for learners who may face unpredictable challenges in their life. The credits are archived for seven years or a time decided by the academic discipline. Moreover, ABC includes credits from online learning programmes, MOOCs, vocational training and skill development courses. As of 2024 around 30 million learners have registered themselves with the ABC platform. By 2024 around 1693 academic institutions have registered with the platform. Of these 337 are autonomous colleges, 119 central higher education institutions, 118 deemed universities, 396 private universities, 403 state universities and 54 central universities (Packer, 2024). The diagram mentioned below shows the process of getting academic credit in ABC.

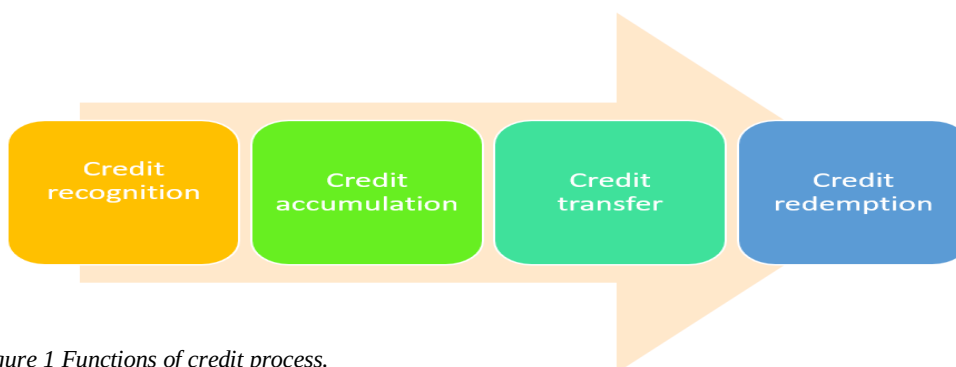


Figure 1 Functions of credit process.

Despite the abovementioned benefits of ABC, many critics are sure of the efficacy of ABC. They resist it in several grounds. Firstly, the teaching fraternity has found several practical difficulties such as absence of manpower, funding, infrastructure, and communication to make the system work. The procedure of transferring credits for each semester or term is an uphill task. The lack of guidelines on student selection for restricted number of seats is a problem that needs a solution. Secondly, as a technology-led system the outcome of ABC is directly dependent on readiness of the educational organisations. There is a lack of tough management support and training due to which many institutions may struggle to embrace the new system. Thirdly, there is an absence of standardisation in the Indian educational setup because of varying syllabi and course content across universities. This is a hurdle to credit transfer as the equality of courses is a basic assumption for the system to function smoothly (Nitesh Rawat, 2023). The role of standardisation is impeded by the curricular disparity across India's education at higher level in both central and state level. This has led to a fear of damage of reputation by accepting credit from low grade programmes. The success of ABC is dependent on a noble solution which can bypass this academic conflict, maybe by instituting a stratified system that acknowledges different standards by supporting a national credit structure. Finally, students can find the process of making an ABC ID challenging especially with the Aadhar verification procedure (Vasava, 2023). Due to digital divide students of rural areas can face problem like unfamiliarity with platforms like Digilocker or limited internet connectivity. There are concerns regarding the difficulty in handling the transfer process. The online learning component has the possibility of limiting the scope for peer interaction and may cause displacement of faculty and increase in contractualization of teaching post.

Comparative Analysis of Credit Systems

It is important to compare ABC's place in the global educational scenario with the mature credit systems of various nations which have negotiated similar hurdles. The ABC is Analogous to models in the United States and Europe with some variations uncovering its distinctive

complication of its outline and implementation. The United States have implemented a decentralised system mainly grounded on the Semester Credit Hours (SCH) or Quarter Credit System (QCS) according to the federal regulation, one college credit hour is approximately equivalent to 60 minutes of classroom instruction+ 2 hours of independent work per week for a term of around 15 weeks(Neha Vashistha, 2022). An undergraduate degree usually asks for 120 semester credits. The accreditation bodies provide some standardisation but the individuals universities have the autonomy to frame their own policies for credit transfer which induces case by case evaluations of a student's credits earned in past. The European Credit Transfer and accumulation System (ECTS)is an established means for comparing credit points across post-secondary level education in the European union and other cooperating European nations(Packer, 2024). ECTS is a primary integrant of the Bologna Process, which tries to bring harmony in the higher education across the European continent to expedite the mobility of both faculty and student. A core tenet of ECTS is its highly regulated workload calculation. "One scholastic year is comparable to 60 ECTS credits, which usually implies 1500-1800 hours of a student total volume of work, which comprises of self-study, seminars, and lectures. The resounding success of ECTS is attributed to its role as a promoter of immaculate mobility and the installation of a common regulatory space for tertiary education within an economic and political union.

Lessons from International Model for India's ABC

The ABC has an ambitious aim to develop a virtual apparatus which blends the useful feature of both the USA model and the ECTS model while considering the special challenges of India's diversity and magnitude. India has adopted a hybrid approach. The ABC is a centralised framework which is like the standardisation of ECTS. It has been crafted to get over the administrative friction and fragmentation which is visible in a decentralised system of USA. The ABC gives a unified digital archive or repository which presents a "Single verifiable source of truth," a feature not present in the USA model. India has promptly solved the issue of scale vs. standardisation. The ECTS functions within an economy and political union, where associated states have a common goal and a degree of parliamentary harmonisation. India's ABC manages a similar purpose within a domestic environment only which has a lot of diversity as well as a humongous number of educational institutes, Many of which function with differing quality standard and curricula. This is the toughest balance to strike. The government of India proceeded to do away with quality base criteria for registration which has increased access and the disagreement all the same with the foremost institutions which are more quality focused and are decentralised in nature. The models of different country have depicted that the effective execution of a credit system rests on a fine balance between institutional autonomy and standardisation. The ECTS model emphasizes on a shared field work which underscores the necessity of enforcing common standards in India to make sure of a smooth credit transfer experience.

Conclusion

"The ABC is more than just a digital repository; it is an ecosystem designed to empower students and revolutionize the educational landscape. It provides a unique ABC ID to every learner, creating a unified digital identity for all their academic pursuits."

— Academic Bank of Credits (ABC) Official Website

THE Academic Bank of Credits is a revolutionary directive that embodies a new ideology for Indian post-secondary education- one that is personal, fluid, and lifelong. In early 2023 and 2024,

press releases from the UGC and the Ministry of Education announced that the creation of Academic Bank of Credit IDs would be mandatory for all Higher Education Institutions (HEIs). These IDs, which are linked to the Digilocker platform, are presented as a single, verifiable source for a student's academic records, with the goal of creating a "One Nation, One Student ID" (Choudhary, 2024). This initiative is a daring technology-based effort that capitalizes on India's virtual public infrastructure to make a cohesive and reliable academic record for each person. While the assurance of transparency and equity of the system is ambitious, its success is not certain. The continual problems – concerns over quality, institutional resistance, and administrative obstacles – emphasize the reality that a regulation of this scale is an endurance event and not a short run. For the Academic bank of Credit to accomplish its promise, it must mature from a hierarchical directive to cooperative effort, where the targets of availability and excellence are sought in harmony and not in disagreement. By tackling with these core pressures with evident and workable solutions, India can redefine academic pathways for millions of learners for and set worldwide benchmark for how a heterogeneous and vibrant country oversees its academic prospects in the 21st century.

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Foundational Stage Reforms under NEP 2020 and Related Policy Initiatives

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Abstract

India's recent reforms in early childhood care and education (ECCE) have brought a significant change in the way basic education is understood and provided. Guided by the National Education Policy (NEP) 2020, children aged 3-8 are officially included in the school system for the first time in the new 5+3+3+4 structure of schooling. The first five years constitute the foundational stage, which consists of the first 3 years of preschool and the first two years of formal education. This step reflects the belief that the initial period is crucial for building a strong foundation for school education and further. To achieve this goal, many interconnected initiatives have been introduced. For example, the National Initiative for Proficiency in Reading with Understanding and Numeracy (NIPUN) Bharat Mission has set a national target to ensure that all children acquire FLN (Foundational Literacy and Numeracy) skills by 2026-27. In addition to this, the National Curriculum Framework for the foundation stage (NCF-FS) 2022 promotes an approach that is flexible, activity-based and rooted in the child's mother tongue. Practical resources such as the Jaadui Pitara Kit and programmes like Bal Vatika provide solid support for teachers and learners, helping to make classrooms more engaging and inclusive. However, the actual effect of these reforms will depend on the solution of the problems of teachers, their professional training, and child-friendly infrastructure.

Keywords: Early Childhood Education, NIPUN Bharat mission, National Curriculum Framework for Foundational Stage, Jaadui Pitara and Bal Vatika.

Introduction

The Indian education system has faced significant challenges with its structure in the past. Developmental years from ages three to six, known as early childhood, are a crucial stage for a child's physical, socio-emotional, motor and cognitive development (Kaul and Sankar 2009; Kaul 2019; Kumar 2023) were largely excluded from the formal education system. According to "10+2" model, Formal schooling begins at the age of six, with class 1, which means that millions of children are not in a formal education during these crucial years of their development. This disregards decades of scientific evidence indicating that over 85% of a child's brain development occurs before the age of six, making this period crucial for cognitive, physical, socio-emotional, and moral development (NEP, 2020).

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Early Childhood Care and Education (ECCE) is a very diverse area of Education spanning from zero to eight years, including both parent education programmes, informal home child care, pre-primary education and the first two years of formal education UNICEF (2017).

Access to high-quality Early Childhood Care and Education (ECCE) is essential for fostering children's fundamental learning, which is vital for their long-term educational, social, and economic success (UNICEF & UNESCO, 2024). According to the Global Report on Early Childhood Care and Education: The Right to a Strong Foundation (2024), the Tashkent Declaration and Commitments to Action (2022) established four pillars as principles for transforming early childhood care and education in order to ensure quality, such as Equitable and inclusive quality ECCE services for all, ECCE personnel, Innovation for advancing transformation and Policy, governance and financing. In India, the National Education Policy (NEP) 2020 introduces a comprehensive framework for transforming the education system, aiming to bridge the shortcomings of earlier policies and establish a foundation for lifelong learning.

The 10+2 structure, which was very strict, has been replaced by a more flexible 5+3+3+4 model. The NEP 2020 emphasises a reorganisation of curricula in line with the developmental needs of learners, with a particular focus on embedding the curricula in Indian cultural values alongside twenty-first-century skills (Bhardwaj, Ranjan, and Sharma, 2024). The first five years of this new structure, called the "Foundational Stage," are designed for children between the ages of three to eight. A strong foundation of ECCE is also included, starting at the age of 3, to improve overall learning, holistic development and wellbeing (Ministry of Human Resource Development, 2020). This marks the first time that the Indian education system has formally acknowledged and included preschool children (NEP, 2020).

The Foundational Stage emphasises a comprehensive, multi-layered and adaptive learning approach focused on play, activity and exploration. The core philosophy states that overemphasising the teaching of the "3Rs" (reading, writing and arithmetic) at this young age is not effective, as this is closely linked to cognitive readiness. Instead, the goal is to achieve the best outcomes in critical areas of development, including attaining milestones in physical and motor skills, cognitive development, social-emotional and moral development, as well as early language, communication, and foundational numeracy skills. This stage aims to make learning enjoyable, accessible and child-centred, helping them develop holistically and prepare them for school by the time they enter Class 1. (NEP, 1986, 2020)

Many interlinked policies and programme have had to be implemented to make this idea a reality. The New Education Policy (NEP) 2020 lays the foundation for transforming the school system into a 5+3+3+4 (foundational, preparatory, middle, secondary stage) model. The National Core Curriculum Framework (NCF-FS) 2022 is a framework for teaching and learning for children aged 3 to 8 years. The NIPUN Bharat Mission has set a national target to ensure that all children can read, write and do basic numeracy by the age of 8. Programmes such as Bal Vatika, a preparatory class, and Jaadui Pitara, a resource kit that promotes play-based learning in schools, help realise these goals. The Integrated Teacher Education Programme (ITEP), with its specialised Foundation stage BA B.Ed., BSc B.Ed. or B. Com B.Ed. is very important because it aims to make teachers more professional and prepare them to meet the goals of NEP 2020 and NIPUN Bharat. An analysis of the recent initiatives is given in Table 1 below:

Table 1: Policy Synthesis and Connections

POLICY INITIATIVE	MAIN OBJECTIVE	TARGET AGE GROUP	KEY INTERCONNECTION
NEP 2020	Overarching policy for education reform: introduces the 5+3+3+4 structure.	All stages of education	The foundational vision and guiding principles for all other policies.
NCF-FS 2022	Develop a developmentally appropriate curriculum for the Foundational Stage.	3 to 8 years	Translates the NEP's ECCE vision into a pedagogical and curricular blueprint. Informs the design of programmes like Bal Vatika and materials like Jaadui Pitara.
NIPUN BHARAT MISSION	Achieve universal Foundational Literacy and Numeracy (FLN).	3 to 9 years (Grades 1-3)	Provides a time-bound, measurable goal (by 2026-27) for the Foundational Stage. Drives teacher training and assessment efforts.
BAL VATIKA	Establish a preparatory class for children before Grade 1.	5 to 6 years (Preparatory Class)	Provides the physical and structural mechanism for children to transition to formal schooling, aligning with the Foundational Stage.
JAADUI PITARA	Provide a play-based, high-quality teaching and learning resource.	3 to 8 years	A tangible, NCF-aligned tool that supports the play-based pedagogy of the Foundational Stage and the FLN goals of NIPUN Bharat.
ITEP	Reform teacher education and professionalise the teaching force.	Aspiring teachers for the foundational stage	The long-term strategy for building the specialised human capital required to effectively implement the NEP's Foundational Stage curriculum and achieve the NIPUN Bharat goals

The NCF-FS 2022

The National Curriculum Framework for the Foundational Stage (NCF-FS) 2022 is crucial because it turns NEP 2020's philosophical vision into a practical guide for educators and policymakers. It marks a major shift from Indian education's textbook-focused, memorization-focused approach. The NCF-FS believes children learn best by playing. It believes play is the best way to develop children's curiosity, creativity, and analytical skills. The NCF-FS promotes comprehensive early childhood education. This underlines that the curriculum should be the "totality of organised experience" of children, not only academic courses. Physical and motor development through free play, guided play, coordination, movement, and exercise; social-emotional and moral development through teamwork, empathy, and shared responsibilities; cognitive development through puzzles and logical problem-solving; and cultural/artistic development through music, art, and storytelling. These are necessary for basic literacy and numeracy.

NCF-FS is a guiding framework, not a curriculum. With this flexibility, teachers, schools, and states can tailor the recommendation to students' needs. Considering India's linguistic and cultural diversity, this is a complex political decision. The NCF provides concepts, objectives, and frameworks for states to design their own curricula, study programmes, and localised teaching-learning tools. States can adjust educational content to local languages and cultures, improving

learning outcomes and participation, especially in multilingual regions. Decentralised innovation is promoted while ensuring national quality and homogeneity.

The NIPUN Bharat Mission: Promoting Universal Foundational Literacy and Numeracy

The Indian government launched the NIPUN Bharat Mission (National Initiative for Proficiency in Reading with Understanding and Numeracy) in July 2021 under the centrally sponsored Samagra Shiksha Abhiyan to solve this critical problem. The goal is to ensure that every child in the country masters reading, writing, and maths by Grade 3 by 2026–27. According to the National Education Policy (NEP) 2020, foundational learning is key to educational reform and competency-based, experiential learning begins in early life. NIPUN Bharat transitions from rote memorisation to competency-based education with defined learning outcomes (Lakshya Soochi), NISHTHA-FLN teacher training, and a comprehensive assessment and monitoring framework. Curriculum overhaul, technological integration, community participation, and ECCE alignment are part of its holistic strategy.

Three main pillars support the implementation of NIPUN Bharat Mission:

1. **Teacher Capacity Building:** The mission aims for a well-trained group of teachers, addressing staff shortages through training programmes like NISHTHA (National Initiative for School Heads' and Teachers' Holistic Advancement) for teachers and Anganwadi workers, especially in the new play-based methods.
2. **Creation of Quality Learning Content:** The mission prioritizes high-quality resources for teachers and students, which is crucial for transforming teaching methodologies.
3. **Assessment and Monitoring:** NIPUN focuses on tracking student performance using Foundational Literacy Skills (FLS) to identify learning gaps. This feedback supports timely interventions and necessary policy updates.

There is a reason why the Nipun Bharat Mission is considered the “top priority of the education system.” The mission provides a strong and urgent reason to implement foundational stage reforms. The NCF-FS gives teachers advice on how to teach, but without clear goals from NIPUN, this framework can be used in name only, and there will be no real accountability for results. NIPUN gives all other projects a way to measure success by setting a clear goal (FLN by Class 3) and a fixed deadline. This is why the “Jaadui Pitara” and other teaching tools have the NIPUN logo, and this is why NISHTHA focuses on FLN when training teachers. These pieces are not just a bunch of good ideas; they are all working together to reach an important goal of universal basic education.

Implementing the Policy: Bal Vatika and Jaadui Pitara

The broad vision and mission-driven goals of ECCE reform require concrete programme and tools to be implemented at the ground level. The Bal Vatika is an additional year of preschool as per the NEP 2020; it is included in the five years of the foundational stage of schooling. The Bal Vatikaprogramme and the “Jaadui Pitara” teaching kit perform this vital function by teaching teachers the “where”, “what” and “how” of the new Foundational Stage curriculum.

Bal Vatika: Bridges to Real Life

Bal Vatika, which means “children's garden”, is a class for five- to six-year-olds that starts just before Class 1. The programme is a practical and innovative way to solve a problem that affects the entire system. It aims to become a vital link between Anganwadis (Integrated Child Development Services Centres) and formal primary schools. This makes it easier for children to

move from a less formal environment to a more structured one. The Bal Vatikaprogramme is essential because it is used in government primary schools, often in buildings that have become vacant due to school expansions or a decline in enrollment. This happens when existing government primary school buildings are left unoccupied due to enrolment declines or school expansions. Rather than being left unutilised or allowed to decay, these resources are transformed into Bal Vatika centres.

This innovative approach addresses infrastructure problems by transforming existing public property into age-appropriate spaces for ECCE. The goal of the programme is to help children get used to school through a number of different play-based activities such as role-playing, telling stories, playing games, and solving puzzles. This will help them prepare for the academic rigour of Class 1 and also help with their social and motor skills.

Jaadui Pitara: A tool that makes learning fun

On February 20, 2023, the government launched “Jaadui Pitara” (Magic Pitara) to help in play-based learning for the foundational stage. This all-inclusive learning tool is designed for children aged three to eight years and is based on the ideas of NCF-FS 2022 and NIPUN Bharat Mission. This kit is not just a collection of toys; it is a complete curriculum that includes many different items like toys, puzzles, puppets, posters, flashcards, story books and worksheets.

“Jaadui Pitara” is a great resource that makes the idea of play-based learning easy to understand and real for teachers and parents. It is available in 13 Indian languages, and a digital version (e-Jaadui Pitara) has also been created to make it easier for more people to use and participate. CBSE has clearly instructed schools with Bal Vatika to set up a separate space for ECCE, and it has also advised the use of the “Jaadui Pitara” (CBSE, 2024). The Bal Vatikaprogramme provides the physical space and structure for the programme, and the “Jaadui Pitara” provides the high-quality, standardised learning materials needed to implement the curriculum. Both of these projects need to work in concert with each other. A dedicated space will not work without good learning materials, and the best materials will not be available without a good environment and programme structure.

Building the future teacher cadre: Integrated Teacher Education Programme (ITEP)

The success of a visionary policy and the efficient use of new tools depend on the skills of the teachers who are responsible for implementing them. The National Education Policy 2020 recognises this by introducing the Integrated Teacher Education Programme (ITEP) as a revolutionary, sustainable approach to reform and professionalise the teaching workforce. It is a four-year, dual-major undergraduate programme that combines a bachelor’s degree (B.A. or B.Sc. or B.Com.) with a B.Ed. Degree. This allows students aspiring to become teachers to complete their studies in a shorter timeframe. (NCTE, 2021)

Stage-specific specialisation is a key part of ITEP, designed in line with the new 5+3+3+4 school structure. The Foundation Stage specialisation in ITEP is designed to prepare student- teachers to work with young children between the ages of three to eight in Anganwadis, Blavatniks and Classes 1 and 2. It provides them a firm grounding in ECCE and Foundational Literacy and Numeracy (FLN), equipping them with the specific teaching skills needed for this age group. The curriculum emphasises playful and hands-on learning with the use of real-world objects, such as toys, puzzles and simple manipulative objects, rather than traditional textbooks, which are used only in Grades 1 and 2. The programme also aims to help children transition smoothly from their home language and environment to the school language and environment.

ITEP is not just another programme to train teachers; it is the most important long-term solution to the shortage of skilled professionals that could otherwise doom the entire ECCE reform agenda (Altaf & Haider, 2025). A significant problem is that there are not enough qualified, specialist Foundation Stage teachers. This is because primary school teachers, who do not have the appropriate skills for ECCE teaching methodology, are often tasked with teaching young children. Short-term programmes like NISHTHA are essential and useful. Still, ITEP offers a long-term, systematic solution by ensuring that a group of expert teachers are trained from the very beginning of their careers. To effectively utilise the NCF's play-based curriculum and "Jaadui Pitara", a teacher workforce skilled in these specific pedagogy methods is needed. The policy suggestion that ITEP will be the only way for teachers to be engaged from 2030 reflects a strong, visionary commitment to continuing the entire reform mechanism.

Implementation status and critical analysis: progress and current issues

The transformative policies of NEP 2020 have been in place for a few years now, and it is important to look at how they are working in practice, and also note their pros and cons. The evidence from the Annual Status of Education Report (ASER) 2024 provides a valuable, data-based perspective on the progress made in ECCE since the policy was implemented (Banerji, 2022).

Current Progress

The ASER 2024 results show that access to early education is improving rapidly and well. According to the report, children in rural India who are three, four or five years old are now spending more time in preschool. In 2024, nearly 80% of three-year-olds will be in some form of early childhood education programme, up from 68.1% in 2018. The enrolment rate for four-year-olds was nearly 85%, and for five-year-olds, it was 83.4% (Banerji, 2022).

Another major success is that children are attending government primary schools at younger ages. This positive trend, seen in almost all states, shows that programmes like Bal Vatika are working. They give children a good and age-appropriate alternative to rushing into formal schooling. The report also indicates that parents, especially mothers, are performing much better in school, which is an excellent opportunity for policy to leverage community involvement in a child's learning journey, as the Nipun Bharat and NCF-FS frameworks suggest.

Existing problems: Gap between policy and practice

Although these efforts have been successful, a critical look reveals a considerable gap between the policy approach and how it is being implemented in real life, especially in terms of the quality of education. Several existing problems may make these reforms less successful in the long run.

- 1) **Teacher Recruitment:** There is no dedicated process for hiring early childhood teachers, leading to untrained primary teachers instructing young children, which impacts educational quality (Baragade, Raut, & Jadhav, 2025).
- 2) **Infrastructure:** Many schools lack child-friendly facilities, such as appropriate furniture and safe play areas, which affects attendance and teacher motivation (Baragade, Raut, & Jadhav, 2025).
- 3) **Teacher Support:** Post-training support is insufficient for teachers, hindering the implementation of reforms (Baragade, Raut, & Jadhav, 2025).
- 4) **Language Barriers:** Students from linguistic minority communities face challenges when taught in a language different from their own (Baragade, Raut, & Jadhav, 2025).

For effective ECCE reforms, clear goals and substantial investment in teacher training are essential, as systemic issues can hinder progress.

Table 2: Implementation Progress and Challenges

AREA OF IMPACT	SUCCESSES (BASED ON ASER 2024 & OTHER DATA)	CHALLENGES (BASED ON ACADEMIC ANALYSIS)
ENROLMENT & ACCESS	Significant increase in pre-school enrolment for ages 3-5 in rural India; nearly 80% of 3-year-olds are enrolled in some programme by 2024.	Anganwadi workers remain underpaid and overburdened, impacting quality; Private pre-schools remain a significant component of the ecosystem, creating quality disparities.
UNDERAGE ENROLMENT	Positive decline in the proportion of children aged 5 and below enrolled in government primary schools (from 30.3% to 18.2% nationally).	Some states, like Rajasthan, still show an increase in underage enrolment in schools alongside rising Anganwadi enrolments.
TEACHER TRAINING	Widespread completion of NISHTHA-FLN training modules; The launch of ITEP for Foundational Stage specialization has begun.	Lack of dedicated recruitment for Foundational Stage teachers; Current primary teachers are often reassigned without specialized skills; Insufficient post-training support and mentoring for educators.
INFRASTRUCTURE & RESOURCES	The Bal Vatikaprogramme repurposes vacant primary school buildings; Launch of "Jaadui Pitara" provides a high-quality, standardized learning kit.	Many schools and Anganwadis lack child-friendly infrastructure, including low-height furniture, dedicated play areas, and proper sanitation facilities.
FOUNDATIONAL LEARNING	FLN levels have largely recovered from learning losses caused by the COVID-19 pandemic.	Language barriers, particularly for children from tribal and linguistic minority groups, persist and hinder learning outcomes

Conclusion

The analysis shows that India's recent policy changes in ECCE, which are based on NEP 2020, are a well-planned and coordinated effort to fill a major gap in the country's educational history, Foundational stage, NCF-FS 2022, Bal Vatika and ITEP are not separate programmes; The National Education Policy (NEP) 2020 introduced Balvatika classes (3-6 years age group) to strengthen the foundational stage, but their implementation is limited. Although Balvatika have been introduced in some Kendriya Vidyalayas, CBSE schools in states like Haryana, many schools still face challenges such as space, trained teachers, low enrolment and curriculum alignment. While the vision of the policy is well defined, only a few schools have adopted it so far, and for wider implementation, schools will require more resources, awareness and time.

ASER 2024 figures show that access to ECCE is improving, but there are still problems, especially when it comes to ensuring that education is good. There is a gap between policy and practice that needs to be bridged because there are not enough dedicated teachers for the foundation stage, not enough resources, and teachers are not getting enough long-term support.

To make the most of these changes, everyone needs to work together to overcome the problems that have come up. Also, focusing on a mother-tongue-first approach, focusing on adapting the curriculum to local needs can help overcome language barriers and ensure that no child is left behind.

Ultimately, these programmes are more than just changes in the education system; This is a big investment in India's future. The aim of these policies is to make the education system fair and of the highest quality by focusing on the holistic development of children and creating a strong foundation for lifelong learning.

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Vocational Education in Indian Schools under NEP 2020: Bridging Policy and Practice

Yoshita Rastogi¹

Abstract

Vocational or technical education prepares learners for a skilled craft required to complete a particular job. This type of education is considered essential as it provides students with the necessary skills in a relatively short span of time. It is also referred to as professional or career education or acronyms such as Technical and Further Education (TAFE) and Technical and Vocational Education and Training (TVET). Vocational education has gained wide exposure in India under National Education Policy (NEP 2020), which envisions early exposure to skill based learning from grade 6th in schools. The policy proposes reconstruction of education, including the educational system and governance to establish a new structure that aligns with the goals of 21st century learners. The policy states that by 2025, at least 50% of students in school and higher education should be exposed to vocational education. Every child will study at least one vocational subject and be exposed to many more as per their preference. This paper examines the NEP 2020 policy in light of vocational education using data from NSDC and NSSO to analyse the extent to which the policy recommendations have been translated into practice. It also identifies key challenges in implementation and focuses on the importance of policy coherence and implementation monitoring to fully utilize the potential of vocational education in India.

Keywords: Vocational Education, NEP 2020, Indian schools, Skill India, School Industry Linkages, Job Readiness.

1. Introduction

Vocational Education (VE) is a significant step in India's educational initiatives. The National Education Policy (2020) recognises the significance of vocational education, and the Ministry of Education (MOE) has already taken several initiatives in this area. The policy has changed the key elements of vocational education to make it more accessible, flexible and contemporary as per today's needs. According to India's 12th five year plan, only a minor proportion of Indian workforce in the age group of 19-24 have received vocational training compared with other nations. For example, participation in VET in the USA is 52% and in Germany it is 75% and 96% in South Korea. These statistics show the requirement of vocational education in India.

These figures highlight the need for vocational education in India. It is important to note that one of the major reasons for the small number of students receiving vocational education is that it is largely focused on grades 11 and 12 and the majority of students drop out after class 8 onwards.

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Additionally, students completing grades 11 and 12 with vocational subjects often lack well defined career pathways to continue their chosen vocational field beyond secondary education. NEP 2020 suggests that vocational education should be introduced by 6th grade so that students can develop necessary skills for higher education and access to better pathways for employment.

In government schools, students in grades 6-8 participate in a 10 day bagless period where they work with local experts such as carpenters, potters, gardeners and artisans. Similarly, internship opportunities for learning vocational subjects are also available to students from grade 6 to 12. Moreover, NCERT has developed detailed guidelines for vocational education. As a result, students can develop a clear understanding and a positive attitude towards vocational education and lifelong learning. Skill Based Aptitude Tests (SBAT) are introduced for students to provide guidance for career choices.

This study aims to examine policy push under NEP 2020 for vocational education and analyze whether it is translated into industry outcomes. It draws data from NSDC and NSSO to identify gaps in school industry linkages and propose strategies for strengthening the effectiveness of vocational education in India.

2. Literature Review

In India, vocational education has suffered neglect and low societal value for several years. The 12th five-year plan (2012-2017) highlighted that less than 5 % of India's age group from 19 to 24 had formal vocational education in comparison to other countries such as South Korea and Germany. This shows the urgent need for structural reforms and large scale expansion of skill

based education in the country. A major step was taken with the National Skills Qualifications Framework (NSQF) in 2013 which aimed to provide certification and enable movement between academic and vocational streams. However its implementation was not successful due to weak institutional support and slow acceptance by workers. Scholars on the other hand have highlighted the persistent issues of stigma and limited opportunities. Saxena (2020) emphasized that vocational education is viewed as a second class option for dropouts but the National Education Policy (2020) has promised to transform this perception by mainstreaming vocational learning from the middle school stage. His analysis highlighted NEP's universal approach and curriculum flexibility for students on experiential learning and emphasized on the fact that its successful implementation depends on teacher training, infrastructure and state level readiness. Naveen (2022) noted that the NEP 2020 sets an ambitious goal of providing vocational education to at least 50% of students by 2025. He highlighted the role of industry partnerships, ITIs and polytechnics in achieving this vision along with a credit based framework to reduce the stigma of skill based education. Burai (2024) emphasizes the policy's focus on early vocational exposure and a flexible curriculum to enhance employability while also understanding the challenges such as societal bias towards vocational streams. Srivastava (2022) explored that vocational courses require skilled trainers and financial assistance to address the gaps that hinder the implementation process. Moreover, Vats and Malik (2024) highlighted the policy's emphasis on vertical and horizontal mobility through NSQF. This study evaluated the implementation progress of the NEP 2020 with a focus on general and vocational education. Parveen (2023) critiques shortcomings of vocational education and raises concerns over premature tracking of students, stressing inclusivity and adaptability as important factors. Lastly, Kaviyarasu and Deivanathan (2024) found that vocational education is a paradigm shift towards economic autonomy and global competitiveness and highlighted its importance in India's development goals.

Overall, the literature explored NEP 2020's potential to bridge India's skill gap while also focusing

on challenges that include infrastructure, societal perceptions and teacher preparedness in light of vocational education.

3. Policy Landscape

The National Education Policy (NEP) 2020 marks a paradigm shift in India and emphasizes the importance of early exposure to vocational skills alongside academic subjects so that relevant skills are developed at the right time. This will ensure a flexible and multidisciplinary education system in which students can explore and develop practical skills while continuing formal schooling. The policy aligns closely with National initiatives like Skill India program which aims to train millions of youth in industry relevant skills and National Skill Development Corporation (NSDC) which provides infrastructure, funding and certification for vocational programs. According to NSDC statistics, thousands of schools have introduced vocational courses across multiple sectors from IT and healthcare to manufacturing and entrepreneurship. Similarly, the National Sample Survey Office (NSSO) indicates that there is growing enrollment in skill based programs among secondary school students. Despite many initiatives, challenges exist in ensuring uniform implementation, industry relevance and social acceptance of vocational tracks.

4. Implementation Framework

National Education Policy (NEP) 2020 envisages building principles of vocational education at school level but needs to have a clear multi layered framework for its implementation in more effective way. At the National level, the Ministry of Education and bodies such as the National Council of Educational Research and Training (NCERT) and National Skill Development Corporation (NSDC) provide guidelines for skill development of students and curriculum. National Skills Qualifications and Framework (NSQF) ensures that school based vocational courses are aligned with industry standards.

At state level, State Councils of Educational Research and Training (SCERT) and District Institutes of Education and Training (DIET) are the key implementing bodies as they are responsible for developing curriculum, preparing teachers and ensuring that vocational courses are aligned with market needs for better output. NEP 2020 gives importance to collaboration between schools and encourages partnership between Industrial Training Institutes, skill centres, polytechnics and others. These partnerships help in bridging the gap between classroom instructions and workplace realities.

The availability of and qualified vocational teachers still remains a challenge. In order to address this, NEP 2020 proposes a twofold strategy:

1. Pre-service training – It includes inclusion of vocational pedagogy in teacher education programmes.
2. In-service training – It includes short-term refresher courses, both online and offline, offered by SCERTs, DIETs, and national training institutes.

Curriculum Integration

The National Education Policy focuses on vocational subjects to be offered from Grade 6 onwards with flexibility so that students can choose subjects as per their choice. This approach allows students for multiple entry and exit points. Moreover, skill based learning is combined with academic subjects so that vocational subjects do not remain a separate task for students and it becomes an integral part of holistic education.

5. Recommendations for Vocational Education

National Education Policy 2020 highlights the potential growth of vocational education in India as it requires every educational institution to include vocational education in its curriculum. Following are some key recommendations:

- The policy recommends organising awareness programmes for students should be conducted to change their overall mindset and attitude towards vocational education.
- The policy aims to change the curricula in terms of inclusion of vocational knowledge and skills, improving course alignment with skill standards and interdisciplinary content linkages.
- The policy advocates the introduction of LokVidya (local knowledge and practices) into schools through vocational education. It relies on community and industrial collaboration to offer vocational exposure through informal internships.
- The policy recommends collaboration with ITIs, polytechnics, local industries, companies, hospitals and agriculture farms, local artisans and NGOs through the Hub and Spoke Model to offer skill training that is relevant to the specific jobs available in that area.
- The policy suggests introducing vocational courses on new and emerging industry skill demands from grade 6 onwards. Examples of these industries include Robotics, Artificial Intelligence and Internet of Things (IoT).
- The Government of India's National Policy on Skills Development and Entrepreneurship (2015), encourages online vocational education through MOOCs and other e-learning systems using flipped classrooms.
- This policy also encourages the use of interest assessments and aptitude tests, to help identify each learner's strengths, skills and capabilities, so that they can make informed choices regarding the vocational career options available to them.
- The policy states that courses under National Skills Qualifications Framework (NSQF) or National Higher Education Qualifications Framework (NHEQF) will enable students to achieve vertical mobility with vocational subjects at school level.
- The policy emphasises building capacity of vocational teachers to use innovative pedagogical methods for effective teaching and training.
- The policy provides pre-service training and short-term training for vocational teachers that is offered online and offline through the SCERTs/DIETs.

6. Illustrations of Policy in Action

NEP 2020 discussed vocational education and several states are demonstrating how policy can be effectively translated into practice. Following examples highlight approaches to implementation:

- 1) **Delhi:** Entrepreneurship Mindset Curriculum (EMC)- Government of India introduced the Entrepreneurship Mindset Curriculum in 2019 to nurture creativity and problem solving skills among students. It introduced initiatives like Business Blasters in which they provided seed money to students to start their businesses or design new ideas. The curriculum empowers students in taking charge of their career path in employment or entrepreneurship.
- 2) **Kerala:** Vocational Higher Secondary Schools (VHSS) - Kerala has been working on vocational education for a long time. Its network of Vocational Higher Secondary Schools (VHSS) offers

a wide range of options including structured training, skill development, ICT enabled classrooms and other facilities for promoting flexible and hands-on learning experience.

- 3) **Gujarat:** Expansion of Vocational Schools- In Gujarat, government approved 589 new secondary and higher secondary vocational schools under Samagra Shiksha Abhiyan in 2022. These schools offer 13 new courses to students such as agriculture, automotive, beauty and wellness, electronics, food processing, tourism, IT and others. Each vocational trade is required to have a minimum intake of 40 students and the medium for these courses is Gujarati.

7. Implementation Challenges

Despite many efforts by the Government of India, there still exists a significant disconnect between schools and industry which acts as a hindrance in the effectiveness of vocational education in India. NEP 2020 emphasises internships and apprenticeships in schools so that students can gain hands-on experience but many schools face challenges in establishing meaningful collaborations with industries. Several vocational courses in schools focus only on theoretical knowledge rather than practical and skill based competencies which are required by employers. Due to this, students graduate from vocational courses without any technical or soft skills necessary for the modern workplace. Also, schools in rural areas have insufficient resources such as labs, tools and skilled teachers which prevent students from gaining real industry skills. The availability of better resources in urban schools often lead to inequalities in skill acquisition between rural and urban students. Moreover, many students and parents still view vocational education as a less respected pathway as compared to traditional academic streams. This affects students' motivation and lower enrollment in vocation courses. NEP 2020 has set out clear targets like vocational exposure from grade 6 and integration with skill India, the practical rollout is uneven across schools. There is lack of proper teacher training and industry engagement, therefore limiting policy effectiveness. All above mentioned gaps highlight the policy practice disconnect. It is important to address these issues so that students can become job ready and aligned with industry requirements.

8. Conclusion

The National Education Policy (NEP) 2020 highlights the importance of vocational education and the capacity building of teachers to enhance students employability and vocational skills at school and college levels. The Policy provisions like exposure since grade 6 and collaboration with NSDC will provide a strong foundation for developing relevant skills alongside academic learning. However, as the analysis indicates, there continues to be a disconnect between the intent of the policy and what actually occurs. There exist weak school industry linkages, curriculum misalignment and social stigma which continues to hinder the effective implementation of vocational programmes. In order to achieve the full potential of the National Education Policy (NEP) 2020, it is important to strengthen industry partnerships and update curriculum with market requirements while also addressing societal perceptions of vocational education. In a nutshell, to effectively address these obstacles, there must be a unified effort between the school system, the business community, and government agencies. If we address these challenges strategically, India can ensure that students not only acquire skills but are also prepared to contribute effectively to the workforce and country's national economy.

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Evolution of Policy Initiative in Special Education: Document Analysis of NEP 2020 and RPWD Act 2016

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Abstract

The evolution of policy initiatives in special education in India reflects an ongoing commitment to inclusive and equitable learning for children with special needs. This comparative document analysis examines the National Education Policy (NEP) 2020 and the Rights of Persons with Disabilities (RPWD) Act 2016 to explore their convergences, divergences and collective impact on special education reforms. The RPWD Act 2016 provides a legal framework ensuring the rights, accessibility, and non-discrimination of learners with disabilities, whereas the NEP 2020 translates this mandate into actionable strategies through curriculum flexibility, teacher training and technology integration. The comparative analysis reveals that both the policies share a common vision of inclusion, yet differ in their operational approaches-the RPWD Act being legislative and rights-based, while the NEP is strategic and implementation oriented. Despite progressive intent, challenges persist in coordination, resource allocation and monitoring. The study emphasizes the need for policy coherence and systemic collaborations to strengthen inclusive education practices in India.

Keywords: Special Education; Inclusive Education; NEP 2020; RPWD Act 2016; Policy Evolution; Educational Rights; Accessibility.

Introduction

Indian education has seen a dramatic transition, shifting away from a segregation-based, charitable approach to disability education and toward a more rights-based, inclusive model. The twenty first century was witness to this acceleration and this came to a head in two landmark policy papers that, in essence, revolutionized educational provisions for children with disability.

The Rights of Persons with Disabilities (RPWD) Act of 2016 signaled a ground breaking shift from conventional methods, bringing India in line with the UN Convention on the Rights of Persons with Disabilities. This landmark legislation rejected the medical model of disability, embracing instead a social and human rights-oriented framework that recognized inclusive education as an undeniable right, while requiring access to mainstream schools equipped with appropriate support systems.

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Accompanying this statutory base, National Education Policy (NEP) 2020 enunciates a grand vision of education transformation. NEP 2020 strongly emphasizes equity and socially inclusive education, with special attention to Socio-Economically Disadvantaged Groups (SEDGs) such as children with disabilities. NEP 2020 advocates for versatile curricula, creative pedagogies, and judicious infusion of technology to cater to varying learning needs.

These progressive guidelines represent India's commitment to building a more inclusive educational ecosystem, where every learner, regardless of his ability, will be able to access quality education in regular mainstream schools. This reset will revolutionize the country's response to inclusive education.

Methods

This paper conducts a critical document analysis of the RPWD Act 2016 and the NEP 2020 to examine their collaborative impact on promoting inclusive education in India. It looks at where the legal requirements of the Act and the educational goals of the Policy overlap and work together. The paper also talks about the possible policy effects of this convergence and the ongoing problems that make it hard to put these progressive frameworks into action.

Historical Evolution of Special and Inclusive Education Policy in India

Over the course of seven decades, India's approach to disability education has significantly changed from charity-based models to frameworks based on rights.

Pre-Independence: Christian missionaries and charitable organisations were largely responsible for providing education for children with disabilities. Without a legal framework safeguarding educational rights, special schools functioned independently, sustaining dependency and segregation.

Post-Independence: Welfare provisions were included in the 1950 Indian Constitution, but the emphasis was still on medical and rehabilitative models. The Persons with Disabilities Act (1995), which required free education upto the age of 18, and the National Policy on Education (1986), which first mentioned integrating children with mild disabilities into mainstream schools, were significant turning points. Although implementation was still difficult, the Sarva

Shiksha Abhiyan (2000) placed even more emphasis on inclusion.

Rights-Based Paradigm (21st Century): The Rights of Persons with Disabilities Act of 2016 was a result of India's ratification of the United Nations Convention on the Rights of Persons with Disabilities in 2007. By adopting a social model of disability, expanding disability categories from 7 to 21, and establishing inclusive education as a fundamental right for children aged 6 to 18, this historic law signalled a move away from welfare and towards rights-based approaches.

The Rights of Persons with Disabilities (RPWD) Act, 2016: A Legislative Mandate for Inclusive Education

The Rights of Persons with Disabilities (RPWD) Act, 2016 is a major turning point in the history of disability rights in the context of India. It means a big change from a welfare-based to a rights-based approach, which changes the law for people with disabilities in a big way. This historic law, which is in line with the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), has huge effects on education because it gives a strong legal basis for inclusive education.

Expanded Definition of Disability

The RPWD Act broader and more inclusive definition of disability is one of its most important parts. The Act acknowledges 21 classifications of disabilities, marking a substantial increase from the 7 classifications in the preceding PWD Act of 1995 (Government of India, 2016). This broader definition includes a lot of different kinds of physical, mental, intellectual, and sensory disabilities. For the first time, it also includes autism spectrum disorder, specific learning disabilities, mental illness, and disabilities caused by chronic neurological conditions and blood disorders. This expansion is important because it legally recognises the different needs of a larger group of students and makes them subject to the Act's rules for education.

Inclusive Education as a Legal Entitlement

The RPWD Act makes it clear that every disabled child between the ages of 6 and 18 has the right to an inclusive education. It says that the right governments and local authorities must make sure that all schools they pay for or recognise offer inclusive education. According to the Act, "Inclusive Education" is *"a system of education in which students with and without disabilities learn together and the system of teaching and learning is appropriately adapted to meet the learning needs of different types of students with disabilities"* (Government of India, 2016). This definition emphasises the importance of learning together and the necessity for systemic modifications rather than anticipating the child to conform to an unaltered system.

Key Provisions for Ensuring Inclusive Education

A thorough set of provisions to support inclusive education is outlined in the RPWD Act. Among these are:

- a. The Act expressly forbids discrimination against any individual with a disability when they are applying to any kind of educational institution.
- b. It requires that campuses, school buildings and other facilities be made accessible in compliance with established guidelines. Ramps, accessible restrooms, and other required adjustments are part of this.
- c. The Act presents the idea of "reasonable accommodation," which is defined as "necessary and appropriate modification and adjustments, without imposing a disproportionate or undue burden, where needed in a particular case, to ensure to persons with disabilities the enjoyment or exercise of rights equally with others" (Government of India, 2016). This can entail offering scribes, extending exam times, or modifying course materials.
- d. In line with the objective of full inclusion, the Act highlights the necessity of tailored support measures in settings that optimise social and academic development.
- e. It requires that educators and other staff members receive training on how to support students with disabilities in inclusive environments.
- f. The Act encourages the teaching of children with disabilities through the use of Braille, sign language, and other alternate forms of communication.

The National Education Policy (NEP) 2020: A Vision for an Inclusive and Equitable Education System

The National Education Policy (NEP) 2020 sets out a vision of transformation of India's education system with a great focus on shaping an inclusive and equitable education eco-system for everyone. While the RPWD Act gives the legal framework for inclusive education, the NEP provides an overall roadmap for its pedagogical and structural adoption. The emphasis in the policy on flexibility, curricular changes, teacher capacity development and technological integration sits harmoniously with the provisions of the RPWD Act, producing a synergy for transformation.

Equity and Inclusion as a Cornerstone

One of the key characteristics of the NEP 2020 is its absolute focus on equity and inclusion. The policy identifies that certain segments have traditionally been excluded from the education system and require special interventions for their full inclusion and success (Ministry of Human Resource Development, 2020). In this context, the NEP proposes the idea of Socio

Economically Disadvantaged Groups (SEDGs) is a generic group that encompasses gender identities, socio-cultural identities, geographical identities, disabilities, and socio-economic status. By making it a point to include individuals with disabilities as part of this group, the policy makes a commitment to meet their educational needs as part of the larger agenda of equity (Sarkar, 2020).

Flexible and Responsive Curriculum

The NEP recommends flexible and multi-disciplinary curriculum which responds to the unique learning preferences, requirements, interests, and abilities of all students. This is a contrast to the more rigid, one-size-fits-all approach while allowing for a learner-centric curriculum. Flexibility in learning is critical for students with disabilities as they may need curriculum adaptations and modifications to accommodate their learning preferences, requirements, and pace. Exemplar was the emphasis on experiential learning, critical thinking, and problem solving over rote-learning created a more engaging learning experience for all students (Ministry of Human Resource Development, 2020).

Teacher Education and Professional Development

The NEP recognizes that teachers are the most significant individuals in implementing inclusive education. They are required to completely transform teacher preparation courses with a strong bias towards teacher preparation in diverse and heterogeneous classrooms (Sarkar, 2023). As a policy, every B.Ed. program will include modules on inclusive pedagogy, differentiated instruction, ways of identifying and supporting students with special needs, as well as how to really be inclusive. Further, there is commitment for professional development for in-service educators so that they are able to build the skills and knowledge to create truly inclusive learning environments. Moreover, the NEP acknowledges that a sufficient number of special educators are needed to work with the regular teacher, at the same school, for students with severe or multiple disabilities

Integration of Assistive Technology

The NEP 2020 greatly encourages the utilization of technology in supporting the learning experience in order to increase access to learning for all students. The NEP recognizes

the possibilities of assistive technology to close the learning gap for students with disabilities (Yadav, n.d.). The NEP places emphasis on providing assistive devices and technology-based tools in teaching-learning process to enable students with disabilities to fully engage in classroom activities. This includes screen readers, text-to-speech software and other adaptive technologies. The emphasis on digital infrastructure and online learning platforms under the NEP also creates potential for personalized and flexible learning opportunities for students in different disabilities.

Early Childhood Care and Education (ECCE)

The NEP places considerable emphasis on the importance of Early Childhood Care and Education (ECCE) for all children, especially those from economically disadvantaged families. The NEP envisions universal access to ECCE of good quality, which is critical to early identification of disabilities and subsequent intervention. The NEP seeks to supply a solid footing in early years for children with disabilities so that they are prepared for formal schooling and may ultimately succeed.

Convergence, Complementarities, and Policy Implications

The Rights of Persons with Disabilities (RPWD) Act and the National Education Policy (NEP) 2020 share an essential convergence, signaling a momentous point in time for the future of inclusive education in India. The RPWD Act articulates the legal 'what,' or non-negotiable right to inclusive education. The NEP 2020, on the other hand, presents the pedagogical and systemic 'how' of inclusive education, why we should think about it differently, and how to realize the vision. Together, both documents share a complementary relationship with important implications for policy, and it helped to bring the discussion from access to meaningful participation and actual learning outcomes for students with disabilities.

Comparative Analysis

The evolution of educational policy in India represents a significant shift toward inclusivity and equity, particularly in the field of special education. Historically, the education of children with disabilities was treated within a welfare-based framework that often reinforced segregation (Sharma & Das, 2015). However, the twenty-first century has witnessed a paradigm shift toward recognizing education as a right rather than a privilege. The *Rights of Persons with Disabilities (RPWD) Act, 2016* and the *National Education Policy (NEP), 2020* are two landmark frameworks that have redefined the discourse on inclusive education in India. While the RPWD Act provides a robust legal and rights-based foundation, the NEP operationalizes this through comprehensive educational reforms (Ministry of Education, 2020). This comparative study analyses these two documents, focusing on their objectives, provisions, and implications for special education.

1. Conceptual Framework and Objectives

The RPWD Act, 2016 is a legislative measure enacted to align India's disability rights framework with the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), ratified by India in 2007 (Government of India, 2016). It expands the definition of disability from seven to twenty-one categories, ensuring wider protection and inclusion. Its primary objective is to guarantee equality, non-discrimination, and accessibility for persons with disabilities (PwDs) in all spheres, including education (Shukla, 2019).

Conversely, the NEP 2020 envisions transforming India's education system by 2040, emphasizing inclusion as a central value (Ministry of Education, 2020). It aims to ensure equitable access and

participation for children with disabilities by integrating flexibility in curricula, early identification of learning needs, and use of assistive technologies (Gupta & Kulkarni, 2021). Unlike the RPWD Act, which establishes rights through law, the NEP translates these rights into pedagogical and institutional reforms.

Thus, while the RPWD Act 2016 is rooted in a human rights framework, the NEP 2020 functions as an implementation strategy that operationalizes these rights through policy and practice.

2. Legal Mandate vs. Policy Vision

The RPWD Act 2016 and the NEP 2020 differ fundamentally in nature and scope. The RPWD Act is legally binding and mandates educational institutions to comply with specific provisions for inclusion. It ensures that no child with a disability is denied admission or discriminated against in any educational institution recognized or funded by the government (Government of India, 2016).

In contrast, the NEP 2020 is a policy framework and not a statutory document. It provides strategic direction but lacks enforceability through legal mechanisms. Its recommendations depend on institutional and state-level implementation. Whereas the RPWD Act enforces inclusion through compulsion, NEP 2020 promotes it through innovation and reform (Kumar & Sharma, 2021). Therefore, the two policies are complementary—the RPWD Act ensuring accountability and NEP 2020 providing the visionary roadmap.

3. Approach to Inclusion and Accessibility

The RPWD Act adopts a rights-based approach, emphasizing accessibility, reasonable accommodation, and equality. It mandates barrier-free infrastructure, accessible learning materials, and support services such as Braille, sign language, and assistive devices (Government of India, 2016). The Act defines inclusive education as a system where students with and without disabilities learn together with appropriate support, though it still allows special schools in cases where mainstream inclusion is not viable.

The NEP 2020, on the other hand, adopts a pedagogical and systemic approach. It integrates inclusive practices across all levels of education—from early childhood to higher education—through reforms in curriculum, assessment, and teacher preparation (Ministry of Education, 2020). The policy also identifies children with disabilities as part of “Socio-Economically Disadvantaged Groups (SEDGs),” situating disability within broader socio-cultural contexts (Jha, 2021).

While the RPWD Act speaks the language of legal entitlements, the NEP speaks the language of empowerment through educational transformation. Together, they reinforce the shift from a charity-based to a rights-based and inclusive approach to education.

4. Teacher Preparation and Professional Development

Both policies acknowledge teachers as critical agents of change in inclusive education. The RPWD Act mandates specialized training for teachers, requiring institutions to develop and regulate standards through bodies such as the Rehabilitation Council of India (RCI) (Government of India, 2016). It also encourages the recruitment of special educators and establishment of resource centers to support inclusive practices (Rao & Shukla, 2020).

In contrast, the NEP 2020 adopts a whole-school approach to inclusion by embedding inclusive education training within all teacher preparation programs. It advocates for continuous

professional development through technology-based training modules and peer learning (Ministry of Education, 2020). While the RPWD Act emphasizes specialized competence, the NEP emphasizes generalized inclusivity, expecting all teachers to be equipped to handle diverse classrooms (Sharma, 2020).

5. Implementation Mechanisms and Challenges

Implementation remains the most critical concern for both frameworks. The RPWD Act clearly outlines institutional responsibilities such as appointing State Commissioners for Persons with Disabilities and Grievance Redressal Officers in educational institutions. However, administrative inefficiency, lack of funding and weak monitoring mechanisms hinder effective enforcement (Bhan, 2022). Despite its legal authority, compliance remains inconsistent across states.

The NEP 2020, while visionary, faces similar challenges due to its non-binding nature. Its success relies on the cooperation of multiple stakeholders—central and state governments, educational boards, and local institutions. Teacher preparedness, inadequate infrastructure, and limited access to assistive technologies pose barriers to implementation (Gupta & Kulkarni, 2021).

Thus, while the RPWD Act provides the legal scaffolding, the NEP 2020 must provide the operational structure to realize true inclusivity. Without sustained coordination, both frameworks risk remaining aspirational rather than transformative.

6. Convergence and Divergence

Both the frameworks converge in their shared commitment to inclusive and equitable education. They recognize disability as part of human diversity and promote the full participation of children with disabilities in mainstream education. The RPWD Act 2016 offers the legal legitimacy for inclusion, while the NEP 2020 provides the educational blueprint to actualize that vision (Jha, 2021).

However, divergence exists in their approaches and focus. The RPWD Act is legalistic and top-down, emphasizing protection, accessibility, and compliance. The NEP is reformist and bottom-up, focusing on pedagogy, flexibility, and innovation (Kumar & Sharma, 2021). The RPWD Act speaks to rights and accountability; the NEP speaks to empowerment and capacity building.

Both documents complement each other—the former ensuring justice through law, and the latter ensuring quality through education reform. For sustainable inclusion, India must bridge the policy–practice gap through integration, adequate funding, and strong inter-ministerial collaboration.

Conclusion

The comparative analysis of the RPWD Act 2016 and the NEP 2020 reveals a significant evolution in India's policy approach to special education. The RPWD Act serves as the legal foundation, ensuring equality, accessibility, and protection for persons with disabilities, while the NEP 2020 builds upon it as a policy framework, emphasizing curriculum flexibility, teacher development, and inclusive pedagogy.

Together, they reflect India's transition from a welfare-based model to a rights-based and competency-driven educational paradigm. However, successful implementation requires coherence between legislative mandates and policy execution. Real inclusion can only

be achieved when legal guarantees, policy frameworks, and pedagogical practices converge to create equitable learning environments for every learner, regardless of ability.

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Policy Gaps in Teacher Training for Inclusive Classrooms: A Conceptual Analysis

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Abstract

Inclusive education is recognized globally as a critical goal, emphasized by frameworks such as the Salamanca Statement (UNESCO, 1994) and the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD, 2006). In India, progressive policies including the Rights of Persons with Disabilities (RPwD) Act, 2016, the National Education Policy (NEP) 2020, and the Samagra Shiksha Abhiyan outline provisions for teacher training aimed at facilitating inclusive classrooms. Despite these policy commitments, there remains a substantial gap between the intended outcomes and the actual preparedness of teachers to implement inclusive practices. This conceptual paper examines the landscape of teacher training policies in India and explores areas of improvement through comparisons with international practices from Finland, Australia, and the United States. It reviews relevant literature, identifies weaknesses in pre-service and in-service teacher training, and discusses the challenges in translating policy into practice. The study emphasizes the need for more practical, continuous, and monitored teacher training programmes. Drawing insights from international examples, it provides recommendations for enhancing the effectiveness of teacher education in promoting meaningful inclusion.

Keywords: Inclusive education, teacher training, policy gaps, NEP 2020, RPwD Act 2016

Introduction

Ensuring inclusive education is both an ethical necessity and a commitment to human rights. Inclusive education ensures that all children, regardless of abilities or disabilities, have equitable access to quality learning opportunities. Since the Salamanca Statement (UNESCO, 1994), inclusive classrooms have been recognized as essential for promoting social justice and educational equity. The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD, 2006) reinforced the global commitment to providing accessible education for all learners. Teachers play a pivotal role in implementing inclusive policies, serving as the primary agents responsible for fostering inclusive practices in classrooms (Forlin, 2013).

In India, legal and policy frameworks underscore the importance of inclusive education. The *RPwD Act, 2016* guarantees children with disabilities the right to attend mainstream schools. The *National Education Policy 2020* emphasizes teacher preparation for inclusive education and encourages continuous professional development to equip educators with necessary skills. Additionally, initiatives like the *Samagra Shiksha Abhiyan* provide structured support and training

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for in-service teachers, while the *National Council for Teacher Education (NCTE)* mandates the integration of inclusive education modules in pre-service programmes such as B.Ed. and D.El.Ed.

However, studies indicate a persistent gap between policy intentions and classroom realities. Teachers often report limited practical training, lack of confidence in addressing diverse learner needs, and insufficient ongoing professional development (Sharma & Deppeler, 2018; Singal, 2019). Furthermore, variations in resource availability, particularly between urban and rural schools, exacerbate these challenges.

Globally, countries such as Finland, Australia, and the United States have implemented more structured and continuous teacher training systems for inclusion, providing models that India can adapt. These international practices highlight the value of combining pre-service exposure, in-service professional development, mentorship, and accountability to improve teacher readiness.

The present conceptual study aims to:

1. Examine policies and provisions related to teacher training for inclusive education in India. Identify gaps in pre-service and in-service teacher training.
Compare Indian teacher training policies with international practices.
Suggest recommendations for improving teacher preparedness to promote effective inclusive education.

By situating the Indian context within a global perspective, this study contributes to understanding policy gaps and strategies for strengthening teacher training to achieve meaningful inclusion.

Review of Literature

Inclusive education has been a central theme in international discourse since the Salamanca Statement (UNESCO, 1994), which urged nations to prepare teachers for diverse classrooms. Scholars have consistently highlighted that teacher preparation is the key determinant of successful inclusion (Forlin, 2013; Florian & Black-Hawkins, 2011).

Research from high-income countries offers valuable insights into systemic approaches to inclusive education. In Finland, teacher education is deeply research-oriented, with inclusive pedagogy integrated throughout all stages of teacher training, ensuring that educators are equipped to address diverse learning needs from the outset of their careers (Niemi, Toom, & Kallioniemi, 2016).

Similarly, Australia has established robust frameworks by mandating disability standards in education and investing substantially in continuous professional development for teachers, promoting sustained competence in inclusive practices (Sharma & Deppeler, 2018). In the United States, inclusive education is institutionalized through the Individuals with Disabilities Education Act (IDEA), which requires both pre-service and in-service teacher training focused on differentiated instruction and the development and implementation of Individualized Education Programmes (IEPs).

The United Kingdom places a strong emphasis on Special Educational Needs and Disabilities (SEND) training within initial teacher education; however, the system continues to grapple with the challenge of aligning policy expectations with practical realities, such as teacher workload and classroom management constraints (Norwich, 2014). Collectively, these examples demonstrate that high-income countries approach inclusive education through structured policy

frameworks, comprehensive teacher preparation, and ongoing professional development, highlighting the importance of systemic support in realizing inclusive education goals.

Despite these initiatives, even countries with advanced teacher education systems face issues of teacher anxiety, resistance to change, and inconsistent implementation. The literature points to the importance of continuous, practice-based professional development rather than one-time workshops (Savolainen et al., 2012).

In India, the advancement of inclusive education has been supported by a range of legal and policy frameworks, including the Persons with Disabilities (PwD) Act, 1995, the Rights of Persons with Disabilities (RPwD) Act, 2016, the National Education Policy (NEP) 2020, and the *Samagra Shiksha Abhiyan*. Despite these measures, research consistently highlights that teachers remain underprepared to effectively implement inclusive practices in classrooms.

In terms of pre-service teacher education, studies (Mukhopadhyay & Mani, 2002; Singal, 2019) reveal that B.Ed. and D.El.Ed. programmes provide minimal exposure to inclusive pedagogy. The training offered is largely theoretical, with limited emphasis on practical classroom strategies such as Universal Design for Learning (UDL) or the use of assistive technologies. Similarly, in-service teacher training faces challenges: reports from NCERT (2017) and UNICEF (2019) note that training modules are often short in duration and vary widely in quality across states. Teachers frequently perceive these sessions as “tick-box exercises” rather than meaningful opportunities for professional growth.

Teacher attitudes further influence preparedness, with research by Sharma and Das (2015) showing that many educators hold neutral or even negative views toward inclusion, often stemming from a lack of confidence in their ability to support students with disabilities.

Additionally, a pronounced rural-urban divide exacerbates these challenges: teachers in rural government schools contend with large class sizes, limited resources, and the absence of specialized support staff, making the implementation of inclusive education even more difficult (Jha, 2010). Overall, while policy frameworks in India provide a strong foundation, systemic and contextual barriers continue to impede the effective preparation and support of teachers for inclusive classrooms.

Comparative Insights

A cross-analysis of Indian and international literature highlights recurring challenges:

A cross-analysis of Indian and international literature highlights recurring challenges in teacher training for inclusive education. In India, key issues include inadequate teacher preparation, limited practical exposure, and insufficient follow-up after professional development workshops (Sharma & Deppeler, 2018; Singal, 2019). Pre-service teacher education programmes often provide theoretical knowledge but lack hands-on experience with children with diverse learning needs, while in-service training is typically short-term and episodic, limiting its long-term impact (Mukhopadhyay & Mani, 2002; NCERT, 2017).

International models, however, offer valuable approaches that India could consider adapting. For example, Finland integrates inclusive pedagogy throughout all stages of teacher education, combining theoretical instruction with extensive classroom practice and reflective mentoring, thereby ensuring that teachers are well-prepared from the start of their careers (Niemi, Toom, & Kallioniemi, 2016). In Australia, disability training is guided by clear standards and accountability mechanisms, which help maintain high-quality, consistent professional development across

regions (Sharma & Deppeler, 2018). In the United States, the implementation of Individualized Education Programmes (IEPs) provides a structured framework for planning and executing inclusive practices, encouraging collaboration between general and special educators and ensuring that teaching strategies are tailored to individual student needs (Florian & Black-Hawkins, 2011; Savolainen et al., 2012).

Collectively, these examples indicate that India's challenge is not a lack of progressive policies but rather the absence of systematic mechanisms to translate policy directives into sustained, practice-oriented teacher training. Without continuous, hands-on professional development, mentorship, and accountability measures, teachers remain underprepared to effectively implement inclusive education in classrooms with diverse learners (Singal, 2019; Sharma & Das, 2015). Aligning Indian teacher training programmes with international best practices could significantly improve teacher readiness and student outcomes in inclusive settings.

Policy Analysis:

India has established several legal and policy frameworks to strengthen teacher preparation for inclusive education. The National Education Policy (NEP 2020) emphasizes inclusive and equitable education for all learners, mandating the inclusion of modules on inclusive education in pre-service teacher education programmes such as B.Ed. and D.El.Ed. It also promotes continuous professional development for in-service teachers, focusing on understanding diverse learning needs, classroom management strategies, and technology-enabled training for inclusive pedagogy.

The Rights of Persons with Disabilities (RPwD) Act, 2016, guarantees the right to inclusive education for children with disabilities aged 6 to 18 years. The Act requires teachers to receive specialized training to support diverse learners and encourages integration of inclusive education strategies into mainstream curricula.

The *Samagra Shiksha Abhiyan* (SSA) complements these policies by providing structured in-service teacher training programmes for inclusive classrooms, offering resource support and learning materials, and focusing on capacity building for educators at primary and secondary levels.

The National Council for Teacher Education (NCTE) Guidelines set minimum standards for teaching programmes with specific components on inclusive education, encouraging hands-on practice, exposure to children with disabilities, and collaborative learning experiences.

2. Identified Policy Gaps

Despite these comprehensive frameworks, several gaps limit the effectiveness of teacher training in India. While policies such as the NEP 2020, RPwD Act 2016, and *Samagra Shiksha Abhiyan* provide clear directives for inclusive education, their translation into practical, classroom-ready skills for teachers remains inconsistent. Many programmes emphasize theoretical knowledge over experiential learning, and there is limited integration of modern teaching strategies, assistive technologies, and individualized approaches for students with disabilities. Furthermore, the absence of continuous professional support, mentoring, and systematic evaluation reduces the long-term impact of both pre-service and in-service training initiatives. These gaps collectively hinder the ability of teachers to confidently and effectively implement inclusive education in diverse classroom contexts.

Firstly, there is a disconnect between policy formulation and institutional implementation, where directives outlined by national policies such as NEP 2020 and RPwD Act 2016 are not fully operationalized at the state and district levels. The absence of coordination among agencies like NCTE, SCERTs, and school management bodies often leads to fragmented execution of teacher training programmes. Secondly, funding allocations for inclusive education and teacher training remain inconsistent, with significant disparities between states, resulting in unequal access to resources and capacity-building opportunities.

Moreover, quality assurance and accountability mechanisms are weak—while policies mandate inclusive education modules and periodic training, there is little monitoring of learning outcomes or teacher competence post-training. This results in compliance-based training that fulfills procedural requirements but fails to build practical classroom capability. The lack of institutional incentives for teachers to adopt inclusive practices, such as career advancement, recognition, or workload reduction, further discourages sustained engagement.

Another critical issue is the limited collaboration between general and special education systems. Teacher education curricula still treat inclusive education as a peripheral topic rather than a core pedagogical principle, creating a divide between mainstream and special educators. Finally, the gap between theory and practice remains a defining challenge—teacher training emphasizes policy awareness but provides insufficient exposure to real classrooms, assistive technologies, and evidence-based instructional strategies.

Addressing these policy and systemic shortcomings requires stronger inter-agency collaboration, equitable funding, structured monitoring, and a shift from theoretical compliance toward experiential, practice-oriented teacher development. Only through these measures can policy intentions translate into effective, inclusive teaching practices at the grassroots level.

- **Pre-service Training Gaps:**

Training in most pre-service teacher education programmes in India remains largely theoretical, with minimal opportunities for student-teachers to engage with real inclusive classroom environments. While curricula under B.Ed. and D.El.Ed. programmes include modules on inclusive education, these are often confined to conceptual discussions about disability types, rights, and policies, without adequate hands-on experience or school-based practicum. As a result, graduating teachers frequently lack confidence in adapting lesson plans, instructional materials, and assessment methods for students with diverse learning needs.

Furthermore, inclusive pedagogy is not integrated across subjects, but treated as an isolated unit, which prevents future teachers from understanding how inclusive principles can be embedded in regular classroom instruction. There is limited emphasis on practical strategies such as Universal Design for Learning (UDL), differentiated instruction, use of assistive and digital technologies, and collaborative teaching models involving general and special educators.

In addition, teacher educators themselves often lack adequate exposure to inclusive education practices, leading to a cascade effect where pre-service trainees do not receive experiential guidance. The absence of model inclusive schools or structured internship opportunities further restricts the development of skills such as classroom management, individualized education planning (IEP), and inclusive assessment.

- **In-service Training Gaps:**

In-service teacher training programmes on inclusive education in India are typically short-term, fragmented, and insufficient to foster meaningful changes in teaching practice. Most workshops or seminars conducted under initiatives such as *Samagra Shiksha Abhiyan* are limited to one- or two-day sessions that focus on policy awareness rather than the development of concrete classroom strategies. As a result, teachers often gain theoretical understanding without the practical competence to apply inclusive methods effectively in real teaching contexts.

Another persistent issue is the absence of follow-up support, mentoring, or peer learning mechanisms after initial training. Teachers are rarely provided with ongoing supervision, classroom observation feedback, or opportunities to reflect on and refine their inclusive teaching skills. This lack of continuous professional development leads to poor retention of newly acquired knowledge and minimal transformation in classroom practices.

- **Curriculum Gaps:**

The existing curricula in teacher education programmes continue to display significant inconsistencies in how they address inclusive education. Although national frameworks such as the NCTE Regulations (2014) and NEP 2020 mandate the inclusion of courses on disability and inclusion, these components are often limited in scope and depth. Teacher education curricula do not comprehensively cover the full range of disabilities recognized under the RPwD Act, 2016. Instead, the focus tends to be restricted to visible or commonly known disabilities such as visual and hearing impairment, while neurodevelopmental, intellectual, and psychosocial disabilities receive limited attention. This narrow approach constrains future teachers' ability to support the diverse learning needs they will encounter in real classrooms.

Furthermore, most programmes lack structured content on social-emotional learning (SEL), behavioral management, and inclusive assessment practices, which are crucial for managing diverse classrooms. Teachers are rarely trained in strategies for fostering emotional regulation, empathy, peer acceptance, and positive classroom climates — all of which are foundational to inclusion. The assessment component of teacher training also remains predominantly academic and standardized, leaving teachers ill-equipped to use flexible, formative, and differentiated evaluation methods that accommodate learners with varied abilities.

- **Implementation Gaps:**

Despite strong policy frameworks, the practical implementation of inclusive education initiatives in schools remains inconsistent and uneven across regions. A major challenge is the shortage of trained resource teachers and support personnel, who play a critical role in assisting classroom teachers to plan and execute inclusive strategies. Many schools, particularly in rural and semi-urban areas, function without special educators, speech and occupational therapists, or counselors. As a result, general teachers are expected to address the diverse academic and behavioral needs of students with disabilities without adequate professional or technical support.

In addition, large class sizes and infrastructural limitations in government schools significantly reduce the effectiveness of training initiatives. Teachers who have received inclusive education training often find it difficult to apply individualized teaching methods or differentiated instruction in overcrowded classrooms where one teacher may be responsible for 40–60 students. The lack of basic accessibility features—such as ramps, tactile flooring, accessible

toilets, and assistive devices—further hinders the inclusion of students with physical and sensory disabilities.

- **Monitoring and Accountability Gaps:**

A significant limitation in India's inclusive education policy framework lies in the absence of systematic mechanisms to monitor and evaluate teacher competency after training. While both NEP 2020 and *Samagra Shiksha Abhiyan* emphasize continuous professional development, there is no standardized system for assessing whether teachers are able to effectively translate training into inclusive classroom practices. Evaluations, where they do occur, tend to focus on attendance or completion of workshops rather than on demonstrated changes in pedagogy, classroom climate, or student learning outcomes.

Moreover, policy mandates often fail to align with school-level implementation, resulting in a disconnect between national objectives and local realities. For instance, while national policies require schools to adopt inclusive strategies and maintain Individualized Education Plans (IEPs), many institutions lack the administrative oversight or trained personnel to ensure consistent compliance. This gap is further widened by the lack of clear accountability structures — neither teacher education institutions nor school administrators are held directly responsible for ensuring the long-term effectiveness of training.

3. International Perspectives and Lessons

High-income countries offer models from which India can draw important lessons:

Finland: Teacher training integrates inclusive pedagogy at all stages, including practical classroom experience. Mentorship programmes and reflective practice ensure ongoing professional development in inclusive teaching.

Australia: The Disability Standards in Education (2005) provide clear guidelines and accountability measures for teacher preparedness. Continuous professional development is competency-based, structured, and linked to teacher accreditation.

United States: The Individuals with Disabilities Education Act (IDEA) mandates training on Individualized Education Programmes (IEPs) and inclusive strategies. Collaboration between special and general educators ensures effective inclusion.

United Kingdom: Pre-service training includes modules on Special Educational Needs and Disabilities (SEND), with an emphasis on practical skills, classroom observation, and differentiated instruction.

4. Comparative Analysis

While Indian policies are progressive on paper, implementation remains weak compared to countries like Finland or Australia, where teacher training is integrated, continuous, and closely monitored. Indian teachers receive limited practical exposure, whereas international systems embed inclusive pedagogy throughout pre-service and in-service preparation. Accountability mechanisms in India are weak, whereas structured accreditation and evaluation systems in other countries ensure teacher competency. International best practices suggest that a combination of pre-service exposure, continuous in-service development, mentorship, and monitoring can significantly enhance inclusive education outcomes.

5. Implications for Practice

Unless these gaps are addressed, inclusive education in India risks remaining largely theoretical, confined to policy documents rather than actual classroom practice (Sharma & Deppeler, 2018; Singal, 2019). Teachers' lack of preparedness can result in inconsistent instructional strategies, limited differentiation, and reduced opportunities for students with disabilities to engage meaningfully in learning activities (Florian & Black-Hawkins, 2011). This can adversely affect not only academic outcomes but also students' social integration, self-esteem, and participation in school life (Jha, 2010; Sharma & Das, 2015).

Policy reforms should therefore go beyond merely revising curricula. Pre-service programmes must integrate hands-on, experiential training in inclusive pedagogy, while in-service professional development should be continuous, modular, and supported by mentoring, peer collaboration, and reflective practice (Forlin, 2013; Savolainen et al., 2012). Schools should also be equipped with adequate resources, including adaptive learning materials, assistive technologies, and trained support staff, to facilitate the practical application of inclusive strategies. Additionally, systematic monitoring and accountability mechanisms are essential to ensure that teacher training programmes translate into improved classroom practices and meaningful inclusion for all students.

Implementing these measures would enable teachers to confidently address diverse learner needs, foster positive classroom climates, and promote equitable learning opportunities, ultimately bridging the gap between policy intentions and educational outcomes for students with disabilities in India (Singal, 2019; Sharma & Deppeler, 2018).

Discussion & Implications

The analysis of teacher training policies for inclusive classrooms in India reveals a significant gap between policy intent and classroom practice. While policies like NEP 2020, RPwD Act 2016, and *Samagra Shiksha* provide a robust framework for inclusive education, the translation of these policies into practical teacher preparedness remains inconsistent and inadequate.

Challenges in Implementation

- **Limited Practical Exposure:** Pre-service teacher education in India remains largely theoretical, offering minimal experiential learning. Consequently, teachers are often unprepared to manage real classroom challenges, such as differentiating instruction, addressing behavioral diversity, and using assistive technologies effectively.
- **Short-term In-service Programmes:** In-service training is typically confined to brief workshops or seminars. The lack of sustained mentoring, peer learning opportunities, and follow-up evaluation reduces the long-term impact of these programmes on teaching practice.
- **Resource and Infrastructure Constraints:** Many government schools, particularly in rural areas, face shortages of resource teachers, adaptive learning materials, and technological support. High student-teacher ratios further hinder the effective implementation of inclusive strategies.
- **Monitoring and Accountability Deficiencies:** There is no systematic mechanism to evaluate teacher competency after training. Without accountability standards, it is difficult to ensure that professional development translates into improved classroom practices.

- Teacher Attitudes and Motivation: Research indicates that teachers may experience anxiety or lack confidence in inclusive classrooms due to inadequate preparation and support. Neutral or negative attitudes toward inclusion can impede effective policy implementation (Sharma & Das, 2015).

Lessons from International Practices

International experiences provide useful insights. Countries such as Finland, Australia, and the United States have successfully addressed similar challenges through structured and continuous teacher training systems. Finland integrates inclusive pedagogy throughout pre-service education and emphasizes reflective mentorship. Australia implements competency-based professional development with strong accountability measures. In the U.S., collaboration between general and special educators around Individualized Education Programmes (IEPs) strengthens teacher capacity.

For India, these experiences suggest several key implications:

- Inclusive teacher education must be practice-oriented and sustained, rather than episodic.
- Mentorship, peer collaboration, and observation-based learning are essential to build teacher confidence and skills.
- Systematic monitoring, feedback mechanisms, and accountability standards are necessary to ensure quality training.
- Context-specific strategies are required to address rural-urban disparities and resource limitations.

Implications for Policy and Practice

The identified policy gaps affect students, teachers, and the education system:

- For students: Insufficiently trained teachers may limit academic achievement, social integration, and equitable access to education.
- For teachers: Inadequate preparation can contribute to stress, burnout, and resistance to inclusive practices.
- For the education system: Without bridging the gap between policy and practice, inclusive education goals risk remaining aspirational, reducing the impact of progressive legislation.
- Addressing these gaps requires an integrated approach, combining policy reform, curriculum revision, capacity building, resource allocation, and systematic monitoring. Aligning Indian teacher training programmes with international best practices can enhance inclusion, ensuring that students with disabilities receive effective support in mainstream classrooms.

Conclusion and Recommendations

Analysis of teacher training for inclusive classrooms in India shows that while national policies such as NEP 2020, RPwD Act 2016, and *Samagra Shiksha Abhiyan* provide a strong legislative framework, significant implementation gaps remain. Pre-service and in-service programmes lack practical orientation, sustained support, and consistent monitoring, which limits teachers' ability to effectively implement inclusive practices and negatively impacts students' learning experiences.

International experiences highlight the benefits of integrating inclusive pedagogy, continuous professional development, mentorship, and accountability systems. Adapting these best practices to the Indian context—while considering rural and resource-limited settings—can strengthen teacher preparedness and improve inclusion outcomes.

Recommendations:

- Revise Pre-service Curricula: Incorporate practical, hands-on training in inclusive pedagogy, Universal Design for Learning (UDL), differentiated instruction, and classroom management.
- Strengthen In-service Training: Develop continuous, modular, competency-based professional development programmes with follow-up support and mentoring.
- Implement Monitoring and Accountability: Establish systematic evaluation mechanisms to assess teacher competency and training effectiveness.
- Resource Allocation: Equip schools with trained resource teachers, adaptive materials, and technology to support inclusive practices.
- Promote Teacher Collaboration: Foster peer learning, mentoring networks, and collaborative teaching strategies in inclusive classrooms.
- Policy Integration: Align state-level implementation with national policy directives and international best practices to ensure consistency and quality.
- By addressing these gaps, India can advance toward meaningful inclusive education, ensuring that all students, regardless of ability, have equitable access to learning opportunities and support.

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Teacher Education Programmes in India and the Global South: A Comparative Analysis

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Abstract

Teachers' education in the Global South is recognised as a critical area that needs reform. It is influenced by different socio-economic contexts, policy frameworks, and resource conditions that affect teacher preparation quality. The study offers a comparative reflection on teacher education programmes between India and parts of the Global South (sub-Saharan Africa, Latin America, South-East Asia, the Middle East, and North Africa), examining their structures, pedagogical orientations, curriculum frameworks, and professional development mechanisms. The analysis uses policy documents, curriculum reviews, empirical studies and international standards (e.g., UNESCO, OECD and regional standards) to explore convergence and divergence. Some common trends are emerging, such as professionalisation, an increasing focus on teacher competency frameworks, and technology integration; however, some negative trends, including the depth of practicum, regulatory coherence, inclusion strategies, and financial investment, often persist. The study argues that similar reform paths are being pursued in India and the extended global South, where sustained change requires greater policy coherence, sustained investment in practicum-based education and relevant forms of teacher professional development. Stakeholders can use the research article's findings to improve teacher education programmes. This research article also offers future recommendations for several pathways that can guide reforms in teacher education programs.

Keywords: Teacher Education, Global South, India, National Education Policy 2020, Teacher Professional Development, Inclusive Education, Educational Reform

Introduction

Teacher education is increasingly acknowledged in all regions of the world as a key factor of educational quality and equity (UNESCO, 2023). In the countries of the Global South (Asia, Africa, Latin America, and the Middle East and North Africa (MENA)), teacher education systems face continuous structural and systemic challenges. Persistent teacher shortages, high pupil–teacher

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ratios, inadequate investment in teacher training, uneven policy implementation and fragmented regulatory structures have hindered the capacity of these systems to deliver sustained gains in teaching and learning (NEU, 2024). These difficulties compromise the supply of trained teachers and influence pedagogical practices, student achievements, and a country's broader national development plan in the region.

In this context, India offers a notable example of systemic change. The National Education Policy (NEP) 2020 represents an important step in the transformation of the country's teacher education framework. The major components consist of implementing a four-year integrated teacher education program (ITEP), setting professional standards, and institutionalising continuous professional development (CPD) requirements (Ministry of Education, 2020; NCTE, 2009; NCTE, 2023). These reforms represent a conscious attempt to professionalise teacher education, align it with global best practices, and enable teachers to better meet the diverse and changing needs of India's education sector. In comparison, most other Global South settings rely largely on short certificate- or diploma-based training programmes, which offer limited practicum and accreditation, and in-service training initiatives are often irregular or ad hoc (Neupane & Joshi, 2021; UNESCO, 2025). This divergence between India's evolving model and those in other regions suggests that there must be a systematic comparative analysis.

The current study aims to place India's innovative teacher education system in the broader context of teacher preparation in the Global South. It presents a comparative analysis of selected regions, including sub-Saharan Africa, Latin America, South-East Asia, the Middle East, and North Africa (MENA), to analyse similar and divergent practices and opportunities for interregional learning. Issues related to programme organisation, curriculum/practicum design, accreditation, professional standards, and modes of inclusion, as well as professional development, are central to such investigations.

By systematically mapping similarities and differences between such contexts, this article attempts to shed light on the extent to which the Indian model can provide generalised insights, while also drawing attention to the relevance of context-specific modifications. In this sense, the study aims to contribute to current academic and policy discussions on teacher education reform by providing evidence-based insights to policymakers, educators and researchers working to improve teacher preparation and promote equitable education in the Global South.

Methodology

Research Design

This study employed qualitative comparative document analysis, which was considered suitable for exploring both the formal structure and contextual dimensions of teacher education systems across different settings.

Data Sources

The data sources in this analysis included several types of documentary evidence. The first level of analysis was an exploration of policy documents and curriculum frameworks that were intended to contain the official discourse related to teacher education reform. Secondly, accreditation standards and professional norms were examined, including those from national bodies, e.g., India's National Professional Standards for Teachers (NPST), and international frameworks, e.g., UNESCO's International Standards Classification of Education-Teacher (ISCED-T). Thirdly, empirical research papers were considered to review implementation experiences and impact findings. International and regional reports from organisations such as the United

Nations Educational, Scientific and Cultural Organisation (UNESCO), the Organisation for Economic Co-operation and Development (OECD), South East Asian Ministers of Education Organisation (SEAMEO) and national ministries of education provided comparative information and regional perspectives.

Case Selection

The countries as cases were purposefully selected to include the diverse paths of teacher education reform in the global South. India has also been added here as an example, arguing for its significant reforms due to the National Education Policy (NEP) 2020. To provide regional coverage, two countries were chosen from each of the following four regions:

- **Sub-Saharan Africa:** Malawi and Kenya, which represent systems with limited resources that are experimenting with reform.
- **Latin America:** Brazil and Argentina also have institutional competency-based frameworks but struggle with decentralised dynamics.
- **South-East Asia:** Indonesia and the Philippines, where regional standards such as the South-East Asia Teachers Competency Framework (SEA-TCF) have an impact on national practice.
- **Middle East and North Africa (MENA) region:** Egypt and Jordan, case studies of countries in transition to orient teacher education towards professional standards within broader socio-political changes.

The shaded region in Fig. 1 represents the global South on the map, and Fig. 2 shows the selected countries as cases.



Fig. 1 Yellow shade indicates the Countries of the Global South (Source: Encyclopædia Britannica, Inc.)



Data Analysis Fig. 2 Green shade represents the countries selected as cases.

During data analysis, an inductive thematic coding analysis was done to identify the emerging themes from the selected documents. The results are presented descriptively, linking policy analysis with relevant empirical evidence and illustrative cases. The comparative analysis further facilitates identification of patterns and divergence across different cases.

Results and Discussion

The importance of teacher education as a driver of educational quality is universal (Darling-Hammond, 2017; UNESCO, 2021), but its contours, structural design, curricular priorities and governance, accreditation standards and continuing professional development are rooted in local histories, policy frameworks and resource realities. Tables 1 and 2 show an overview of teacher education programs in India and the Global South.

Table 1.

Country-wise description of program requirements in teacher education programs

Country	Program Duration	Entry Requirements	Practicum Duration	Curriculum Focus	Accreditation Body
India	2-4 years (B.Ed./ITEP)	50% UG marks + TET/CTET	20-week internship	Integrated pedagogy + subjects	NCTE, NAAC
Malawi	2 years (MIITEP)	JCE/MSCE certificates	2 full academic terms of supervised teaching	Subject content + pedagogy	Ministry of Education
Kenya	2-3 years (Diploma/B Ed)	C+ in KCSE or equivalent	2 terms + 3 months micro-teaching	Professional studies + subjects	Kenya National Examination Council (KICD, Teacher Service Commission (TSC)
Brazil	4 years (Licenciatura), (minimum 3,200 hours)	Upper secondary completion	Minimum practice required, a minimum of 400 hours (about 12.5% of the curriculum)	Subject specialization + pedagogy	Federal/State regulation
Argentina	4 years (IES/University)	Upper Secondary school completion	Teaching practice included	Subject content + education	INET (National Institute)
Indonesia	4 years (Bachelor)	High school + entrance exam	1 semester (7th semester)	Subject mastery + teaching methods	Ministry of Education

Philippines	4 years (Bachelor)	High school + entrance exam	Teaching practice required	Content pedagogical knowledge	+	Commission on Higher Education (CHED), DepEd
Egypt	4 years (Bachelor)	Secondary school completion	Limited practicum	Traditional subject- centered		Ministry of Higher Education
Jordan	4 years (B.Ed.)	Secondary school completion	336 hours teaching practice	Academic professional education	+	Ministry of Higher Education

Table 2.

Country-wise description of Professional Development Programmes, Key Challenges and Recent Reforms

Country	Professional Development	Key Challenges	Recent Reforms	Sources
India	Mandatory CPD (NISHTHA/DIKSHA)	Implementation gaps, rural access	NEP 2020: 4-year ITEP model	NCTE (2023); NCTE (2009); Ministry of Education (2020); NCERT (2014)
Malawi	Limited in-service training	Teacher shortages, infrastructure	IPTE curriculum revision (2017)	Chirwa et.al. (2023); Kunje&Lewin (2003); Ministry of Education, Malawi (2017); MoEST (2017)
Kenya	KePTS-based TPD (mandatory)	Competency-Based Curriculum (CBC) implementation, funding	New competency-based approach	KICD (2016); Teachers Service Commission (2019); KEMI (2023)
Brazil	State-sponsored programs often consist of periodic, fragmented in-service training	Distance education quality risks, high growth in distance learning and private-sector training, raising concerns over equity and academic rigour	PARFOR federal programs, the National Program for Qualification of Basic Education Teachers	Oliveira (2015); World Bank (2019); Ministry of Education, Brazil (2009)
Argentina	In-service as a right/responsibility	Decentralized system variations	Continuous quality improvement	Oliveira (2015); Instituto Nacional de Formaci3n Docente (2018)

Indonesia	Limited systematic CPD	Large scale, uneven distribution	Teacher certification program	Education International (2012); Ministry of Education Indonesia (2020); WENR (2022); Nurhattati et al., (2020)
Philippines	DepEd in-service programs	Quality assurance, resources	K-12 curriculum alignment	CHED (2019); Department of Education Philippines (2020); PQF (2011)
Egypt	Sporadic training opportunities	Conflict impact, limited resources	Limited reform initiatives	Ministry of Higher Education Egypt (2018); UNESCO Institute for Statistics (2020)
Jordan	Queen Rania Teachers Academy	Traditional methods, limited reform	ERfKE project phases I & II	TIMSS & PIRLS (2015); Al-Momani (2010); Queen Rania Teachers Academy (2019)

The National Education Policy (NEP) 2020 is one of the most visionary and holistic reform efforts in the Global South (Government of India, 2020). Its focus on restructuring teacher education into integrated four-year programmes, the creation of National Professional Standards for Teachers (NPST) and a coherent model for continuing professional development represents a clear attempt to align national priorities with global best practices (OECD, 2019; UNESCO, 2021). Equally important is its emphasis on inclusivity, multilingual pedagogy, and socio-cultural responsiveness in teacher training. But to realise this stated vision, its effective implementation may require addressing issues of institutional capacity and concerns of degree fraud (including rigorous accreditation) and system-wide harmonisation involving all states, schools, and teacher education institutions (TEIs) (Tilak, 2021).

In sub-Saharan Africa, the contrast between Malawi and Kenya reflects the compromises they make on access versus quality. Despite a lack of resources, Malawi still relies on short diploma and certificate programmes that focus on the quick delivery of teachers rather than the continued professionalisation of the profession (World Bank 2010). Short practicums, overcrowded classrooms and under-resourced teacher training colleges exacerbate this problem. In contrast, Kenya has worked to improve its curriculum through a competency-based approach, increased emphasis on practicum and a focus on modernisation of teacher education (Sifuna and Sawamura 2010). Yet, the force of systemic pressures, exacerbated by teacher shortages, regional inconsistencies in provision and low investment in continuous professional development (CPD), hinders improvement (UNESCO 2017). The African cases, therefore, reflect the structural barriers to reform that exist when economic vulnerability and educational ambition collide.

But the situation is slightly different in Latin America. At the university level, both Brazil and Argentina institutionalise teacher education in universities, ensuring longer and more academically focused preparation programmes (Bruns&Luque, 2014). Brazil has institutionalised

extensive practical experience, and Argentina outlines accreditation and curricular reform on inclusion and diversity (Gatti&Barreto, 2009). However, despite this strength, both countries also show weaknesses in sustaining reform amid political and economic disturbance. Lack of policy stability, uneven regional capacities, and funding uncertainty undermine long-term progress (UNESCO, 2021). Latin America's experience shows that structural institutionalisation is indispensable but insufficient in the absence of political stability and uninterrupted funding sources.

More broadly in South-East Asia, the two cases of Indonesia and the Philippines continue to highlight this tension between regulatory ambition and the reality of implementation. Huge financial allocations have been used by the Indonesian government to professionalise teachers through certification programmes and to expand teacher training universities (Chang et al., 2014). However, quality assurance, bureaucratic redundancies and persistent rural & urban inequalities undermine their impact (OECD 2016). The Philippines has placed considerable emphasis on licensure examination and continuous professional development (CPD) mandates, but they are not implemented uniformly, with a disconnect between policy aspiration and classroom reality (SEAMEO, 2020). Both situations demonstrate the dangers of technocratic fixes when governance and equity considerations are not well taken into account.

In the Middle East and North Africa (MENA), Egypt and Jordan present two distinct and related trajectories. Egypt's centralised system emphasised national standards and state-led development of teacher education (Herrera, 2019). Yet, overcrowding, lack of practicum integration, and lack of institutional autonomy reduce its effectiveness. Jordan has made donor-funded and international partnership-supported efforts to improve teacher quality and align with global standards (Schneegans et al., 2021; World Bank, 2015). But scaling and sustainability are still open questions, especially in an environment of fiscal pressure and political uncertainty. These cases illustrate how external partnerships can help catalyse reform while also potentially leading to dependency if they are not rooted in self-reliant national systems.

Inclusion emerged as a key but unevenly implemented aspect of reform across all the regions. Although most policy frameworks address the areas of inclusive pedagogy, gender sensitivity and diverse needs of learners (Slee, 2018; UNESCO, 2020), implementation of this practice is often limited. While inclusion is very clearly incorporated in India's national teacher education curriculum, other countries' commitment to inclusive practices is lacking in clear pathways to implementation. Another area where the disparity between discourse and practice is evident is one with which we need to rapidly engage in continuing professional development programmes. Most countries mandate some continuous professional development (CPD) programmes but do not offer consistent institutional support, monetary rewards and equitable access, most particularly for teachers in remote or less represented areas (Villegas-Reimers, 2003).

Taken together, the comparative findings suggest that teacher education reforms in the Global South fall on a continuum from India's progressive NEP-2020 model to resource-constrained minimalist approaches evident in Malawi. In intermediate cases, e.g., Latin American and Southeast Asian countries, good institutional innovations have been implemented, but their close relationship with structural and political context limits their effectiveness.

What is needed is a focused and sustained effort that builds capacity in institutions, meaningfully combines theory and practice, establishes rigorous accreditation standards, and integrates continuous professional development (CPD) into teachers' professional trajectories (Darling-Hammond, 2017; World Bank, 2021). India's NEP 2020 is a model of systemic ambition, but its

implementation will determine its global relevance. In other global South settings, inter-regional learning is essential, not only to help in identifying best practice but also to better understand the dangers of fragmented, under-resourced, or politically fragile restructuring. However, teacher education reform is not a technical enterprise but is a highly contextualised process shaped by social, political and economic conditions that must be acknowledged if the vision of quality inclusive education expected for all is to become a reality (UNESCO, 2021).

Implications and Future Recommendations

The results suggest that investments in infrastructure, salaries for qualified teachers and integration of technological infrastructure are essential if teacher education and professional development of teachers are to be successful, especially where inequalities are most pronounced (UNESCO, 2025). Strengthening accreditation and professionalisation standards through common quality assurance frameworks, such as India's National Professional Standards for Teachers (NPST), the South-East Asia Teachers Competency Framework (SEA-TCF) and competency-based frameworks in Brazil, can improve professional accountability while creating equity between public and private providers (NCTE, 2009; NCTE, 2023; Oliveira, 2015; SEAMIO INNOTECH, 2018).

Equally important is the creation of an integrated curriculum that includes theoretical foundations but also extensive practical experience. Continuous professional development must move beyond irregular workshops to institutionalised systems linked to promotions and career advancements (Darling-Hammond, 2017). Digital resources, online mentoring and professional communities of practice can facilitate access and contextualised feedback in continuous professional development (CPD) (Mitchell et al., 2024).

The teacher education programs must keep inclusivity central by embedding disability, gender and cultural diversity modules in pre- and in-service trainings. The experience of the Integrated Special and Inclusive Teacher Education Programme (ISITEP), United Nations Children's Fund (UNICEF) programmes, and India's teacher education reforms using inclusive pedagogy offer lessons on how this can be incorporated systematically (Rehabilitation Council of India, 2022; UNICEF, 2024). Regional and cross-national collaborations are vital in sharing resources and innovations across different regions and accelerating the growth of teacher education programmes in the global South (UNESCO, 2022).

The recommendations of this study revolve around the prioritisation of teacher education programmes in the government budget and the ensuring of fair salaries and technology-rich environments. Standardised accreditation frameworks like NPST and SEA-TCF must be enforced and updated. CPD should be institutionalised as credit-bearing and digitally blended. Inclusive education addressing disability, gender, and language must be central. Finally, regional cooperation should foster joint research, exchanges, and evidence-based policy.

Conclusion

This comparative analysis shows that teacher education is transforming in the Global South, although this transformation is taking place unevenly across its different regions. India's National Education Policy 2020 (NEP 2020) provides a holistic framework that includes a four-year professional degree, national professional standards, and mandatory continuing professional development (NCTE, 2009; NCTE, 2023). This makes India a regional leader in viewing teacher education as both academic and practical. However, in rural and resource-poor areas, where infrastructure, mentoring capacity, and sustaining resources are scarce, the scale of implementation presents challenges.

In contrast, sub-Saharan Africa still suffers from severe teacher shortages, short pre-service training and little practical experience that compromise the quality of teaching and the professional identity of teachers (UNESCO, 2021). In Latin America, where there is strong federal support and an emphasis on competencies, a lack of equity still persists with respect to uneven monitoring of quality across different regions (Oliveira, 2015). South-East Asia includes the regionally aligned Teacher Competency Framework (SEA-TCF), which supported cross-national coherence, despite disparities in resources and training (SEAMEO INNOTECH, 2018). The Middle East and North Africa (MENA) are in a unique situation of instability, inconsistent legislation, and the exclusion of marginalised groups (UNICEF, 2024).

However, there have also been promising innovations that provide transferable lessons. The Teacher Education in Sub-Saharan Africa (TESSA) Open Educational Resources project has shown that context-relevant resources can make a broad contribution to the professional development of teachers in Africa (Wolfenden et al., 2011). India's Continuous Professional Development (CPD) platforms, facilitated by policy directives, have demonstrated the possibilities of continuous professional development and learning of pre- and in-service teachers. Together, these cases point to multiple pathways of progress in teacher education that can be put into place in different contexts in different countries.

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Comparative Analysis of Professional Standards for Teachers: Examining Frameworks across Diverse Educational Systems

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Abstract

Recognizing teachers as pivotal to India's future, the National Education Policy 2020 prioritizes high-quality teacher education, professional development, and the development of competencies required for outcome-based learning. In this regard, 'National Professional Standards for Teachers (NPST)' provides a framework for teacher preparation, practice, and performance improvement. Through a detailed review analysis, the paper aims to provide a comparative analysis of National professional standards for teachers, focusing on India's newly implemented NPST alongside those of the United Kingdom, Australia, South Africa, and New Zealand. The paper highlights the global trend towards standardizing the teaching profession, tracing its evolution from set of unregulated practices to structured frameworks driven by reports and policy documents released by nodal agencies. The analysis reveals a global shift towards competency-based frameworks placing categorical focus on the aspect of continuous professional development of teachers for building competencies in the critically relevant areas. This paper concludes with actionable recommendations designed to optimize the implementation of NPST which is crucial for cultivating a highly competent teaching workforce, a cornerstone of the Viksit Bharat 2047 vision.

Keywords: National Education Policy 2020, National Professional Standards for Teachers, Teacher Education, Competency-based Education

Introduction

Every profession comes with certain guidelines and benchmarks which define its set of knowledge, ethical values, competencies and responsibilities. These standards promote the quality and accountability in the profession. The professional standards provide clear expectations from the teachers, irrespective of their country and affiliation (NPST, 2021). They make it easier to define competencies, ethical guidelines and performance indicators in relation to specific profession (Adeniu & Gallagher, 2017). Professional standards help teachers to evaluate their performance with the behavioral indicators. From a global standpoint, each country has its own distinct educational system and professional standards for teachers.

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To ensure quality in teacher education, India, for the first time, has introduced its Professional Standard Framework at the National level through NPST. NPST stands for National Professional Standards for Teachers which came in 2021 as a result of NEP 2020's main thrust on quality education and catalyst role of teacher in the process. NPST focuses on competency-based approach and 21st century skills aligning with the vision of NEP2020. With a well-defined, structured parameters for three levels of professional development for teachers, namely proficient, beginner and advanced, NPST perfectly aligns with the vision of outcome-based education. The standards ensure scaling up of the level of teachers in the best possible way (Patil & Karad, 2020). Further the significant thrust on adapting constructivist approach of learning viz a viz an enquiry led learning in Indian classrooms, teachers need to be professionally sound and determined to improve their teaching practices. The idea of Continuous Professional Development (CPD) for teachers also finds its concrete shape and manifestation through NPST alongside Sustainable Development Goal of quality education. NPST as envisaged by NEP 2020 will help enable the achievement of a just, inclusive, and sustainable world for all (Selvaraj et al., 2015). The three domains of teacher standards in NPST: Core values and Ethics, Knowledge and Practice & professional growth and development will open a gateway of success for the NEP 2020.

Historical Background of Professional Standards

Historically, teaching was initially an unregulated profession in most of the countries but with time, it evolved. In the 20th century, the Delors report along with 'Global Education Monitoring' (GEM) report played significant role in standardizing the teaching profession in many countries and providing it with a structured framework. Delor's report focused on lifelong learning and GEM report on teacher's competency frameworks. As a result, some countries, as part of the professional standards for teachers focused on standardization and accountability putting a significant focus on lifelong learning (Edelfet & Rath (2004)). With the arrival of the 21st century, digital learning, globalization and educational reforms paved the way for competency-based teacher frameworks. For example, the United Kingdom introduced its first Qualified Teacher Status (QTS) standards in 1998. Similarly, Australia developed its 'Australian Institute for Teaching and School Leadership (AITSL)' in 2003. These were significant developments in the area which were taking place around the world. India joined the race lately in the form of NPST. In this paper authors try to analyze the journey of professional standards of teachers in countries like South Africa, New Zealand, Australia and the United Kingdom and compare them with NPST in Indian context. The rationale for choosing these countries for the comparison lies in their uniqueness as different subcontinents around the world and representation of diversified demography in their teacher standards.

Table 1

Comparison of professional standards of India, UK, South-Africa, New Zealand and Australia

Country	Professional standards framing body	Professional levels	Domains/Sub-domains	Cultural Context	Technology Integration	Inclusiveness and Diversity	Assessment and Accountability system
India	NCTE (National Council for Teacher Education)	1.Proficient 2.Expert 3.Advanced	A. Core Values and Ethics 1.Constitutional Values 2.Professional Values	NEP driven focus on outcome-based education	NPST emphasizes the integration of ICT in	The NPST framework emphasize inclusivity by ensuring	1.NCTE maintains records for Continuous professional

			3.Student commitment 4.Professional relationships 5.Professional Commitment 6.Ethical dimension of technology B.Knowledge and Practice 1.Subject knowledge 2.Factors affecting student learning 3.Pedagogical knowledge 4.Curriculum structures 5.Integration of technology in education C. Professional Growth and Development 1.Professional development 2.Learning needs of teachers 3.Reflection 4.Engagement and participation in learning community	and Indian Knowledge system.	teaching-learning processes, use of digital tools for planning, instruction, and assessment.	that teachers are prepared to address diverse learners' needs, including socio-economic, cultural, linguistic, and ability differences at the backdrop of rich Indian diversity in India.	development. 2.Performance evaluation on the basis of indicators given in NPST
United-Kingdom	England: DFE (Department for Education) Wales: EWC (Education Workforce Council) Scotland: GTCS (General Teaching Council for Scotland) Northern Ireland: GTCNI (General Teaching Council for Northern Ireland)	QTS-based competencies	1. Professional Values and Conduct High Ethical Standards Respect and Equality Inclusivity 2. Professional Knowledge and Understanding Subject Expertise Pedagogy Assessment support for students with Special Needs 3. Planning and Professional Practice Effective Planning Classroom Management 4. Professional Collaboration Teamwork Parental Engagement 5. Professional Learning and Development Reflective Practice Lifelong Learning Innovation	All four UK nations require teachers to address cultural context by valuing and promoting diversity. This means understanding pupils' backgrounds to inform inclusive and relevant teaching, actively challenging prejudice, and fostering an environment of mutual respect.	While each UK nation has unique standards, all require teachers to integrate technology effectively. They emphasize using digital tools to enhance teaching, support pupil progress, and promote digital literacy.	The framework highlights inclusivity by requiring teachers to adapt teaching to respond to the strengths and needs of all pupils, including those with special educational needs or disabilities.	Across the UK, the performance management system is inextricably linked to teacher appraisal, though the specific processes and terminology vary between the four nations. The primary purpose is to ensure that teachers have the skills and support needed to carry out their professional duties

							effectively, ultimately contributing to better outcomes for pupils.
South Africa	SACE (South African Council for Educators)	General competency standards	1.Ethical Teaching for wellbeing of learners. 2.Teacher's collaboration for teaching-learning and professional development. 3.Teacher's support for social justice. 4.Teachers making thoughtful choices about their teaching. 5.Teacher's understanding of language. 6.Monitoring and assessment of learning.	The South African Professional Standards stress respect for cultural diversity, inclusive teaching that acknowledges learners' cultural identities with the integration of indigenous knowledge systems.	Technology is seen as a means to an end, not an end in itself. Focus on the use of digital tools to support instruction, not to replace traditional teaching methods.	Inclusion, as defined by SACE, is a core teacher competency. It requires educators to embrace diversity, address barriers to learning, and adapt their teaching to meet all learners' needs.	Registration of teachers with SACE and regular professional development programs.
New Zealand	Teaching Council of Aotearoa (Teaching Council)	Competency-based approach	1.Commitment to the indigenous culture of New Zealand (tangatawhenuatanga and TeTiriti o Waitangi partnership in Aotearoa) 2.Adequate use of inquiry, collaborative and problem-solving method. 3.Establishment of professional relationships. 4.Inclusion and empathy. 5. knowledgeable and adaptive teaching.	The Teaching Council of Aotearoa (TCA) has a very strong and explicit focus on Māori culture, which is central to its professional standards. The Council's approach is guided by Tātaiako: Cultural Competencies for Teachers of Māori Learners, a key framework that sets expectations for all educators in New Zealand.	The Teaching Council of Aotearoa (TCA) sees technology integration as a crucial element of modern professional practice, focusing on its purposeful use to enhance learning and prepare students for the future. The Council's view is not just about using digital tools, but about a teacher's digital fluency and their ability to strategically incorporate technology	The Teaching Council of Aotearoa (TCA) places a strong emphasis on inclusiveness and diversity, viewing it as a core ethical and professional responsibility for all educators in New Zealand. This commitment goes beyond general tolerance; it is actively woven into the professional standards and is closely linked to the country's Maori culture.	Self-growth cycles and peer evaluation

					to benefit all learners.		
Australia	APST (Australian professional standards for teachers)	Graduate level, proficient level, highly accomplished level and lead level	A. Professional knowledge 1. Knowledge of students and their learning patterns. 2. Content knowledge B. Professional Practice 1. Creation of supportive and safe learning environment. 3. Assessment and Feedback. C. Professional Engagement 1. Engagement in professional learning 2. Teachers engagement with colleagues, parents and the community	The Australian Professional Standards for Teachers highlight the importance of understanding and respecting students' diverse cultural backgrounds in the learning process.	The framework encourages digital competencies and technology integration	The Australian Professional Standards for Teachers (APST), developed by the Australian Institute for Teaching and School Leadership (AITSL), embed digital competencies across various standards rather than as a single, separate standard.	Performance based promotions with a focus on evidence of impact

Discussion

Similarities

When NPST of India is compared with teacher professional standards of UK, New Zealand, South Africa and Australia, it was found that each of these countries is unique in terms of its demography, economic, financial and social demands. All of them have gone through set of educational reforms and in particular GERM as a global movement pushed them to work for structured teacher education system and teacher standards. The core similarity between these countries was that as a priority, all the countries look towards teachers as subject experts. They primarily focus upon pedagogical skills, ethical conduct and continuous professional development of teachers.

There is a standard body in each country which separately looks after the issues related to teacher's professional standards in terms of creation, implementation and maintaining of these standards by teaching fraternity. In India, NCTE is responsible for all the aspects related to teacher education and professional standards. In United Kingdom, there are separate professional bodies for each constituent part but all of them work under Department of Education, UK and look towards professional standards of teachers. South Africa has created SACE (South African council for educators) as a teacher's professional body whereas Australia has Australian professional standards for teachers (APST) in this regard.

Differences

When countries were analyzed in terms of differences and in respect of different dimensions it was found that teacher standards in these countries are different in terms of structured career progression, cultural context, inclusiveness and social justice. Australia and India's focus is primarily on structured career progression as they talk about teacher levels like proficient, advanced and expert teachers. Other countries like New Zealand and South Africa do not focus

on career stages but competency-based approach. They have single-tier competency-based framework.

New Zealand and South Africa are also very unique in approach from other countries in terms of more focus on cultural context and social justice. New Zealand is more focused on integrating Māori culture in education because of its treaty of Waitangi between British crown and Māori tribes. The treaty has long influenced their policies including the principles of partnership, security and initiative. They are morally bound to the treaty. According to them, incorporating Māori perspectives made the educational system more inclusive and equitable. Incorporation of Māori culture seemed to have been crucial in decreasing their academic gaps and helped achieve success. Teachers' standards in South Africa also give due importance to inclusiveness and social justice because of the apartheid movement it faced for a long time. We already know about its complex socio-political history. The apartheid era before 1994 segregated the whole nation on racial lines. Teachers also faced a racial discrimination for a long time. As of now, Out of the ten main domains of their teaching standards, three directly point towards cultural inclusion.

It is to be noted that India's NPST has also cultural context attached to it in implied ways. NPST came out as a provision of NEP 2020. With significant focus of policy on Indian knowledge system (IKS) there is also corresponding initiatives being undertaken to integrate India's ancient and traditional knowledge into education across various levels.

After analyzing the standards, it was found that, Australia and UK have high digital competency expectations from their teachers. Even in NPST, teachers are assumed to be digitally competent. NPST in some way also tries to align the ICT based skills with UNESCO's digital competency framework. It evaluates teacher's performance on the basis of the use of innovative technology in classroom like lesson planning and assessment. The various levels of digital competencies are incorporated at different career stages. For example, at proficient level, teachers are expected to identify the appropriate ICT resources for effectively teaching concepts but at expert teacher stage they are expected to create their own ICT resources for teaching-learning process.

Talking about the accountability mechanisms, it can be observed that UK and Australia have strong teacher evaluation system while India's accountability framework is rapidly evolving. New Zealand is unique in terms of accountability mechanism as it focusses on self-reflection and professional growth.

Implementing NPST in Teacher preparation: Way Forward

NPST has been prepared with a positive outlook to enhance teacher quality in India but it can face challenges in terms of catering to the diverse teacher community. Language and local context could be a barrier in its successful implementation due to innumerable diversity to cater to. NPST has notable focus on ICT but even in today's era, many of the Indian schools in rural areas lack even the basic digital infrastructure. In this scenario, it will be very difficult for the teachers to use modern teaching aids in classroom.

NPST calls for the evaluation and assessment of teachers based on the given performance indicators which require investment in monitoring and evaluation process. NPST also call for mentoring and peer support system which needs to be worked upon at great length and breadth. Preliminary to all these challenges, to begin with, what the country needs is awareness towards NPST. This could be possible through sensitization programmes at central as well as state level. Local contextualization is another main challenge to NPST which can be tackled through orientation and workshop programmes at state and district level. Appropriate Training and

capacity building programmes for teachers and school leaders in the area of successful implementation NPST within a local context would go a long way to take the whole initiative in the progressive direction.

Conclusion

Kothari commission (1964-66) has rightly said that “the future of any country is shaped in its classrooms”. The future of a child is always shaped in the hands of the teachers. To create a knowledgeable and humane society, any country needs a well-structured teacher education system because teachers are the nation builders. The comparative analysis of NPST with the teacher professional standards of UK, South Africa, Australia and New Zealand made it clear that, even though India has joined very late he race for structuring the professional standards but it has all the positive and 21st century expectations from its teachers and they are well-presented with reference to NPST. Other countries have contextualized their well-defined teacher professional standards long time back. NPST is still in its initial years and looking forward for successful implementation. Successful implementation requires proper awareness through orientation and workshops. If successfully implemented, it has the tendency to functionalize the Indian education system in the most efficient way and performance of Indian teachers will be greatly enhanced. It has the ability to foster teacher quality, learning outcomes and digital education. It can create a strong teaching workforce for the nation and hence, will positively contribute towards achieving the dream of Viksit Bharat by 2047. The country needs well-trained and competent workforce to fulfill the dream of Viksit Bharat and India's overall development. It will complement the society with next generation learners who will be knowledgeable, skilled and work for self-reliant India.

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Creating Equitable and Inclusive Learning Environment: A Reflective Perspective

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Abstract

In the Indian subcontinent, inclusion of students from Socio-Economically Disadvantaged Groups (SEDGs) in school education is a major concern both for the policy makers as well as other government agencies working for educational concerns. National Education Policy (NEP) 2020 envisions galvanizing the whole Indian education system to achieve equitable and inclusive education. This indicates the exigency of study for understanding the challenges faced by schools for effective policy implementation at the ground level. In this context, this study focuses on the identification of challenges faced and strategies adopted by teachers for implementing equitable and inclusive education. This qualitative study suggests some innovative strategies as per the recommendations of NEP 2020 for making equitable and inclusive education a reality. The results indicate challenges faced by schools, based on these challenges, certain innovative strategies were suggested in light of NEP 2020. Imperative actions for the development of integrated curriculum, skill-based learning, and life skill training programmes were also considered germane to sustenance and better adjustment of students at various levels of school education.

Keywords: Inclusive Education, Equitable Education, National Education Policy 2020, Socio-Economically Disadvantaged Groups, School Education, Teaching Strategies

Introduction

India's commitment to inclusive education originated with the introduction of its first National Educational Policy in 1968. This policy, developed based on the recommendations of the Kothari Commission, emphasized the need for equal educational opportunities for all children, with a particular focus on reducing regional disparities and improving access for girls, minorities, and socially disadvantaged groups. Additionally, it highlighted the importance of integrating children with physical and mental disabilities into mainstream classrooms (National Policy on Education 1968). The Universal Declaration of Human Rights (1948) marked the first formal recognition of education as a fundamental right for every child. Article 26 of the Declaration promoted free and compulsory education for all children at the elementary level without discrimination. Building on this foundation, UNESCO, in collaboration with other agencies, launched the "Education for All" movement. Education was identified as the top priority in development programmes. Consequently, at the World Conference on Education in Jomtien (1990), discussions extended beyond free and compulsory elementary education to encompass the basic learning needs of

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children from all social backgrounds, regardless of their individual differences. The Salamanca Statement and Framework for Action on Special Needs Education (1994) reaffirmed an inclusive orientation towards education. During this meeting, representatives from various governments and international organizations convened to strategize on promoting inclusive education and the role of schools in translating policy into practice at the grassroots level. The first education policy of independent India in 1968 proposed the idea of equal opportunities of education to children of every class based on the recommendations proposed by the Kothari Commission. It was clearly delineated in the policy that, for promoting equalization of educational opportunities and social cohesion, there is a need to plan for maintaining regional balance, the education of girls, minorities, and backward classes. The requirement of integrated development programs was also emphasized for bringing mentally and physically handicapped children into regular classrooms.

In 1974, the government launched the Integrated Education for Disabled Children (IEDC), which not only provided financial assistance to schools but also supported them in providing education to physically and mentally challenged students to bring them into the mainstream. Subsequently, the concern for different categories of social groups was shown in the National Policy on Education 1986. Provision of vocational education was considered important for special groups like women, students of tribal groups, and students with disabilities. Establishment of common schools, special schools, and residential schools was recommended for students from different socio-economic backgrounds, students with disabilities, and residential schools for SC & ST students. Different provisions were made considering all these students as different groups before the onset of the National Curriculum Framework 2005. This framework has given the mantra of “Acceptance of Differences and Celebration of Diversities”. Major focus was given on creating an inclusive environment in schools and specifically in classrooms for all students irrespective of their individual differences. It recommended an inclusive curriculum and vocational-oriented skill development that avoids reinforcing stereotypes or limiting students based on group identities. and the capabilities of students of different groups. Despite ongoing efforts to promote inclusive education, the status of equitable and inclusive education in India remains unsatisfactory. Numerous initiatives and recommendations are outlined in various policies and programmes at both international and national levels; however, a significant gap persists between policy formulation and implementation. The National Education Policy (NEP, 2020) seeks to address these challenges by envisioning a future in which equity, accessibility, and educational inclusion are central to the Indian education system, with a renewed emphasis on bridging existing gaps.

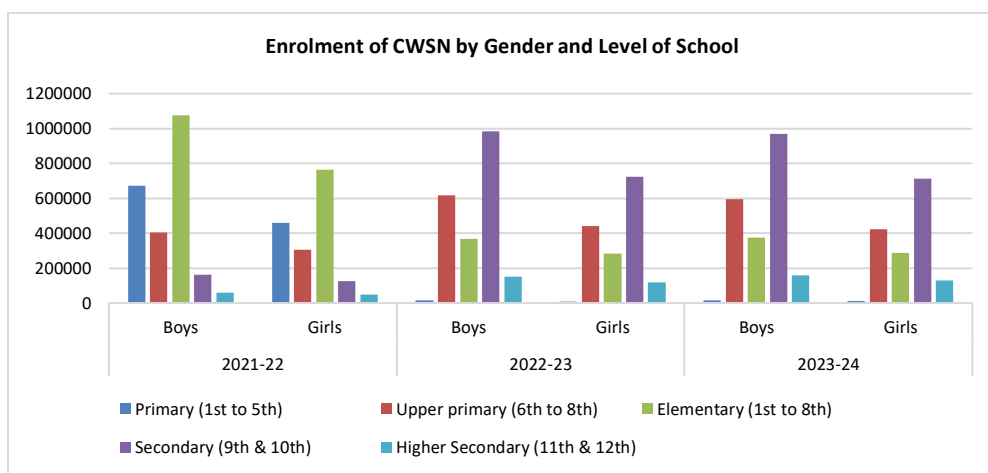
Vision of NEP 2020 for Equitable and Inclusive Education

National Education Policy 2020 has clearly described the importance of equitable and inclusive education for the students of SEDGs, which includes the following subgroups.



Figure 1: Classification of Socio-Economically Disadvantaged Groups

NEP 2020, recommended equitable and inclusive education for the above shown categories, where under gender identities emphasis is given on girls and transgender, under socio-cultural identities students from SCs/STs/OBCs and minority are included, and students of rural and remote areas are taken under geographical identities. Under the subcategory of disabilities and socioeconomic conditions, there are students with disabilities, learning challenged students, and children in vulnerable situations, as well as low-income households and immigrant populations. Inclusion of students of these subcategories of SEDGs is required because the enrolment ratio of these students is not up to the mark of the satisfaction level. Analysis of data of out-of-school children under a gender lens depicts a higher proportion of female children (3.23 per cent) aged between 6 and 13 are estimated to be out of school as compared to male children (2.77 per cent) (State of Education Report of India, UNESCO, 2019)

**Figure 2: Total Enrolment of Children with Disabilities Across Levels of Schooling**

Source: U-DISE Flash Statistics for years 2020-21, 2022-23, and 2023-24

It is evident from Figure 2 that the data on the enrolment of students with disabilities in India is plummeting drastically with an increase in the level of education.

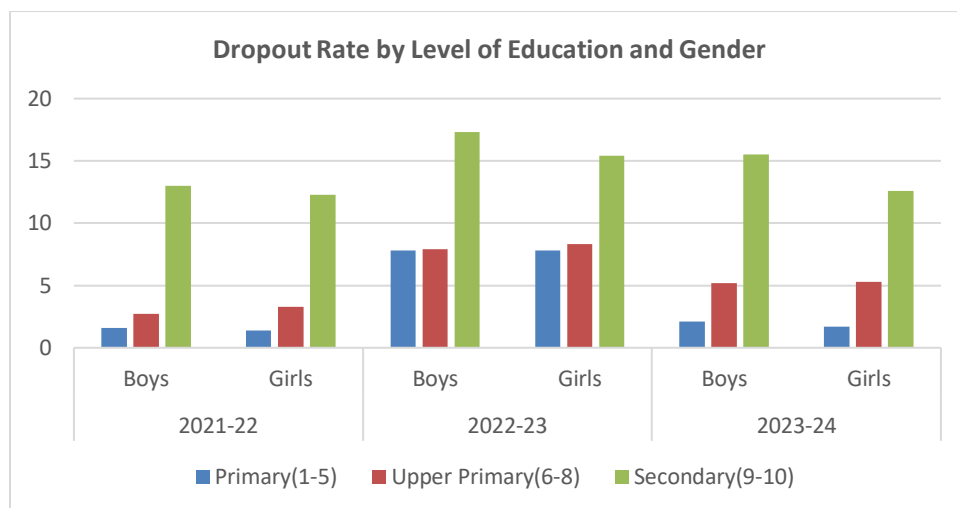


Figure 3: Dropout Rate by Educational Stage and Gender, all India 2021-24

Source: U-DISE Flash Statistics 2021-22, 2022-23, 2023-24

From Figure 3, it is very evident that the dropout rate of students of both genders is highest at the secondary level in India. The dropout rate is as prominent in the case of girls as it is for boys. From the data of Educational Statistics at a Glance, 2018, the engagement of male students in economic activities and the engagement of female students in domestic activities are the major reasons for the dropout of male and female students in India.

Review of Related Literature

The need for proper training is required for teachers and associated stakeholders to deal with students having disabilities. For meeting the needs of these students and bringing them into the mainstream, it is essential to sensitize the teachers along with teaching techniques and approaches for boosting the confidence level of students (Moriña, A. et.al.2020). The study of possible ways and strategies to deal with the barriers in implementing inclusive education in Pacific countries was conducted by Sharma, U., in 2019. The most challenging areas identified were inadequate teacher preparation, negative attitudes towards specially abled students and lack of involvement of stakeholders in addressing the issues of inclusive education. (Efthymiou, E. &etal. 2017) studied a multimodal perspective for the development of inclusive learning relationships in mainstream settings in a small village in the Midlands of England. The results of the study state that there is a great influence of behaviour and practices adopted by teachers in their classroom. Knowledge about individual differences of students with special needs and social pedagogical practices is also important in bringing students into mainstream settings. T. Saloviita (2020) surveyed Finnish comprehensive school teachers' attitudes towards inclusive education and reported that the attitudes and experiences of special education teachers were more positive as compared to those attitudes and experiences of other teachers. Also, the size of classrooms and, availability of resources have no association with the positive or negative attitude of teachers towards inclusive education. Johansson, S.T. et al (2021) analysed the perspectives of teachers in schools of rural areas of Haryana state in India. The study identified that while teachers generally accept students with disabilities in regular classrooms, they often harbor doubts about these students' potential, which negatively affects the opportunities provided for their academic success. Professional training and support for teachers in rural areas

are regarded as effective strategies for implementing inclusive education. Additionally, teachers' beliefs significantly influence the implementation of educational policies. According to Donath et al. (2023), teachers' knowledge, skills, and positive beliefs toward inclusive education shape their pedagogical practices. Professional development enhances teachers' competence and fosters positive attitudes toward inclusive education. Preparing teachers to promote inclusion is essential. Khan and Mishra (2023), in their analysis of inclusive teacher education in the Indian subcontinent within the context of the National Education Policy (NEP) 2020, suggested that teacher education programs should align with NEP 2020 guidelines for inclusion. Based on a review of the relevant literature, the following research questions and objectives were formulated.

Objectives of the study

1. To identify the challenges faced by teachers in implementing equitable and inclusive education in schools.
2. To study the strategies adopted by teachers for accommodating the students belonging to Socio-Economically Disadvantaged Groups (SEDGs)
3. To suggest innovative strategies for equitable and inclusive education in the context of NEP 2020.

Methodology

For this study Descriptive Research Design was used. Sixty teachers (N=60) were randomly selected from 15 different schools situated in 5 regions of New Delhi. Three schools were randomly selected from each region. From each school, 4 teachers were randomly selected for this study. Oral consent was taken for their participation in this study. Thematic Analysis as a method of Qualitative Research was used to identify and interpret the themes within the data.

An open-ended questionnaire was used to collect the data from the teachers. Thematic Analysis was done to discover the themes and meaning within the data. The responses were transcribed and documented for coding. The initial codes were generated, followed by labelling the features systematically to develop the major themes.

Analysis of the Data

For comprehensive analysis, data regarding the challenges faced by teachers were further divided into initial codes, which were grouped into subthemes. After a thorough study of sub-themes, the major themes were finalised

Table 1: Thematic Analysis for Challenges Faced by Teachers

Sample Data Extract	Code(s)	Sub themes	Theme
The inclusive school buildings are not fit for children's enrolment.	Funding issues Poor school building Learning material issues Large-sized classroom	Financial Resources Physical infrastructure Learning Material Pupil Teacher Ratio	Resource Constraint
Require a lot of training, patience, and compassion on the part of the teachers	Teacher-centred instruction	Conventional methods of teaching	Lack of Training and professional development
Time constraints, completion of syllabus	Lecture-based teaching Passive learners		

Unable to manage class Less participation of students	Indiscipline Unsympathetic Attitude Stress and anxiety Time management	Classroom management Teacher training	
Changing the mindset of society for inclusion Preconceived notion of not accepting the special needs of their child once identified by the school Parents are not comfortable if students of different SEDGs study with their children	Illiterate Parents Preconceived Notions Social discrimination	Educational level of parents Lack of awareness acceptance Attitude of parents Negative Lack of Community Engagement	Lack of Involvement of stakeholders
The dropout rate is high amongst girl students and students from poor economic backgrounds	Poor family Girl child Safety issues Illiteracy Early marriage Domestic and Economic Engagement	Gender disparity Economic disparity	Socio-Economic Barriers
Provision to safeguard the academic loss of students engaged in co-curricular activities Students from SEDGs face bullying and teasing	Academic pressure Stress Anxiety Peer pressure Indifferent attitude Career	Mental Wellbeing Counselling	Lack of Support System

Discussion:

Thematic Analysis of Challenges Faced by Teachers in Implementing Inclusive Education:

Teachers from various schools across Delhi reported a range of challenges posed by their schools' locations, infrastructure, and differing perspectives, or attitudes of parents and students towards inclusion. Despite this huge diversity of experience, efforts were made to consolidate the responses discovered under five major thematic categories.

- **Resource Constraints:** Challenges exist for schools with respect to the inclusion of students of socio-economically disadvantaged groups. In certain situations where schools do not have required infrastructure facilities such as accessible classrooms, washrooms, ramps, etc, and

trained teachers specifically for the children with special needs, the challenges are manifold. In the absence of adequate resources, such as learning and teaching material for students belonging to SEDGs, there is a high possibility of learning gaps for such students. Lack of sufficient resources to cater to the needs and requirements of students of SEDGs was considered the major challenge in schools. Inclusion of economically weaker sections of students (25%) is also pointed out as a financial liability for the school. Other than this, it was mentioned that in case a school has a smaller number of students but has different diversities of needs, it increases the financial burden on the school to recruit special teachers to fulfil the specific needs of such a smaller number of students. High classroom strength was also considered a barrier for setting up inclusive classrooms, as teachers were unable to provide individualised instructions to students.

- **Lack of Training and professional development:** The respondents highlighted shortage of trained teachers supporting inclusivity in the classrooms was one of the biggest challenges. Most teachers rely on traditional teaching methods to complete the syllabus, which often leads to a non-interactive classroom, passive learning, and discipline issues. The Lack of experience of school management committees and unsympathetic attitude towards students belonging to SEDGs were cited as a barrier in providing inclusive and equitable education. Respondents emphasized this need for targeted professional development focusing on inclusivity.
- **Lack of involvement of Stakeholders:** The teachers' responses pointed out to lack of awareness among parents and community stakeholders. Illiteracy was another prominent issue that further deepened their divide. Teachers also pointed out resistance from some School Management Committee (SMC) regarding inclusion, further reflecting their limited understanding and lack of awareness about inclusion, which further poses key challenges.
- **Socio-Economic Barriers:** Enrollment of students from SEDGs was not the only challenge, but retention of these students posed an even greater issue. Illiteracy of parents, safety concerns of girls, early marriage, and engagement of girls in domestic work and that of boys in economic activities were highlighted as considerable Socio-Economic Barriers.
- **Lack of Support System:** The participants reported unique challenges related to students engaged in co-curricular activities. Such students experienced stress during the examination due to absenteeism. As the number of such students was generally less so teachers sometimes ignored their needs and requirements, which might result in poor academic performance. Teachers also showed their apprehensions about dealing with the diverse needs of students and understanding their social and emotional conditions. A few teachers also pointed out unreported cases of bullying and teasing of Socio- Economically Disadvantaged students.

Data regarding the Strategies being adopted by teachers for accommodating the students belonging to Socio-Economically Disadvantaged Groups (SEDGs) was divided into initial codes, which were grouped into subthemes. After a thorough study of sub-themes, the major themes were finalised.

Table 2: Thematic Analysis Strategies being adopted by teachers for accommodating the students belonging to Socio-Economically Disadvantaged Groups (SEDGs)

Sample Data Extract	Code(s)	Sub themes	Theme
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"I try to engage all my children in the class with different activities." "I prefer the traditional way of teaching as it helps in timely syllabus completion" "Students were given equal opportunities to voice their ideas/questions, the first few minutes of each class"	Traditional Method Syllabus completion Peer Interaction Learning Activities Learning Teaching Material	Collaborative Learning Teacher Centric Learning Resources	Teaching Strategies
"Discussions and orientations of parents and teachers related to inclusion of students from different strata of the society was also initiated at the school level" "Maintaining information about disabilities and specific needs of students, sharing of such information with teachers and parents" "We organise extra classes and doubt clearing sessions"	Discussion Record Keeping Parents' Orientation Extra Class	Orientation programs Record Maintenance Awareness Programs Remediation	Administrative Strategies

Thematic Analysis of strategies being adopted by teachers for accommodating the students belonging to Socio Economically Disadvantaged Groups (SEDGs)

After thematic analysis of strategies used by teachers, the following major themes were identified

- **Teaching Strategies:**

Many teachers use interactive activities to raise engagement and collaboration. Many teachers have mentioned the use of different strategies like peer interaction, activity-based methods, collaborative learning, and using suitable learning teaching aids to accommodate children from SEDGs in the regular classrooms. A segment of teachers prefer the conventional method for syllabus completion. They assume that strict classroom discipline could be maintained through conventional ways. Also, some teachers stressed the need for capacity building to implement inclusive education.

- **Administrative Strategies:**

Maintaining information about the diverse needs of students and sharing such information with teachers and parents was one of the common initiatives that the schools took to implement inclusive and equitable education. Discussions and orientations of parents and teachers related to the inclusion of students from different strata of society were also initiated at the school level. For the inclusion of students participating in co-curricular activities, teachers were guided to

support them. One of the measures was taking extra classes for their doubt clearance to complete the syllabus, so that students can participate in their specific activities without any stress or anxiety.

After the Thematic analysis and discussion on Objective 1 and Objective 2 of the study, it is essential to propose certain innovative strategies for inclusive and equitable education in schools. During the analysis, it was observed that teachers recognized the two most important parameters of quality education, i.e., Equity and Inclusivity, as mentioned in NEP 2020.

Suggestions for Innovative Strategies for Inclusive and Equitable Education

Capacity Building of Teachers: The training of teachers needs to be planned in such a way that they can cater to the needs and requirements of students from socio-economically disadvantaged groups. As per NEP 2020, there is a need to have knowledge and sensitivity towards gender identities, cultural identities, and students from different socio-economic conditions.

Financial Support System: Financial aid needs to be provided to all the schools to establish an inclusive setting. Every school must involve Alumni, NGOs, Corporates, etc, in school activities and events to generate funds to overcome financial liabilities.

Collaborative Program for Social and Emotional Wellbeing: A collaborative programme can be developed for teachers and students to foster positive relationships and nurture their mental health. It will help in acquiring resilience, positive attitude, efficacy, and responsible decision-making, both by the teachers and the students.

Skill-Based Education: The skill-based education may be promoted in schools without additional financial burden by engaging the local artisans, technicians, self-help groups, etc, for providing practical exposure. Also, the products created by the students may be sold for fund generation to sustain skill-based education.

SEDGs Cell and Inclusion Policy: Every school should develop a comprehensive policy of inclusion. Under this policy, it can be made compulsory for all stakeholders to attend sensitization programmes at least twice a year. For addressing the grievances of SEDGs students, a special cell needs to be created in every school. The major objective of this cell will be to provide guidance and counselling by trained personnel to the students of SEDGs on an immediate basis without any delay.

Resource Sharing: School clusters within the same geographical location can share resources for achieving the objectives of inclusive and equitable education. This will help the schools to share their financial burden as well as share innovative ideas for developing further strategies as per the specific needs of students.

Cross Disability Approach: The schools in order to implement inclusion in true sense need to emphasise on Cross disability approach for providing equitable learning opportunities to all children with specific disabilities rather than segregated programs. As promoted by **Rights of Persons with Disabilities Act (2016)**, **Samagra Shiksha (2018)**, and the **National Education Policy (2020)** this approach ensures common support systems, accessible infrastructure, flexible teaching strategies, and teacher training for addressing multiple disabilities

Innovative Teaching Strategies

Culturally and Gender Responsive Pedagogy: To respect the diversity of student's teachers should use culturally and Gender Responsive pedagogy to avoid unconscious biases based on traditions across cultures. Gender neutral language needs to be consciously used by teachers in the classroom.

Community Focused Projects: To establish a connection with community projects with real-life utility need to be given to the students. Such projects must seek solutions to the problems related to the community.

Digital Tools: To foster active learning, creativity, and critical thinking in students, the teachers should use authentic open educational resources for classroom instruction. It will not only help in making the learners active but also help in knowledge creation. Many digital tools or platforms are available free of cost for learning and assessment of the students.

Differentiated Instructions: For inclusion, it is important to provide differentiated instructions to encourage interaction and engagement across genders and cultures. It may be achieved in the classrooms through flexible grouping, individualised support so that every individual gets a safe space for expression. Also, preparation of personalised plans for teaching for children with special need called Individualised Education Plans (IEP) can be used.

Inclusive Lesson Planning: Components of inclusive lesson planning, like knowledge of learner profiles, flexible content delivery, multiple instructional pathways, adapted resources, scaffolding activities, and diverse assessment methods, help teachers build an inclusive classroom environment. Use of multilingual instructions can also be helpful to promote equity and enhance the comprehension level of learners to achieve long-term academic goals.

Universal Design for Learning (UDL): In order to have inclusive classrooms it is recommended to use a framework which helps in designing lessons that are flexible and accessible for all learners. UDL allows multiple means of engagement(games, stories, pictures, examples, collaboration etc), representation(visual, audio, tactile) and expression(oral, written, creative arts, dramatization) in the same lesson.CBSE Handbook on Inclusive Education (2020) provides detailed plan for UDL lesson that can be adapted by the teachers.

Peer Mediated Learning: Since the children learn in the most comfortable manner from each other's experiences so with the guidance of the teachers peers can prove to be an essential learning resource. Thus **Peer-mediated learning** transforms classrooms into supportive communities reinforcing the values of cooperation and inclusivity.

Conclusion

The National Education Policy 2020 outlines provisions for equitable and inclusive education at the school level, and steady progress has been observed in this area. However, teachers continue to encounter challenges in implementing equity and inclusivity in their classrooms. Although various strategies are employed to foster an inclusive atmosphere, gaps remain in current practices for achieving equitable and inclusive education. To address these challenges, innovative strategies are recommended to help schools more effectively realize the vision of inclusive and equitable education articulated in the National Education Policy 2020.

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Inclusive Education in the Digital Age: Harnessing the Power of Assistive Technology

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Abstract

In the digital age, inclusive education has become a global priority aimed at ensuring equal learning opportunities for all students, including those with disabilities. Assistive technology (AT) serves as a transformative tool in this mission by reducing barriers, fostering participation, and promoting equity in classrooms. This paper explores how AT enhances accessibility, engagement, and self-confidence among learners with diverse needs while supporting teachers in implementing inclusive pedagogies. It categorises assistive technologies based on their functional contributions, such as access tools, communication aids, and cognitive supports and demonstrates how they operationalise the principles of Universal Design for Learning (UDL). The study undertakes a systematic review of recent research to identify effective practices, implementation barriers, and strategies for sustainable AT integration in inclusive schools. Findings reveal that effective inclusion through AT requires comprehensive teacher training, supportive policies, and collaborative planning. The paper concludes that harnessing assistive technology is not only a matter of digital innovation but also a commitment to educational justice and human rights.

Keywords: Assistive technology, inclusive education, accessibility, digital learning, universal design for learning (UDL), teacher training, digital equity.

1. Introduction

Inclusive education represents a paradigm shift from segregation toward equality and participation in learning. The digital revolution has further intensified this movement, redefining how students access, interact with, and construct knowledge. Yet, despite remarkable progress in educational technology, students with disabilities often remain marginalised due to physical, sensory, or cognitive barriers. In this context, assistive technology (AT) has emerged as a vital enabler of inclusion, allowing students with diverse abilities to engage meaningfully with the curriculum and their peers (Chambers, 2020; McNicholl et al., 2019).

Assistive technologies range from low-tech tools, such as adapted writing instruments, to high-tech digital solutions, including screen readers, voice-recognition systems, and eye-tracking devices. When strategically integrated into pedagogy, these technologies embody the principles of Universal Design for Learning (UDL), which advocate for multiple means of representation, engagement, and expression (Dalton, 2017; Tobin, 2021). They not only enhance accessibility but

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also foster independence, confidence, and social participation among students with disabilities which are key indicators of successful inclusion (Yenduri et al., 2023).

The purpose of this paper is to examine how assistive technology can be harnessed to promote inclusive education in the digital age. It categorises the major roles of AT in inclusion, discusses barriers to effective adoption, and recommends best practices to ensure that technological innovation translates into genuine educational equity.

2. Methodology

This study followed a systematic literature review approach to examine how assistive technology contributes to inclusive education. The methodology was guided by established qualitative synthesis protocols emphasizing rigor, transparency, and thematic integration.

2.1 Research Design

A qualitative, descriptive design was employed to synthesize findings from existing empirical and conceptual studies on AT and inclusive education. The objective was to identify major themes, implementation challenges, and effective strategies reported across diverse educational settings.

2.2 Data Sources and Search Strategy

Relevant literature was gathered from databases including ERIC, Scopus, SpringerLink, Taylor & Francis Online, and Google Scholar. Search terms included assistive technology, inclusive education, digital accessibility, universal design for learning, educational technology for disabilities, and inclusive pedagogy.

2.3 Inclusion and Exclusion Criteria

Studies published between 2018 and 2024 were primarily included if they (a) focused on the educational use of AT, (b) discussed inclusive pedagogical outcomes, and (c) were published in English. Excluded materials included non-scholarly reports, outdated technological analyses, and studies unrelated to formal education.

2.4 Data Analysis

Selected articles were coded thematically to extract patterns concerning the functions of AT in inclusion, barriers to implementation, and best practices for integration. Themes were grouped into conceptual categories such as accessibility, engagement, teacher competence, and policy frameworks. This interpretive synthesis enabled the identification of coherent strategies for bridging technology and inclusion.

2.5 Ethical Considerations

As this study analyzed published literature, no human participants were involved, and no ethical clearance was required.

3. The Role of Assistive Technology in Inclusive Education

Inclusive education aspires to create learning environments where every learner, regardless of ability or disability, can participate, achieve, and flourish. In this context, assistive technology (AT) acts as the bridge between potential and opportunity. It transforms barriers into enablers allowing students with disabilities to access, process, and express knowledge in ways that align with their individual strengths (Chambers, 2020). The following subsections categorize AT's inclusive functions across five major dimensions: accessibility, participation, self-efficacy, universal design, and digital preparedness.

3.1 Enhancing Accessibility and Learning Equity

Accessibility lies at the heart of inclusive education. Without equitable access to information and participation, the goal of inclusion remains unattained. Assistive technologies provide the tools necessary to level this playing field.

For students with visual impairments, screen readers, braille displays, and text-to-speech applications convert digital text into accessible formats (Khribi, 2022). Learners with hearing impairments can benefit from captioned videos, visual alert systems, and speech-to-text transcription services (Borders et al., 2016). For those with motor disabilities, adaptive keyboards, switches, and voice-input devices enable independent computer use and participation in classroom activities (Metatla et al., 2018).

By converting inaccessible material into usable forms, AT ensures that all learners regardless of their sensory, physical, or cognitive challenges can access the same curriculum content. This transformation of access into equity is central to digital inclusion, which forms the foundation of contemporary inclusive education (Evmenova, 2020; Lee & Templeton, 2008).

3.2 Promoting Active Participation and Engagement

Inclusive education extends beyond physical presence; it requires active engagement. Assistive technology facilitates this by enabling learners with disabilities to communicate, collaborate, and contribute to shared learning environments.

Augmentative and Alternative Communication (AAC) devices such as speech-generating systems or symbol-based applications, allow non-verbal students to participate in classroom interactions (Bondurant, 2016). Similarly, interactive whiteboards, digital storytelling tools, and game-based learning platforms encourage multisensory engagement for learners with attention difficulties or specific learning disabilities (Oliveira et al., 2018).

These tools support social inclusion, allowing students to express ideas, ask questions, and work collaboratively, thus countering isolation. In inclusive classrooms, AT fosters belonging, an essential psychological dimension of participation. As McNicholl et al. (2019) observed, the use of digital tools empowers learners to shift from passive recipients of aid to active agents in their educational journey.

3.3 Building Confidence, Independence, and Self-Efficacy

Inclusive education must address not only academic needs but also the psychological dimensions of learning such as, self-confidence, motivation, and self-efficacy. Assistive technology plays a transformative role here by empowering learners to act more independently, thereby strengthening their sense of competence.

When students can read using text-to-speech software, write through speech-recognition systems, or navigate content using adapted devices, they begin to view themselves as capable and autonomous learners (Yenduri et al., 2023). This autonomy reduces dependency on teachers or peers, fostering a greater sense of self-worth and agency.

Furthermore, the confidence gained through successful engagement often translates into better social interaction and academic persistence. Students who feel capable are more willing to take risks in learning, a hallmark of inclusive growth. In this way, assistive technology contributes not only to academic inclusion but also to psychological inclusion, an often-overlooked dimension of inclusive education (Stumbo et al., 2009; Batanero et al., 2022).

3.4 Supporting Universal Design for Learning (UDL) in Practice

The ultimate goal of inclusive education is not to provide special treatment to a few but to design systems that are inherently flexible for all. Assistive technology aligns seamlessly with the

Universal Design for Learning (UDL) framework, which advocates for multiple means of representation, engagement, and expression (Dalton, 2017; Izzo, 2012).

Through AT, teachers can provide multiple means of representation, offering information in visual, auditory, or tactile forms, such as captioned videos or braille e-books. Multiple means of engagement can be achieved through interactive media, gamified applications, or virtual simulations that cater to diverse learning preferences. Lastly, multiple means of expression are enabled when students demonstrate understanding through digital storytelling, visual design, or speech-to-text outputs instead of conventional writing (Kohler-Evans et al., 2019).

In this sense, AT serves as both a tool and a philosophy, it redefines pedagogy to prioritize flexibility and learner variability. When integrated intentionally, it transforms the classroom into a universally designed learning environment, benefitting not only students with disabilities but all learners (Shepherd & Alpert, 2013).

3.5 Preparing Students for a Technology-Driven World

In the 21st century, digital literacy is a prerequisite for inclusion, not only in education but also in society at large. Assistive technologies provide learners with disabilities the skills and confidence required to navigate a technology-driven world. By familiarising them with digital tools, software interfaces, and online communication, AT strengthens digital competence and career readiness (Alanazi, 2023).

Moreover, many AT devices, such as smart home controls or adaptive communication appstend learning beyond the classroom, enhancing daily independence and lifelong learning. For example, the integration of voice assistants or wearable technologies empowers students to manage tasks and access information independently, reducing reliance on external support (Metatla et al., 2018).

Therefore, assistive technology must be viewed not merely as an educational support mechanism but as a pathway to empowerment, equipping learners with the technological fluency necessary for full participation in the digital society.

3.6 Collaboration and Teacher Empowerment

Inclusive education thrives on collaboration among educators, specialists, and families. However, the successful implementation of AT depends heavily on teacher preparedness. Studies reveal that teachers often hesitate to use AT due to limited training and technical confidence (Witte, 2020).

To ensure success, educators must receive sustained professional development that focuses on both the pedagogical and practical aspects of assistive technology. Collaborative models, where teachers, AT specialists, and parents work together, ensure that tools are chosen based on student needs rather than convenience (Bausch et al., 2015). When teachers are trained to integrate AT effectively, inclusion becomes not just a policy directive but a lived classroom reality. As Laughlin et al. (2018) noted, empowered teachers are the true catalysts of inclusive technology integration.

Assistive technology, when embedded within inclusive pedagogy, does far more than compensate for disabilities, it redefines the meaning of inclusion. It transforms accessibility into participation, participation into empowerment, and empowerment into equity. By merging technological innovation with human-centered design, educators can realize the full promise of inclusive education: that every learner, regardless of ability, deserves both access and agency in their learning journey.

4. Challenges in Implementing Assistive Technology for Inclusive Education

While assistive technology (AT) has proven transformative in theory, its practical implementation in inclusive education remains fraught with challenges. These barriers are typically systemic, attitudinal, and practical, each impeding the equitable realization of AT's potential in classrooms.

4.1 Systemic and Structural Barriers

One of the foremost systemic challenges is inadequate funding. Effective AT integration requires sustained investment in hardware, software, technical support, and continuous training (Lee & Templeton, 2008). Many schools, particularly in low-resource settings, struggle to allocate adequate budgets for AT procurement and maintenance (Chambers, 2020). This economic gap perpetuates inequity, with marginalised learners often denied access to essential technological supports.

Additionally, the absence of clear national or institutional policies regarding AT provision, assessment, and usage leads to inconsistency and fragmentation in practice (Evmenova, 2020). Without standardised frameworks, schools rely on ad hoc or individual efforts, which are insufficient for systemic inclusion.

Another structural limitation is the scarcity of AT specialists, professionals capable of assessing student needs, configuring tools, and offering technical assistance. The shortage of such expertise reduces the likelihood of sustained and effective AT use in schools (Tuck et al., 2023).

4.2 Attitudinal and Cultural Barriers

Even where resources exist, attitudinal resistance often hampers the adoption of assistive technology. Many educators view AT as a complex or specialized intervention rather than a mainstream teaching tool. This misconception creates hesitation, especially among teachers unfamiliar with digital technologies (Sami, 2016).

Moreover, societal stigma surrounding disability and technology use continues to pose psychological barriers for both students as well as teachers. When AT is perceived as a marker of deficiency rather than empowerment, it discourages its open use in classrooms (Parker & Conversano, 2021). This stigma undermines inclusive values and isolates students rather than integrating them.

Resistance to change is also significant. Transitioning from traditional to technology-enhanced pedagogy requires educators to reimagine their roles as facilitators rather than sole transmitters of knowledge. Such shifts in mindset take time, institutional encouragement, and professional reinforcement (Batanero et al., 2022).

4.3 Practical and Technical Barriers

Beyond funding and attitudes, schools often face logistical and technical difficulties that obstruct AT integration. Common problems include unreliable internet connectivity, device incompatibility, and frequent software malfunctions (Witte, 2020). These disruptions not only frustrate teachers but also hinder students' consistency in learning.

Equally problematic is the lack of sustained professional development. Teachers who initially receive AT training frequently lack follow-up support, leading to the gradual abandonment of technology in daily practice. Without continuous mentorship and technical assistance, AT becomes underutilised or misapplied (Laughlin et al., 2018).

Finally, time constraints pose a real challenge. Teachers already burdened with heavy workloads often find it difficult to allocate time for individualized AT assessments, configuration, and monitoring. Inclusive technology integration, therefore, requires systemic scheduling adjustments and administrative support.

5. Best Practices for Effective Integration of AT in Inclusive Classrooms

While challenges are evident, numerous studies point toward a range of best practices that can ensure the successful and sustainable adoption of assistive technology in inclusive education. These practices emphasise a balance of pedagogical intentionality, collaboration, and institutional support.

5.1 Needs-Based and Student-Centered Assessment

Effective inclusion begins with understanding each learner's unique needs. Comprehensive, individualised assessments involving teachers, students, parents, and AT specialists should precede tool selection (Merbler et al., 1999). This participatory approach ensures that AT solutions align with both educational objectives and student preferences, thereby preventing technology abandonment (Morgan et al., 2018).

Regular goal setting and progress reviews should accompany the implementation process. These allow educators to evaluate the impact of AT on learning outcomes and adjust tools or strategies accordingly.

5.2 Universal Design and Inclusive Pedagogical Planning

Rather than treating AT as an add-on for a few students, educators should embed it within Universal Design for Learning (UDL) frameworks (Dalton, 2017). This means designing lessons that incorporate flexible access points for all learners, using captions, tactile materials, adjustable text displays, and multimodal assessments.

Such integration ensures that assistive technologies benefit every student, not only those formally identified with disabilities. When inclusion is normalized through design, diversity becomes a natural feature of learning rather than an exception.

5.3 Teacher Empowerment and Professional Development

Teacher competence is the linchpin of inclusive technology implementation. Schools should provide continuous professional development that blends technical training with inclusive pedagogy. Workshops alone are insufficient; what is needed is embedded learning, mentorship, peer collaboration, and reflective practice (Bausch et al., 2015).

Pre-service teacher education programs should also include modules on assistive technology literacy, ensuring future educators enter the profession prepared for inclusive digital environments (Yenduri et al., 2023). When teachers understand the pedagogical "why" behind technology, not just the technical "how", they become advocates for inclusion rather than reluctant implementers.

5.4 Collaboration and Partnership Networks

The inclusive potential of AT depends on strong collaboration among educators, families, administrators, and specialists. Regular communication and shared decision-making allow for coherent implementation and collective problem-solving (Jones & Hinesmon-Matthews, 2014).

Community partnerships and NGOs can further support schools by providing expertise, funding, or devices. Moreover, developing peer support networks among students where learners help one another with technology can normalise AT use and reduce stigma.

5.5 Ethical and Equitable Access

Equitable access must guide every aspect of AT integration. Schools should ensure that students' privacy and data are protected, particularly when using cloud-based or AI-powered applications (Petcu et al., 2014). Similarly, policymakers must prioritise digital equity, guaranteeing that low-income or rural students have access to the same AT as their urban counterparts (Morgan et al.,

2018). Inclusivity, in essence, is an ethical practice; it requires fairness not only in opportunity but also in protection and dignity.

6. Future Directions

The future of assistive technology in inclusive education is both promising and dynamic. Emerging innovations such as artificial intelligence, virtual reality (VR), and brain-computer interfaces (BCI) are expanding the frontiers of accessibility. AI-powered personalisation, for instance, can adapt content to real-time learner needs, while VR offers immersive simulations for students with sensory or mobility challenges (Alanazi, 2023).

However, technological advancement alone is insufficient. The next phase of inclusion demands policy coherence, research-based teacher education, and primacy to student voice. Learners with disabilities must be active participants in shaping the tools meant for them; advocates of their rights, and not just passive beneficiaries.

Finally, future educational systems must view assistive technology not as an expense but as an investment in human potential. When accessibility and innovation converge, education moves closer to fulfilling its moral purpose: enabling every learner to participate, learn, and lead.

7. Conclusion

In the evolving landscape of the digital age, assistive technology stands not merely as a set of devices or tools but as a transformative force for realising the ideals of inclusive education. It empowers learners with disabilities to transcend barriers, enabling access, participation, and self-expression in ways that reaffirm education as a universal human right. When integrated thoughtfully within pedagogical design, assistive technology bridges the gap between diversity and equity, turning inclusion from a policy aspiration into a lived classroom reality.

However, the true potential of assistive technology lies beyond technical provision; it depends on human commitment, collaborative spirit, and visionary policy. Teachers must be empowered through professional preparation, institutions must ensure equitable access, and societies must embrace diversity as a cornerstone of progress. The convergence of innovation and compassion can redefine learning environments into spaces where every student, regardless of ability, can engage, achieve, and lead with confidence. Ultimately, inclusive education powered by assistive technology is not just about adapting to differences; it is about celebrating them, creating a world where technology serves humanity, and every learner finds their rightful place in the shared pursuit of knowledge.

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A Critical Review of Sexuality Education Policies and Legislation for Students with Disabilities in India

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Abstract

The inclusion of sexuality education within broader educational practices is gaining wider appreciation in the country. Controversial and unevenly applied, India still considers its inclusion within education systems as the bottom of the ladder; the lack of such frameworks and policies makes matters worse for students who are disabled. The National Education Policy (2020), the Rights of Persons with Disabilities Act (2016), and the Right to Education Act (2009) are just some of the documents that frame caste and sexuality education. This paper will present an in-depth and qualitative disruptive analysis of the policies, legislation, and associated literature. This paper will focus on the gaps in the literature on education in India with respect to international documents such as the Technical Guidance on Sexuality Education. These documents, as well as the literature, demonstrate the disproportionate access to services disabled students face, the violence they are subjected to, as well as the apathy that surrounds policies on disability, sexuality, and the sociocultural default in India.

The policies and legislative framework review also point out the fact that the denial of the right to sexuality education within the policy framework is an instrument of greater subordinate domination of disabled students. Other low and middle-income countries also face such issues, but it is evident that gaining political support for the provision of sexuality education, as well as mobilization of community resources to support such initiatives, is possible. As described in this paper, it is essential for human rights and development for the educational systems in India to align with the best practices of the world. India can work towards closing these gaps to ensure the construction of protected, informed, and inclusive environments for all learners, including learners with disabilities.

Keywords: Sexuality Education, Disability, Policy Review, Inclusion, India, Qualitative Research

Introduction

UNESCO's International Technical Guidance on Sexuality Education (2018) describes sexuality education as a structured, curriculum-based learning process that offers children and young people information and skills that are age-appropriate, culturally meaningful, and scientifically sound. It covers the cognitive, emotional, physical, and social dimensions of sexuality. Comprehensive Sexuality Education (CSE) expands this foundation by using a holistic, rights-

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oriented, and evidence-informed framework that develops learners' values, attitudes, and competencies to protect their health and dignity, form respectful and safe relationships, exercise bodily autonomy, make informed choices, and advance gender equality. UNESCO (2018) also highlights that CSE is not limited to biological content; it includes themes such as consent, communication, safety, social norms, and relationships, making it essential for the development and protection of all learners, including those with disabilities.

Indian sexuality education has been dominated by socio-cultural concerns for years, resulting in limited implementation and less concern in educational systems (Kumar, 2013; Population Foundation of India, 2022). Global agencies, including UNESCO (2018) and the World Health Organization (WHO, 2017), hold that comprehensive sexuality education (CSE) is a human right and a universal element of youth health. Yet debates remain in India over whether to teach in schools. Individuals with disabilities are again excluded from this discussion since policies and legislative structures tend to emphasize general inclusion and rarely include sexuality as a developmental and rights-based need (Rohleder, 2018; Andreassen, 2024). Evidence from everywhere globally indicates that CSE is likely to enhance the understanding of young people's responsibilities and rights, reduce unwanted pregnancies, and enhance gender equality (Chandra-Mouli et al., 2018; UNESCO, 2018). However, views on disabilities are often overlooked in sexuality education. For instance, studies have shown that students with disabilities are likely to suffer from abuse, stigma, and social exclusion if sexuality education is absent or inadequate (Nguyen & Wilkins, 2020; Hameed et al., 2020).

Given that educational systems in low- and middle-income countries (LMICs) may not have support for implementation and inclusion, the risks are most critical in these settings (Keogh et al., 2018; Michielsen et al., 2021). Studies from across the globe indicate that CSE has the potential to raise awareness of the responsibilities and rights of young people, reduce early pregnancies, and enhance gender equality (Chandra-Mouli et al., 2018; UNESCO, 2018). However, attitudes toward disabilities are often overlooked in sexuality education. For instance, studies show that when sex education is absent or poor, students with disabilities are more prone to experience stigma, social exclusion, and abuse (Nguyen & Wilkins, 2020; Hameed et al., 2020). As a result of often poor implementation support and lack of inclusivity in the education systems of low- and middle-income countries (LMICs), these risks are particularly acute there (Keogh et al., 2018; Michielsen et al., 2021). This article critically analyses Indian policy and legislative approaches, highlighting their involvement with or avoidance of sexuality education among students with disabilities. The review highlights the extent of silence in India by comparing national approaches with global guidelines, such as UNESCO's International Technical Guidance (2018) and WHO's Global Standards (2017). It also examines how socio-cultural resistance, unprepared teachers, and the absence of disability-sensitive curricula increase the likelihood that students with disabilities will be excluded.

Objectives

This paper is guided by the following objectives:

1. To review key Indian education policies (NEP 2020, RPwD Act 2016, RTE Act 2009) in relation to sexuality education for students with disabilities.
2. To compare Indian policy approaches with international frameworks such as UNESCO's International Technical Guidance (2018) and WHO's Global Standards (2017).
3. To identify implications of policy neglect for learners with disabilities and propose recommendations for disability-inclusive sexuality education

Literature Review

The significance of thorough sexuality education is continuously emphasized by international research. Evidence that CSE increases gender equity, lowers the number of pregnancies that occur too soon, and empowers students by promoting their understanding of their rights and responsibilities is presented in UNESCO's International Technical Guidance (2018). Furthermore, Rohleder (2018) highlights how sexuality education can improve autonomy, lessen abuse susceptibility, and encourage social engagement for youth with disabilities. Research conducted in North America and Europe demonstrates that disability-inclusive sexuality education programs help students become more confident, communicate more effectively, and adopt safer behaviours (Ballan, 2012).

Nguyen and Wilkins (2020) reported that incorporating disability perspectives into sexuality education enhanced self-advocacy and personal rights awareness in sub-Saharan Africa. These results emphasize that inclusion is a necessary component of equitable sexuality education rather than an add-on. However, studies also point to issues like stigma, inadequate teacher preparation, and shoddy policy frameworks.

Efforts to implement sexuality education in India have been inconsistent and uneven across states. The Adolescent Education Programme (AEP), initiated under the National AIDS Control Programme with support from NCERT and CBSE, was designed to introduce life-skills education and sexuality-related learning into school settings. However, resistance from communities and political actors led several states to discontinue the programme (Kumar, 2013). Subsequent reviews highlight that teachers often feel unprepared and lack adequate training to teach sexuality-related content, creating further challenges in effective delivery (Chandra-Mouli et al., 2015). These barriers are even more pronounced for learners with disabilities, who face additional disadvantages such as limited availability of accessible instructional materials, insufficiently trained special educators, and minimal family engagement.

Although international research consistently affirms the benefits of comprehensive sexuality education (UNESCO, 2018), Indian studies reveal context-specific obstacles that hinder its adoption. Socio-cultural discomfort surrounding sexuality topics remains a major barrier, as reflected in the withdrawal of AEP in several regions (Kumar, 2013). Moreover, national analyses and reports from civil-society organisations point to gaps such as inadequate teacher preparation and persistent policy silence, which further impede the integration of sexuality education into mainstream and inclusive education frameworks (Population Foundation of India, 2022).

The work of NGOs like TARSHI and CREA, which have created inclusive materials and workshops for sexuality education, is also documented in recent scholarship. These are still small-scale, though, and have no impact on prevailing policy. A policy silence that sustains marginalization is reflected in more recent policy discussions, particularly those under the NEP 2020, which emphasize inclusion and life skills but do not specifically incorporate sexuality education.

Methodology

This study reviewed policy using a qualitative and interpretive methodology. The National Education Policy (2020), the Rights of Persons with Disabilities Act (2016), and the Right to Education Act (2009) were among the primary documents examined because of their significant influence on Indian education and inclusion. To offer comparative insights, secondary sources, including peer-reviewed research, NGO reports, and international frameworks (e.g., UNESCO 2018; WHO 2017), were analysed. To find explicit references, silences, and gaps in sexuality

education, thematic coding was employed. Evaluation of policy flaws and reform opportunities was made possible by comparative analysis with international standards.

Policy Review

Whereas life skills and inclusive education are highlighted under the National Education Policy (NEP, 2020), sexuality education is not explicitly addressed. Political insensitivity as well as cultural resistance can be explained by this exclusion. There is no acknowledgment of sexuality education as part of integral development in the NEP, yet accessible learning environments and support systems for disabled students are promoted. Like the NEP, the Rights of Persons with Disabilities (RPwD) Act (2016) does not touch upon sexuality issues, but it does ensure the right to inclusive education and integrated development. The Right to Education Act of 2009 provides free and compulsory education but focuses very little on curriculum content under sexuality education in Favor of infrastructure, enrolment, and access. The silence of these policies speaks volumes about the structural ignoring of sexual rights for disabled learners

Conversely, sexuality education is explicitly articulated as a rights-based need for all students, including the disabled, in UNESCO's International Technical Guidance (2018). This reflects a significant gap between India's international obligations and its national policy practice. Students with disabilities are left at the intersection of cultural opposition and policy omission in the absence of clear acknowledgment.

Comparison of Sexuality Education in Indian Policies and International Frameworks:

Policy/Framework	Key Focus	Reference to Sexuality Education	Disability Inclusion	Notes/Comparative Insights
NEP (2020)	Inclusive education, life skills, socio-emotional learning, and teacher training	No explicit mention of sexuality education	General mention of inclusion, but sexuality is excluded	Reflects cultural and political hesitation (Sharma & Singh, 2022; Michielsen et al., 2021)
RPwD Act (2016)	Rights-based approach to inclusive education and holistic development	No mention	Strong emphasis on inclusion, but sexuality is absent	Structural neglect of sexual rights for persons with disabilities
RTE Act (2009)	Free and compulsory education, access, and enrolment	No mention	No reference	Prioritises access, not content (Kumar, 2013)
UNESCO Technical Guidance (2018)	Rights-based, evidence-informed CSE framework	Explicit, comprehensive, mandatory	Strong disability inclusion	Provides a global benchmark that India has yet to adopt
WHO Global Standards (2017)	Sexual and reproductive health in school health programmes	Explicit focus on CSE	Disability is considered in inclusive health approaches	Calls for integration into the education and health sectors

Keogh et al. (2018)	Case studies: Ghana, Kenya, Peru, Guatemala	Policies are inconsistent, but CSE is integrated in some	Limited disability inclusion	Shows LMICs face barriers, but India lags in formal integration
Michielsen et al. (2021)	European region review	Stronger uptake of sexuality education, though barriers remain	Disability under-addressed	Highlights India's lagging position compared to global progress

Table Analysis

The comparison draws attention to India's ongoing policy silence on sexuality education, particularly for students with disabilities. Sexuality education and sexual rights are not specifically mentioned in the NEP (2020), RPwD Act (2016), or RTE Act (2009), despite their emphasis on inclusive education in general. Although it provides little coverage, the Adolescent Education Programme (AEP) is still dispersed and contentious. On the other hand, comprehensive, rights-based, and disability-inclusive approaches to sexuality education are offered by international frameworks like WHO's Global Standards (2017) and UNESCO's International Technical Guidance (2018). According to cross-country policy reviews (Keogh et al., 2018; Michielsen et al., 2021), India stands out for its resistance to formally incorporating CSE into national policy, even though other regions also face difficulties with disability inclusion. This gap underscores the urgent need for explicit, disability-inclusive policy reform in the Indian context.

FINDINGS AND DISCUSSION

Three themes arise from the review.

1. Policy Silence and Structural Neglect

For sexuality education in students with disabilities, there is overt policy silence. While the NEP (2020), RPwD Act (2016), and RTE Act (2009) all stress inclusion, none of them mention sexuality education specifically. In other LMIC settings, Keogh et al. (2018) refer to this silence as "systemic avoidance," where cultural sensitivities drive the intentional exclusion of sexuality-related material. Even rights-based schemes such as the RPwD Act fail to acknowledge sexual rights, which amplifies the silence in India. This omission heightens vulnerability to exploitation and disinformation by failing to provide students with disabilities with the chance to understand relationships, consent, and reproductive health.

2. Sociocultural Resistance and Policy Hesitation

Policy language and classroom practice remain shaped by sociocultural resistance. Sex education has often been seen as culturally unsuitable, as reflected in opposition to initiatives like the Adolescent Education Programme (AEP) (Kumar, 2013). Prevalent myths that disabled students are asexual or are unable to understand sexuality fuel this resistance (Rohleder, 2018). Even though resistance is found across Europe, governments have proceeded with sexuality education through incremental changes, as stated by Michielsen et al. (2021). India's reluctance, in contrast, has created patchy programmes in which sex education is considered a health programme and not as a human right to education.

3. Teacher Preparation and Implementation Gaps

Implementation continues to be inadequate even in instances where life skills or integrated development are mentioned in policies. Especially, in the inclusive classrooms of individuals with

disabilities, educators do not have the training and resources required to educate on sexuality education (Chandra-Mouli et al., 2015). The few teaching materials available are not accessible, and curricula fail to consider students' different communication and learning needs. In line with Hameed et al. (2020), an absence of adapted resources often hinders students with disabilities in LMICs from accessing even the minimum level of sexuality education offered. The implementation gap undermines India's commitments to inclusive education, which further enhances the inequality between students with and without disabilities. The juxtaposition of these challenges illustrates that India's dilemma is both a cultural and policy failure to translate international obligations into local action. Cross-country comparisons indicate that while other countries also have cultural barriers, disability-inclusive practices have been enabled by incremental policy reform and explicit recognition of sexuality education as a right. India remains behind, leaving students with disabilities at higher risk.

Policy Implications and Recommendations

The findings identify areas that need urgent reform. Sexuality education needs to be particularly recognized in Indian educational policies as a rights-based and developmental imperative, particularly for children with disabilities. While inclusive and holistic education are already focused on in the NEP (2020) and RPwD Act (2016), their failure to speak of sexuality education indicates a missed opportunity to align with international best practices (UNESCO, 2018; WHO, 2017).

1. Policy Alignment with International Standards

In alignment with the WHO's Global Standards (2017) and UNESCO's International Technical Guidance (2018), India should adopt a rights-based approach. These standards promote early, age-appropriate sexuality education, disability sensitivity, and inclusivity. Relevance and global consistency would be ensured through adapting these recommendations to the cultural context of India (Keogh et al., 2018; Michielsen et al., 2021).

2. Integration into Teacher Education and Training

One of the biggest hurdles remains teacher preparation. Disability-sensitive sexuality education units, such as accessible pedagogies such as Braille, tactile graphics, sign language, and simplified communication, need to be integrated in pre-service and in-service training (Chandra-Mouli et al., 2018). Otherwise, even with accommodative policies, inclusive classrooms can risk perpetuating exclusion.

3. Development of Accessible Curricula and Materials

Curricular reforms must ensure that sexuality education is made accessible for diverse learners. This involves developing available materials in forms of large print, audio, easy-to-read text, and augmentative communication aids. Global evidence (Hameed et al., 2020; Andreassen, 2024) indicates that curricula that are inclusive of disability decrease abuse risks and enhance self-advocacy.

4. Stakeholder Engagement and Community Sensitisation

One major barrier remains cultural resistance. Collaboration with parents, disability rights groups, NGOs, and local leaders can facilitate communication and reduce stigma. Other LMICs, where policy acceptance is needed for support by the community, have been successful with multi-stakeholder solutions (Population Foundation of India, 2022).

5. Monitoring, Evaluation, and Accountability

To ensure implementation, policies must be accompanied by open monitoring systems. This entails auditing sexuality education's presentation in inclusive environments on a frequent basis and assessing if students with disabilities are being provided with accommodations. Policy promises are at risk of being symbolic unless there is accountability (Sharma & Singh, 2022).

6. Research and Evidence-Building

Empirical research regarding how Indian schools are, or are not, serving students with disabilities in sexuality education is scarce. A stronger evidence base supporting training interventions and policymaking would be the outcome of investment in longitudinal, mixed-method research (Michielsen et al., 2021).

7. Cross-sectional Collaboration

Finally, policy actions should sync the disability, education, and health sectors. The health workers, counsellors, and special teachers need to facilitate the inclusion of sexuality education within the education system, and it cannot be confined to just health programs. A multi-sectoral approach ensures sustainability and extensive reach

Conclusion

In India, sexuality education is still marginalized, especially for students with disabilities. Although the National Education Policy (NEP, 2020) and the Rights of Persons with Disabilities (RPwD) Act (2016) marked advancements in inclusive education, the rights and overall development of students are compromised when sexuality education is not explicitly acknowledged in these frameworks (Government of India, 2016, 2020; Sharma & Singh, 2022). Even though sexuality and disability are closely related in determining social participation, autonomy, and dignity, this silence feeds a cycle of exclusion (Rohleder, 2018; Andreassen, 2024). According to the review's findings, sociocultural resistance and policy omissions pose serious obstacles to providing comprehensive sexuality education (CSE) (Kumar, 2013; Chandra-Mouli et al., 2018). Due to prevalent cultural taboos, parents and communities may oppose CSE, and teachers frequently lack the training and preparation necessary to handle delicate subjects (Population Foundation of India, 2022). The absence of disability-sensitive curricula, modified learning resources, and organized support systems exacerbates these difficulties for students with disabilities (Hameed et al., 2020; Nguyen & Wilkins, 2020). As a result, students continue to be at risk for misinformation, stigma, and abuse—all of which run counter to the inclusive and equitable education ideals that are supported by national and international frameworks (UNESCO, 2018; WHO, 2017).

Sexuality education must be explicitly incorporated into inclusive education policies going forward. This needs to be supported by family engagement programs, teacher training programs, and cooperative alliances with advocacy and non-governmental organizations. All students can benefit from safe, knowledgeable, and empowering learning environments if Indian policies are in line with global best practices (Keogh et al., 2018; Michielsen et al., 2021). In the absence of such

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Making Science Visible: Policy Initiatives and Implementation Gaps in Education for the Visually Impaired.

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Abstract

This research paper critically examines the intersection of policy, technology, and pedagogy in advancing science education for students with visual impairment in India. Anchored by the framework of India's inclusive education policy, the study explores the efficacy and implementation challenges of national initiatives such as the NEP 2020 in ensuring equitable access to science education for the visually impaired. Drawing on recent literature, the paper evaluates the integration of assistive technologies—including Braille devices, tactile models, and screen readers—within science curricula. Findings reveal persistent barriers in teacher preparedness, resource distribution, and curricular adaptation, but also highlight innovative strategies and promising practices in select educational settings. The study concludes with recommendations for policy reforms, enhanced teacher training, and infrastructure improvements to better bridge the vision gap and enable meaningful participation of learners with visual impairment in science education.

Keywords: Visual Impairment, Inclusive Education, Science Education, NEP 2020, Assistive Technology

Introduction

The foundation of national development and innovation lies in science education, which empowers learners to comprehend and interact with the world in significant ways. The inherent curiosity about science drives individuals to pursue answers to their inquiries through a grasp of fundamental scientific principles. (Trundle, 2010). The necessity for understanding science and investigating natural phenomena is also relevant for individuals with visual impairments (Mastropieri & Scruggs, 1995). In light of the principle of equal opportunities in education, it is essential to address the needs of visually impaired individuals to ensure they receive quality science education (Kavkler, 2005). An effective science education for visually impaired students allows them to engage with the world through their senses, make informed decisions based on their perceptions, tackle everyday challenges, and enhance their experiences and skills (Mastropieri & Scruggs, 1995). The significance of science education for individuals with visual impairments is crucial for their academic, social, and emotional growth (Ediyanto& Kawai, 2019).

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In India, students with visual impairment continue to be notably underrepresented and inadequately supported in science classrooms, especially at the secondary and higher education levels. Even with advancements in inclusive education policies and an increasing acknowledgment of the rights of children with disabilities, visually impaired learners continue to face enduring obstacles—spanning from curricula and teaching materials that are not accessible to insufficient teacher training and a lack of adaptive technologies. The visual aspects of scientific experiments and demonstrations frequently make essential content difficult to access, highlighting the need to modify teaching strategies and materials. Misconceptions persist among both learners and educators, with science often viewed as challenging, or even out of reach, for students with visual impairments. Consequently, a limited number of individuals advance in the field of science past the foundational level, which restricts their prospects for careers in STEM and involvement in scientific advancements.

Recent developments in assistive technology and policy reforms—anchored in the National Education Policy 2020 and the Rights of Persons with Disabilities Act—are starting to confront these obstacles. The successful combination of technology, supportive teaching methods, and strong policy execution is essential for closing the gap and making science education genuinely accessible and inclusive for all learners in India. Science education enables visually impaired students to engage more deeply with science and nature, fostering a more mindful existence (Wild & Paul, 2012). Consequently, the significance of science education extends beyond all students to include those with visual impairments as well.

Review of Literature

Kankhar & Mahender (2025) undertook an investigation titled ‘Teaching beyond Vision: Academic Challenges of Visually Impaired Students and Teachers in India’, examining the educational obstacles faced by visually impaired students and their educators at Taramati Bafna School in Maharashtra, India. The study, informed by interviews with 61 students, 3 teachers, and a principal, uncovers obstacles in the instruction of complex subjects, insufficient assistive technology, and socioeconomic limitations. It highlights the importance of early exposure to Braille and the use of innovative tools such as the Talking Tactile Tablet.

M et al. (2025) conducted a study on ‘Enhancing science education: The role of accessible laboratories for students with visual impairment’. This study examined the significance of accessible laboratory environments for students with visual impairments in the context of science education. Traditional laboratory settings present challenges and limit complete engagement due to their reliance on visual cues. A systematic review of 18 publications was conducted to identify effective accessibility solutions. The findings highlight the importance of alternative sensory-based experiments, assistive technology, and tactile materials in enhancing comprehension and involvement.

Desai, Pratibha. (2024) conducted a study on ‘National Education Policy: 2020 And Persons with Disability’. The recent National Education Policy 2020 strives to enhance the equity and inclusivity of the education system. Recommendations have been made regarding the education of individuals with disabilities, focusing on inclusive education, technology integration, and specialized approaches for certain disabilities. This study aims to emphasize recommendations regarding the new National Education Policy 2020, grounded in the RPwD Act 2016, specifically focusing on the education of individuals with disabilities.

Dr. Garima (2023) investigated the ‘Role of science education under Indian national education policy-2020’. The NEP 2020 emphasizes the significance of the science curriculum in cultivating

various skills essential for navigating real-world challenges. The analysis examined and evaluated the policies, particularly focusing on the National Curriculum Framework 2005 (NCF 2005) and the National Education Policy (NEP 2020). The New Education Policy 2020 represents a crucial advancement in India's educational landscape, emphasizing the importance of education from primary to higher levels. This paper aimed to explore various aspects of NEP 2020 concerning the transformation of the Indian educational sector, particularly in relation to science and technology education.

Dr. Kumar and Madhu Singh (2022) conducted a study on 'India's New Education Policy (NEP) 2020: Catering for Children with Disabilities'. According to the New Education Policy, every teacher education program will incorporate training on instructing children with particular impairments. The New Education Policy outlines the long-anticipated reforms that India has been seeking. These adaptations are thoughtfully crafted to address the needs of children with impairments and those hailing from low-income families. The study examined the stipulations outlined in the New Education Policy 2020 regarding individuals with disabilities, emphasizing the necessity for an inclusive educational framework that effectively reaches this demographic. This initiative represents a significant move towards integrating individuals with disabilities into the broader educational framework.

M. Revathi and G. Victoria Naomi (2021) conducted a study on the learning of science concepts among visually impaired students at the middle school level. This study seeks to investigate the understanding of science concepts among visually impaired students in middle schools located in the Coimbatore and Madurai districts of Tamil Nadu, India. The sample comprises students with visual impairments from Grades VI to VIII. The study included participants who were both Totally Blind and Low Vision students. A questionnaire consisting of 15 questions focused on scientific concepts was developed. A qualitative analysis was conducted. The findings indicated that approximately 60% of participants were at a low level in their understanding of Science Concepts, while 27% were at a moderate level, and 13% achieved a high level in their comprehension of science concepts.

Need for the Study

This subject is significantly pertinent in contemporary educational discussions and corresponds with India's objectives of providing equitable, high-quality education for all, as delineated by SDG 4 and the NEP 2020. There is an increasing demand for research-driven suggestions to guide policymakers, technology developers, and educators, guaranteeing that visual impairment does not hinder scientific education in the 21st century. Also, research and new ideas in making scientific instruction more accessible, such as adaptive lab equipment, tactile learning materials, and specific teacher training, have been demonstrated to greatly improve these students' grasp and interest in the subject. Nonetheless, these methods have not yet been extensively adopted in conventional educational environments. Badyal and Sharma (2022) discuss some of the major challenges that NEP 2020 faces. One major issue is that it's challenging to fairly divide resources between different places, especially between cities and rural areas. Additionally, the research titled "NEP 2020 - Opportunities and Challenges" by D. highlights several critical problems that must be addressed for the policy to be successfully implemented. A significant difficulty recognized is the necessity for sufficient infrastructure and logistics, especially in rural and underserved regions, where digital infrastructure and internet access are deficient. The report says that to fully achieve the policy's revolutionary potential, all stakeholders, including politicians, educators, institutions, and the community as a whole, will need to work together to solve these problems. This study aims to reconcile the disparity between governmental

objectives, technological progress, and the actual requirements of visually impaired learners, offering evidence-based techniques for fostering inclusive scientific environments in Indian schools.

Objectives

To examine the policy's underlying assumptions about pedagogy, inclusion, and science education.

Methodology

This is a qualitative study that utilizes policy document analysis as its primary method.

Analysis

Advancements in science and technology have a big effect on how well a country does. If the younger generation is excited about making new scientific technologies, it may be possible to integrate science education further. N.E.P. 2020 highly recommends that science teachers motivate students to engage in creative and critical thinking over their assignments. We have to teach science to high school students by having them undertake hands-on activities. N.E.P. 2020 can illustrate how to educate science in new and creative ways. Everybody knows that science at the secondary level is fundamental science. If our children can understand science in a fun way at this level, it would be easier to include more science in higher education. N.E.P-2020 actively encourages students to be open to new ideas and research since it helps them build a scientific mind. A teacher should use creative teaching techniques to get students to try new things in the classroom. NEP 2020, which is about scientific education, makes it clear what the science curriculum should do to help students learn how to deal with real-life situations. The framework also proposed a lot of adjustments to the science curriculum based on the many ways that kids learn and the requirements of society and the world as a whole.

PROVISIONS MENTIONED IN NEP 2020 FOR SCIENCE EDUCATION OF VISUALLY IMPAIRED

The National Education Policy (NEP) 2020 includes a lot of rules to help visually impaired kids learn science. This is part of India's larger goal of providing education to everyone. These rules are meant to make sure that all students, no matter what their handicap is, can learn, have equal access to learning, and get a high-quality education.

Everyone can get to and take part in: Guarantees that all children, including those with visual impairments, have the right to a fair and high-quality education, especially in science. NCF 2005, in chapter 4.3 "Participation of All Children" (4.3, 4.3.2), emphasizes the right of children with disabilities—including visual impairment—to access curricular experiences on par with others. There are calls for fewer obstacles to learning and more active engagement from all students in scientific classes.

Inclusive Curriculum and Materials (Section 6.10, 6.11): Encourages a flexible, needs-based curriculum that makes science information available in Braille, tactile, audio, and digital formats for students who are blind or have low vision. Requires the creation and dissemination of appropriate learning resources, including tactile scientific pictures and auditory laboratory apparatus.

Assistive Technology Integration (Section 6.11b): This section advocates for the widespread use of assistive technology, including screen readers, Braille displays, and tactile models, to enhance the hands-on and accessible nature of scientific education for individuals who are blind or have

low vision. Promotes tech-based solutions and easy-to-use digital learning systems, especially for scientific classes.

Teacher Training and Sensitization (Section 6.14): Emphasizes the need for professional development for teachers to learn how to teach science in a way that includes everyone, such as by making experiments and demonstrations accessible to students with visual impairments. Emphasizes the necessity for specialized teacher training in the utilization of both traditional and technology-driven instructional tools for scientific instruction.

Section 6.13 of Inclusive Assessment and Evaluation suggests changing how scientific tests are given (for example, using oral tests, assistive devices, or different formats) to take into account the requirements of all students and make sure that visually impaired students are fairly evaluated. Stresses the need for inclusive testing methods and formats that are easy to use for lab and practical scientific tests.

Early Identification and Intervention: This program understands how important it is to test for and help people with visual impairments early on so that they may get the help they need to study science from the very beginning.

Transition and Support Mechanisms: This program helps visually impaired students go from school to college in STEM fields and then to work. It includes counseling and workshops to help them enhance their skills.

THE PEDAGOGICAL GAPS IN NEP 2020

Finding 1: Celebrate the outcome, but don't talk about the process-The NEP strongly supports the idea of teaching all students to have a "scientific temper," but it doesn't provide VI learners with any help on how to do this.

Finding 2: Solutions Based on Resources Instead of Teaching Methods-The policy often talks about inclusion in terms of infrastructure and resources, such as "barrier-free access" and "assistive devices," but it doesn't say what teaching methods are needed to use those resources well. It gives you the tools but not the lesson plan. There are no clear instructions in NEP 2020. It talks about "barrier-free access," but it doesn't say how to make a scientific lab or a complicated graphic barrier-free.

Finding 3: The Idea of a Generic Learner-Even though it talks about inclusiveness, the policy's educational vision frequently includes an implicit learner (for example, in sections on "experiential learning"). The necessity to completely reconfigure the experience for visually impaired learners is not acknowledged.

Finding 4: There is a lot of focus on training teachers, but not on educating them in scientific teaching methods that are particular to VI.

Finding 5: The "light" is there, but it's spread out; it has to be concentrated into a "beam" that science instructors can use. The NEP 2020 is the key to the door, but we need the correct tools to unlock it. The policy tells you where to go, but not how to get there.

FEASIBLE SOLUTIONS (THE "HOW"):

Curricular and Pedagogy: Requiring the creation of science curricular frameworks based on Universal Design for Learning (UDL). Making a national collection of tactile visuals, 3D-printable models, audio-described films, and textbooks that can be read aloud. Also, make sure that science information is available online. NCF 2005, Chapter 4.6.6 "Need for Plurality and

Alternative Materials" and 4.6.4 "Tools and Laboratories" recommend using alternative formats, adaptive tools, and diverse teaching approaches to make science accessible for visually impaired learners. Guidelines for creating scientific curricula, content, pedagogy, and learning standards that specifically accommodate visually impaired learners through tactile, aural, and multisensory experiences are provided by NCF 2023 Scientific Education (Part C, chapter 4).

Teacher Training: All teacher education programs (B.Ed., M.Ed.) should include required modules on how to teach science to VI students. This should include working with assistive technology and adaptable methods in real life. Make the case for making UDL and VI-specific scientific teaching practices a part of all teacher education programs, not just something that can be added on.

Assessment: The NCF 2005 recommends adjusting assessment techniques (such as oral, tactile, and Braille-based assessments) to allow students with visual impairments to demonstrate scientific competency (chapters 3.11.2 "Assessing Learners" and 3.11.5 "Design and Conduct of Assessment"). Push for different ways to test VI students in science, such as oral exams, model-building, portfolio-based assessments, coding simulations, or using tactile diagrams instead of just a written test with visual parts.

Infrastructure: Policy guidelines must include funds for schools to build scientific laboratories that are easy to get to and include talking balances, tactile measuring tools, and safe, easy-to-navigate lab areas. NCF 2005 advocates policies and practices that ensure classroom and laboratory activities are designed for full participation through accessible resources such as tactile models, Braille, large print, and audio.

Equity and Inclusion: To close the gaps in equity in STEM education, the changes to scientific education under NEP 2020 need to be open and available to all students, even those from disadvantaged backgrounds. Part B, Chapter 4 of NCF 2023's Cross-cutting Theme on Inclusion: emphasizes inclusive practices, flexible curriculum modification, universal access, and the use of assistive technology in scientific labs and classrooms to ensure that visually impaired students may participate fully and meaningfully.

Research and Innovation: NEP 2020 stresses the significance of research and innovation in science education, but there should be a clear plan for how to encourage a research culture in schools and colleges to help science go forward.

Assistive Devices and Software: Instruments like as screen readers, Braille displays, text-to-speech applications, magnification software, and voice recognition enable visually impaired students to access textbooks, scientific papers, and internet resources in accessible formats.

Digital & Online Platforms: Virtual laboratories, accessible instructional films, and interactive software may cater to varied learning requirements and facilitate education outside traditional classrooms.

SUMMARY

The NEP 2020 aims to enhance scientific education for visually impaired students by reforming the curriculum, integrating technology, training educators, and simplifying assessments. This will enable all children to engage with science meaningfully and pursue STEM pathways. "Can the NEP 2020 provide guidance?" Indeed, it is capable of doing so, but now, it just emits potential energy. To effectuate authentic change, collaboration is essential, alongside the formulation of tangible strategies and the investment of requisite time and resources. It is now the

responsibility of legislators, educators, and disability advocates to ensure that opportunities are readily accessible for blind individuals aspiring to become scientists. Utilizing the NEP can enable access to the universe for all students, provided we possess the requisite skills and commitment. Lack of vision does not preclude the possibility of pursuing a career in science.

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Understanding Students' Mental Health and Well-being: Policy Initiatives and Interventions

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Abstract

Mental health and well-being are essential for students' holistic development. In India, a large proportion of population consists of youth. The mental health challenges concerning youth are on the rise. This paper explores the prevalence of students' mental health problems, reviews key policy initiatives and interventions like the National Mental Health Programme, Tele MANAS, and Manodarpan, and highlights implementation related challenges including social stigma, lack of awareness, shortage of professionals, and inadequate infrastructure. Recommendations are provided to improve mental health services through collaborative efforts, enhanced funding, monitoring, and community engagement. The study emphasises the growing need for mental health care to support students' well-being.

Keywords: Mental Health, Well-being, Policy Initiatives, Manodarpan, Counselling Services

Introduction

The World Health Organisation defines mental health as “a state of mental well-being that enables people to cope with the stresses of life, realise their abilities, learn well and work well, and contribute to their community. It is not simply the absence of mental health conditions or illness but about the presence of well-being and the ability to thrive.” The Centre for Disease Control and Prevention (CDC, 2022) defines well-being as “having positive emotions (e.g., contentment, happiness), not having negative emotions (e.g., depression, anxiety), satisfaction with life, fulfilment, and positive functioning.”

According to the recent reports of the World Health Organisation (2025), India accounts for about 18% of the global population. “The burden of mental health problems in India is significant, with 2443 disability-adjusted life years (DALYs) per 10000 population, and an age-adjusted suicide rate per 100000 population is 21.1. The economic loss due to mental health conditions, between 2012-2030, is estimated at USD 1.03 trillion” (WHO, 2019). India comprises approximately one-fifth of the world's adolescents and youth (United Nations Population Fund [UNFPA], 2014). The National Mental Health Survey (2016) reported that for years 13-17, the incidence of psychiatric illness was about 7.3% in adolescents, with the most common problems ranging from “depressive episodes (2.6%); agoraphobia (2.3%); intellectual disability (1.7%);

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autism spectrum disorder (1.6%); phobic anxiety disorder (1.3%); drug use disorder (10.40%); 9.4% children aged 2-17 years have been diagnosed with inter-personal relationship, ADHD and psychotic disorder (1.3%). 7.4% of children aged 3-17 years have behavioural issues” (As cited in Government of India, 2022). Moreover, due to

high prevalence of mental illness, suicide is found to be the number one cause of death among those aged 15-29 years. Between 1990 to 2016 the global contribution increased from 25.3% to 36.6% among women and from 18.7% to 24.3% among men (WHO, 2019). This data highlights the increasing concern for mental health initiatives, particularly for students across the country.

Globally, Sustainable Development Goal 3 outrightly recognises the importance of mental health and well-being, highlighting the prevalence of mental disorders and the need for suicide prevention. The growing rate of suicide among youth across the globe is a matter of great concern, which calls for suicide prevention strategies and early mental health intervention programmes. Target 3.4 states, “By 2030, reduce by one-third premature mortality from noncommunicable diseases through prevention and treatment and promote mental health and well-being” (WHO, 2025). Students these days face growing challenges that affect their social, emotional, and cognitive development. It is essential that these challenges are addressed properly to ensure their optimal growth and development. These challenges not only affect their academic achievement but also their personality, social relationships, career paths and choices, and overall well-being. Hence, examining the well-being and mental health of students in India becomes essential to help them attain their highest potential. The paper examines the mental health and well-being of students in India, the policy initiatives and interventions, and discusses the challenges while offering recommendations for improvement.

Understanding Mental Health Challenges Faced by Students

Students face a variety of difficulties that influence their mental health and well-being. According to the National Mental Health Survey (2016), “Nearly 1.9% of the population were affected with severe mental disorders in their lifetime, and 0.8% were identified to be currently affected with a severe mental disorder.” It was also found that approximately 9.8 million adolescents in India between the age group of 13-17 years require active interventions. They struggle with the inability to share their problems, the inability to trust others, particularly if they are facing issues at home, as well as difficulty in sharing what they feel because of the fear of being victimised (Balamurugan et al., 2024). Other issues include lack of a designated physical setting, non-cooperation from school administration, infrequent availability of a counsellor, and lack of privacy (Raman & Thomas, 2023). Concerns like early exposure to violence, poverty, social stigma, and increased use of technology also contribute to mental health difficulties (School Initiative for Mental Health Advocacy [SIMHA], 2024). Balamurugan et al. (2024) reported, “The intense academic pressure, cut-throat competition, and societal pressures faced by school children in India make it crucial to understand the extent of their struggles and the impact on their overall well-being.”

Research revealed that mental health concerns during childhood and adolescence are associated with negative consequences during early adulthood and lead to problems of poor mental health and life satisfaction, and compromised quality of life (Schlack et al., 2021). Another study of Kolkata found that higher academic pressure, absence of emotional support, and lack of understanding from parents and teachers add significantly to mental health issues among adolescents, further leading to an increased risk of suicide and substance abuse (Mitra, 2025). Academic stress is also among the major predictors for mental health difficulties including stress,

anxiety, depression, and suicidal ideation among secondary and higher secondary students in Asia (Mahapatra & Sharma, 2020). Parental expectation, peer relationships, career confusion, pressure to excel, social stigma, and lack of access to counselling services direct towards the growing need for mental health awareness and interventions. The National Suicide Prevention Strategy, launched by Ministry of Health and Family Welfare in 2022, revealed that the majority of suicides in India happen among youth and middle-aged adults. Around 65% of suicides are committed by those in the age group 18- 45 years.

Students spend more than half of their time in schools and other educational institutions. Research over the last few decades has demonstrated that educational institute based mental health interventions are proven to be effective in promoting well-being, prevention, early identification, diagnosis, and treatment of mental health concerns among adolescents and youth (SIMHA, 2024). UNICEF (2021) reported that schools and other learning environments can meet children's and teenagers' mental health and psycho-social well-being requirements, especially in times of crisis. The role of schools beyond education has been further emphasised after the COVID-19 pandemic, stressing the need for global investments in adolescent health, well-being, and rights (Duraku, 2021).

Policy Initiatives and Interventions

In an effort to address mental health challenges faced by students, various policies and interventions are initiated at the central and state levels to ensure equitable access to mental health support services for students. The *National Mental Health Programme (NMHP)*, introduced in 1982, ensured that mental health becomes one of the mainstream programmes of the general healthcare system. It aimed to ensure that minimum mental health services are available and accessible for all, especially in vulnerable and disadvantaged sections of society. The programme also aimed to apply mental health knowledge to general healthcare and social development, as well as promote participation at the community level for the development of mental health services.

District Mental Health Programme was introduced in 1996 under National Mental Health Programme with an objective to expand community mental health services. It aimed for early detection and treatment of mental health concerns and imparted training to physicians for diagnosing and treating commonly found mental health issues. It covered 767 districts in India and provided counselling and outpatient services, suicide prevention programmes, and awareness initiatives. It also provided 10-bedded inpatient mental health facilities at the district level (Ministry of Health and Family Welfare, 2025). "The *NIMHANS Act* was implemented in 2012 to enhance mental health education and research in India. Under the act, the National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru, was declared to be an Institute of National Importance. This allowed the institute to expand its academic and research capabilities in the domains of mental health and neurosciences." (Ministry of Health and Family Welfare, 2025).

The *Rights of Persons with Disability Act (RPwD)* replaced the Persons with Disabilities (PWD) Act, 1995. It added mental illness to the definition of disability and brought out stronger laws for individuals with psycho-social disabilities. The Act aligns with India's commitment to the UN Convention on the Rights of Persons with Disabilities (UNCRPD) as it aims to ensure equality, dignity, and non-discrimination for persons with disabilities, including those with mental health conditions (Ministry of Health and Family Welfare, 2025). *Rastriya Kishor SwasthyaKaryakram (RKSK)* was initiated by the Ministry of Health and Family Welfare in 2014 to reach out to

adolescents, especially marginalised and underprivileged adolescents. It emphasises on community-based intervention programmes, including counselling facilities, health clinics for adolescents and behaviour change communication. It addresses the health needs of adolescents.

“The *National Mental Health Care Act*, 2017, came out to ensure the right to mental health services and protect the dignity and rights of individuals with mental illness. The Act replaced

the Mental Health Act of 1987 and brought out several progressive changes, like the right to affordable and quality mental healthcare services and the decriminalisation of suicide in India.” (Ministry of Health and Family Welfare, 2025). The *National Health Policy* was also launched in 2017 and was a major advancement, as it recognised mental health as a national health priority. “It aimed to address mental health issues using a multifaceted approach, integrating mental healthcare into primary healthcare, strengthening human resources, and improving treatment accessibility.” (Ministry of Health and Family Welfare, 2025)

The *National Education Policy (NEP)-2020* recognises the importance of holistic development of students and emphasises that the role of education system is not just limited to high academic achievement but also the socio-emotional development of every individual. It states, “The development of capacities that promote student wellness, such as fitness, good health, psycho-social well-being, and sound ethical grounding, is also critical for high-quality learning” (Government of India, 2020). The policy calls for early recognition and interventions for mental health concerns among students. The policy also stresses that school students should have access to mental health services through counsellors or trained professionals to help them navigate during times of difficulty.

The National Tele Mental Health Programme-*Tele Mental Health Assistance and Networking Across States (Tele MANAS)* came out in 2022 to change the landscape of India’s digital mental health infrastructure. It provides free 24/7 mental health support to individuals through a national toll-free helpline in 20 Indian languages. According to the recent statistics, it has handled over 1.81 million calls since its launch, providing mental health services across nation. Services are inclusive of immediate tele-counselling by trained professionals, referral support for severe cases, and awareness campaigns through digital platforms and mobile-based mental health interventions to ensure accessibility in rural and remote areas. The recently launched Tele-MANAS mobile application offers video call consultations in states like Karnataka, Tamil Nadu, and J&K. It also offers self-care strategies, stress management techniques, and direct access to mental health professionals (Ministry of Health and Family Welfare, 2025).

The *Manodarpan* initiative came out in 2020 by the Ministry of Education (MOE), Government of India (GOI). The initiative came out during the COVID-19 outbreak to provide psycho-social support for the mental health and well-being of students during and beyond the pandemic. The National Toll-free Helpline (8448440632) provides tele-counselling services to students, parents, and teachers across the nation to address their mental health

issues. The initiative also runs a series of webinars and discussion sessions, ‘Paricharcha’, to offer assistance to students and other stakeholders with the intention of creating mental health and well-being awareness and ways of coping with them. It provides a space to reach out for psycho-social support from experts in the field of mental health. ‘Sahyog’ live interactive sessions are also held every day for students of classes VI-XII from 5 to 5:30 pm on the PM e vidya channel that focuses on providing guidance for promoting mental well-being among students. (National Council of Educational Research and Training [NCERT], 2025).

The *School Health and Wellness Programme* was launched in February 2020 under the Ayushman Bharat Programme and implemented in government and government-aided schools. The programme aims at appointing one male and one female teacher in every school as “Health and Wellness Ambassadors”. These teachers are trained to carry out activities with school children regarding the promotion of health practices and disease prevention information in different focus areas in the form of fun and interactive activities for an hour every week (National Health Mission, 2025). The Ministry of Health and Family Welfare also introduced the *National Suicide Prevention Strategy* in 2022 to reduce mortality through suicide by 10% by 2030. The initiative strengthens leadership and partnership in the country through the involvement of central government ministries, local self-government, non government organisations, professional bodies, and corporate houses, and provides suicide prevention strategies by enhancing the capacity of health services. The action plan also includes societal support and community resilience to destigmatise mental health and reduce stigma associated with suicidal behaviours. In addition CBSE and NCERT have also provided manuals to promote mental well-being of learners across the nation.

Several state-level initiatives are introduced which are reflected in the following table: **Table 1: Showing State Initiatives for Promotion of Mental Health of Students**

Mental Health Initiatives	State
‘The Happiness Curriculum’	Delhi
‘Saharsh’, a state-level social-emotional learning programme	Tripura
‘Balsakha-Guidance and Counselling Programme’	Uttarakhand
SAATHI (Sikkim Against Addiction Towards Healthy India)	Sikkim
Take it Easy	Tamil Nadu
MaNaMThittam – Mana Nala Nallaatharavu Mandram	Tamil Nadu
UNARV/Unarvu- a school-based adolescent mental health programme	Thiruvananthapuram, Kerala

National and state level initiatives work to ensure equitable access to mental health services for all, irrespective of individuals’ backgrounds. These initiatives aim at removing biases attached to mental health concerns and normalising mental health talks.

Challenges in Implementation

These policy initiatives and interventions highlight the growing commitment of the country towards the mental health of students. These initiatives together aim to raise mental health awareness and make it more accessible. While these initiatives aim to bring change, their implementation and accessibility depend on various factors:

- **Social Stigma** – Mental health continues to be viewed as a taboo, and this adds to a huge burden on mental morbidity. Thus, it acts as a roadblock to treatment seeking. Findings have revealed that nearly 80% of people suffering from mental disorders had not received any treatment despite the presence of illness for more than 12 months (National Institute of Mental Health and Neurosciences [NIMHANS], 2016). The fear of being judged or victimised often stops students from reaching out for help.

- Lack of Awareness – Many students, parents, and even teachers are unaware of mental health difficulties and struggle to recognise the warning signs. This lack of knowledge delays intervention and care.
- Shortage of Professionals –Lack of trained mental health professionals can be seen globally. Due to a shortage of professionals and a lack of awareness, there exists a huge gap in treatment in terms of receiving mental health care. We need 3 psychiatrists per 100,000 population, as per the World Health Organisation. However, the current ratio in India is only about 0.75 psychiatrists per 100,000 people, as per the Indian Journal of Psychiatry (Ministry of Health and Family Welfare, 2025).

Several other challenges include a lack of proper infrastructure, like counselling rooms or a separate space for counselling; social and cultural barriers; limited financial resources for counselling services in educational institutions; a lack of research and resource allocation; and inconsistent policy implementations, which are associated with low treatment and diagnosis of mental health issues.

Recommendations

Addressing these challenges and ensuring mental health initiatives reach the masses requires collaborative support from government, educationists, healthcare professionals, parents, and the community.

- Initiating collaborative efforts to identify and address mental health difficulties concerning youth in India. Community engagement needs to be strengthened to make people aware and provide support services.
- Integrating mental health in basic well-being care plans. “It is widely accepted that a barely effective method to address mental well-being issues is to integrate them into basic well being care plans, which calls for skilled monitoring and counselling at the foundation phase for early finding” (Handa & Goswami, 2024).
- Improving the mental health facilities in India by enhancing the structural and operational elements of mental hospitals to be achieved by increasing hospital funding allocations and making efforts to shift bureaucratic resistance to change regarding mental hospitals (Handa & Goswami, 2024).
- “Prioritising investment in comprehensive data collection, analysis, and research efforts to understand the evolving mental health landscape. This should include evaluating the effectiveness of various interventions, tracking mental health indicators, and conducting studies to inform policy decisions.” (Suhas et al., 2023).

Conclusion

The mental health of students is a vital aspect that affects their inter-personal relationships, academic performance, personality, and overall well-being. Though India has made significant strides through policy initiatives and interventions, various challenges still exist, such as social stigma, lack of awareness, and shortage of professionals, that hinder its effective implementation. Addressing these challenges requires multi-stakeholder efforts for an inclusive and equitable mental health system for all.

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Well-being in Focus: Prospective Educators' Understanding of Psychological needs in Education

Nida¹ & Raisa Khan²

Abstract

This research investigates the relationship between educational psychology and mental health, highlighting the necessity for conducive learning environments that foster both cognitive development and emotional resilience. It looks at how stress, anxiety, and social variables affect learning and talks about evidence-based methods including mindfulness, socio-emotional learning (SEL), and strong relationships between teachers and students. The study promotes comprehensive methodologies and policies that emphasize student welfare and enduring achievement through the incorporation of psychological elements into education. The objectives of this research are: 1. to explore how prospective teachers perceive their role in supporting students' psychological needs. 2. To analyze how teacher training programs shape the mental health awareness and support strategies of prospective educators.

Keywords: Educational Psychology, Emotional Resilience, Psychological Interventions, Prospective teachers.

Introduction

Subjective well-being pertains to individuals' assessments of their lives, including life satisfaction, pleasant emotions, and the lack of negative emotions like anxiety or sadness. Individuals with elevated subjective well-being typically experience contentment and regular enjoyment, whereas individuals with diminished well-being often encounter dissatisfaction and unpleasant feelings. It embodies the cognitive dimension of life satisfaction, indicating how individuals evaluate their overall quality of life (Diener & Suh, 2001). The Well-being is defined by the Oxford English Dictionary as "the state of being or doing well in life; happy, healthy, or prosperous condition; moral or physical welfare (of a person or community)" (OECD, 2007). Health is considered as a state of complete physical, mental, social well-being and not just the absence of disease (World Health Organization, 1948). It is recognized that the experience of well-being contributes to the effective functioning of multiple biological systems, which may prevent the individual from succumbing to diseases, or when illness occurs, it may promote rapid recovery. The meaning of

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the term well-being has not been universally accepted. Well-being has been defined and measured in many ways such as:

- as a sense of well-being measured by three aspects; satisfaction with life, general affect, and perceived stress as a reflection of one's level of happiness for a human being (Campbell et al. 1976).
- As global well-being comprises three components: cognitive appraisal, positive affect, and negative affect (Andrews and Withey, 1976). Mental health is an important part of general health and well-being. It includes anything from mental disease to thriving. In higher education, common risk factors are stress from school, money problems, feeling alone, bad health, and parents' expectations. Protective factors, on the other hand, help people stay strong and feel good. Mental health and well-being are very important for future teachers since they affect not only their own growth but also the classroom environment, student motivation, relationships, and emotional growth. Institutions like NCERT prioritise psychosocial development to train educators who can effectively address students' mental and emotional needs.

Psychological requirements of aspiring educators

Emotional Safety: Making sure that pupils feel safe and included in their surroundings, Empathy and Connection: Getting to know your pupils' feelings and backgrounds,

Mental Health Awareness: Knowing how to spot indicators of anxiety, depression, or trauma in students.

Support Systems: Knowing when and how to send pupils to counsellors or other experts. Taking care of yourself and Resilience: Future teachers need to know how to deal with their own stress and mental health. In the context of this research, "understanding" refers to awareness and preparedness, how much prospective teachers know about students' psychological needs; their confidence in responding to students' emotional or psychological struggles; knowledge of support strategies; and their familiarity with methods or interventions to foster well-being. In educational contexts, these recognizable mental health difficulties may include prospective teachers acting in inappropriate or disruptive ways; It is very important that during their training period they learn about every possible situation which they may have to tackle in actual classrooms. A prospective teacher should be emotionally mature because they may have to handle many kind of situations in class where students behave aggressively. So it becomes the responsibility of teacher how they handled and how they solved the problem at hand. This is a sign of a mentally stable and healthy teacher. Symbols of psychological distress in prospective teachers may include aggressive or disrespectful behaviour, confusion or sluggishness, difficulty focusing, emotional outbursts, hypersensitivity, or social withdrawal. Good mental health is crucial for future teachers to reach their academic goals. Mental health issues can make it hard to learn by making it hard to focus, think, solve problems, interact with others, and work together. On the other hand, good mental health builds resilience, motivation, and determination, which help people handle difficult assignments, deal with stress, and adjust to new learning possibilities. Not every future teacher has mental health problems; many are doing well. These disparities come from different personal situations, resources, and the environment. Mental health is shaped by the interplay between external stressors and internal coping resources. While some student teachers deal with challenges like limited academic readiness, financial hardship, or loneliness, others benefit from strong psychological assets such as a solid sense of identity, meaningful social connections, and loving, supportive relationships. The

university setting plays a key role in shaping these experiences and has a significant role in supporting or undermining student well-being. *The framework perceives wellbeing as dynamically constructed by its actors through an interplay between their circumstances, locality, activities and psychological resources, including interpersonal relations with families and significant others. Individuals adjust accounts of their lives with reference to four domains. An example is when an individual is not happy with the situations in the birth family and resolves this by moving to another branch of the family or decides to act differently while starting a new family. Conversely, individuals can choose different models of relationships (personal and familial) where their previously unmet needs can be satisfied. This can also involve shifting to a new community or setting that offers economic opportunities and psychological resources that are different from those that the individual previously possessed.*

Cognitive well-being is the measure of a person's reactions toward other people and the surrounding environment. On the basis of social economical classes in the society people measure their own cognitive well-being. There are different varieties of socio-economic statuses that are found in the society. Among all varieties of socio-economic status, people from the lower class compare themselves from the upper middle class and higher class. They compare their life style from higher class and upper middle class too and try to find out the negative and positive things from it. When a person evaluates his/her positive and negative aspects of life, tries to investigate the things that give them satisfaction and respect in society, it contributes to the development of cognitive well-being.

Affective Perspective: The first perspective suggests that Affect is the dominant factor influencing subjective well-being. The affective component of subjective well-being contains two independent factors: Positive Affect and Negative affect (Bradburn, 1969), which can be measured with the Positive and Negative Affect Scale (PANAS; Watson, Clark and Tellegen, 1988). Within this perspective, evaluations of Positive Affect and Negative Affect reflect an individual's experiences of their life and form the basis of SWB (Watson & Tellegen, 1985). As independent factors, Positive Affect and Negative Affect contribute unique variance to Subjective Well-Being. Therefore, someone experiencing low Positive Affect does not necessarily experience high Negative Affect and vice versa. Individuals who evaluate their SWB to be positive, however, experience high Positive Affect and low Negative Affect.

"Gender Differences in Subjective Well-Being Looking at the results from empirical gender research, reliable differences between men and women in relation to well-being have been found for longevity, morbidity, and mental health (Maccoby, 1998). This line of research has been aptly summarized by Sen (1996): "Women get sick, and men die." In relation to mental health and subjective well-being, there is evidence for a higher prevalence of mental illness for women as compared to men, especially concerning major depression (Nolen-Hoeksema, 1987; Russo and Green, 1993). Gender differences in the normal range of subjective well-being show a somewhat different picture.

Integration of Mental Health Education in Core Curricula

Curricula might support building coping skills through strategies for managing stress, anxiety, and other emotions. This skill is crucial for building healthy relationships and for navigating social situations. Providing mental health education early on can help prevent or mitigate mental health challenges by teaching students how to recognise warning signs and seek help when needed. Interdisciplinary Collaboration in Mental Health Support of Children's and Adolescents.

Characteristics of ‘Good Life’ related to the Parameter of healthy mental health

Psychological	Physical	Social	Spiritual
• Self-Acceptance (awareness about own strength and weaknesses) • Purpose in Life (understanding of one’s principles and ideas) • Personal Growth (realisation of one’s own dream and aspiration) • Autonomy (moral responsibility) • Self-Motivation	• Healthy Appearance (overall look) • Healthy Lifestyle (self-care) • Appropriate Behavior (reaction towards situation) • Greater Flexibility (muscular ability + accepting the unknown) • Coordination (integration between mind and body with input of sense)	• Trust and Belongingness (connection with others) • Benevolence (act of kindness) • Hospitality (reception and entertaining the guest) • Celebrating holidays, festivals, achievement • Contribution Towards Society (e.g. being a good neighbour, giving donations for festivals, Blind school).	• Self-Esteem (values/ achievements) • Resilience (survival capacity) • Harmonious • Religious Observance (performing cultural rituals within family) • Altruism (selflessness)

The present study was conducted to enhance understanding about how different facets of well-being in educational psychology need to be developed for prospective teachers to bring different outcomes especially in relation to emotional intelligence, and emotional maturity among prospective teachers. Therefore, the problem of the study may be stated as: “Well-being in Focus: Prospective Educators’ Understanding of Psychological Needs in Education”

Review of literature

Guardian (2024) Australian university: Despite the growing demands, many teachers feel inadequately prepared to manage students’ mental health challenges. The Australian Catholic University (ACU) found that 81.5% of principals have faced critical incidents, including student suicide attempts and mental health crises, highlighting the urgent need for in-house psychologists and improved training in teacher education programs.

Rodríguez-López et al., (2023). In essence, this training serves a dual purpose: to update and improve teaching skills while also preparing teachers to face new challenges in an ever-evolving educational system”

Debattista and Mangion’s (2019) study found that ‘teachers who supported students with SEBD were more aware of strategies to be used in the classroom than those who never supported such students (p. 300). This suggests that teacher training can increase teachers’ confidence in assessing mental health in the classroom. For example, in one Australian study, researchers asked primary and secondary pre-service teachers to complete a 13-week training unit on dealing with sensitive issues, including mental health.

Gray et al. (2017) reviewed studies from 1993 to 2016 and conceptualised teacher well-being (TWB) as a multifaceted mental health construct linked to school climate, inclusion, and student

outcomes. Similarly, McCallum et al. (2017), building on McCallum and Price (2016), defined well-being as a dynamic construct shaped by individual, family, and community values and experiences. They highlighted factors influencing TWB, including personal skills and contextual elements such as school leadership.

Gupta and Kumar (2010) studied the relationship of mental health with emotional intelligence and self-efficacy among college students. Two hundred participants (100 boys and 100 girls) from science and arts streams participated in the study. Results demonstrated that emotional intelligence and self-efficacy positively correlated with mental health. Male students were also found to be superior to female students in terms of mental health, emotional intelligence, and self-efficacy.

Blanco and Díaz (2005) emphasized that psychological well-being is related to personal development, coping style, the ability to face life's challenges, and the effort to achieve meaningful goals. Further, as per it, it involves achieving positive life goals. In essence, it is about feeling satisfied with oneself and life, handling the demands of the society effectively, and finding meaning in personal experiences. There is evidence that people with high levels of psychological well-being tend to act in alignment with their interests, values, and needs.

Gardner (2005) investigated the relationship between five dimensions of emotional intelligence and two measures of strain: psychological health and physical health. Results revealed a moderate relationship between total emotional intelligence and both measures of employees' health. The findings suggest that higher scores on emotional intelligence were related to a lower prevalence of ill health.

Gordon et al. (2004) conducted a study on a sample of 95 students to determine the influence of trait emotional intelligence on an individual's sense of well-being. A correlational analysis indicated that global trait emotional intelligence was a poor predictor of global emotional well-being. This result indicated that emotional experience is influenced, in part, by one's ability to regulate emotions and by establishing personal strivings that are congruent with core values or personal convictions. It is tentatively concluded that trait emotional intelligence is related to emotional well-being.

According to Suh (2001), psychological well-being represents the cognitive evaluation of life satisfaction, whereas happiness and quality of life are often used interchangeably with the term. The Oxford English Dictionary defines well-being as "the state of being or doing well in life; happy, healthy, or prosperous condition." Similarly, the World Health Organisation (1948) views health as a complete state of physical, mental, and social well-being, not merely the absence of illness.

"RESEARCH SNAPSHOT: Are university students psychologically distressed? There is now a strong and expanding evidence base indicating that mental health difficulties are prevalent in university student populations across Australia, the UK, and the USA. University students are a 'high risk' population for mental health difficulties given that the prevalence of mental disorders is highest in the 16-24-year-old age group. However, empirical studies suggest that young people undertaking university study may be experiencing higher levels of psychological distress than their age-matched peers in the general community (APS, 2014; Stallman, 2010). Commencing first-year undergraduate students often report less distress than subsequent-year students, indicating that the decline in student well-being occurs during the first year of university life and persists throughout the degree (Stallman, 2010). International and domestic students report similar levels of psychological distress (Schofield et al., 2016). While the academic field of study accounts for

some variation in students' distress levels, high levels of distress have been recorded for students in diverse academic programs, including Science, engineering-science, veterinary medicine, law, and the Bachelor of Arts (Larcombe et al., 2015).

Objectives

1. To explore how prospective teachers perceive their role in supporting students' psychological needs.
2. To analyse how teacher training programs shape the mental health awareness and support strategies of prospective educators.

Research Method: This thematic study draws on secondary literature and conceptual frameworks to explore prospective teachers' understanding of psychological needs in education. Methods such as interviews, focus groups, reflective journals, and classroom observations were used.

Common Data Collection Methods in Thematic Research

Method	Purpose	Contribution to Thematic Research
<i>Semi-structured interviews</i>	<i>Explore individual beliefs and reflections</i>	<i>Rich, personalised data for theme development</i>
<i>Focus groups</i>	<i>Understand shared experiences and perceptions</i>	<i>Collective narratives, peer comparison</i>
<i>Reflective journals</i>	<i>Capture growth in awareness over time</i>	<i>Longitudinal thematic insight</i>
<i>Life-history narratives</i>	<i>Explore past experiences that shape beliefs</i>	<i>Deep, interpretive understanding</i>
<i>Classroom observations</i>	<i>Understand behaviour and context in real-time</i>	<i>Supports triangulation with reflective data</i>
<i>Document analysis</i>	<i>Review training materials and student work</i>	<i>Contextual insights into program content</i>
<i>Field notes</i>	<i>Record informal, spontaneous observations</i>	<i>Complement interview and focus group data</i>
<i>Audio/video recordings</i>	<i>Capture tone, emotion, and interaction</i>	<i>Enriches data for more nuanced coding</i>

Implications for Research and Practice: *The reviewed studies showed that prospective teachers often recognised the importance of psychological well-being as very important but felt underprepared to handle such situations.*

Conclusion

Mental health encompasses a spectrum of psychological conditions, from mental illnesses to optimal well-being. Positive mental health, or well-being, involves more than the absence of issues; it relates to professional growth, motivation, and fulfilling relationships. As holistic education gains importance, teacher training programs must prioritise mental health competencies to prepare educators to support students effectively. Thematic studies highlight the need for enhanced training that integrates mental health awareness, resulting in more empathetic and capable educators.

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Language Education Initiatives in the 21st Century: Translating Policy into Practice

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Abstract

The 21st century has witnessed a paradigm shift in language education. Today, policies are no longer confined to documents but are expected to resonate in classrooms and beyond. It simply implies that the gap between the vision and the reality must be bridged at any cost. It also ensures that the ideals of learner-centeredness, multilingualism, and inclusivity are not mere aspirations but lived realities. To this account, this paper tries to explore the complex journey from policy to practice in the area of language education. It investigates on three major themes: mother-tongue-based multilingual education (MTB-MLE), translanguaging pedagogies, and the integration of digital technologies in particular reference to Artificial Intelligence (AI). It draws insights from twenty seven accessible, peer reviewed studies from database such as ERIC, DOAJ, and the UNESCO repository. Furthermore, the paper deliberates on the possibilities and challenges of bridging the gap between policy and practice. Though, the policies articulate a commitment to inclusive, equitable, and innovative education, their effectiveness invariably depends on many factors, such as, teachers' beliefs, available resources, assessment systems, and the ethical use of technology. Finally, the paper outlines some noteworthy recommendations with the ultimate aim of making language education initiatives purposeful and transformative in 21st century learning.

Keywords: 21st Century, mother-tongue-based multilingual education, translanguaging pedagogy, artificial intelligence, Policy implementation, professional development.

Introduction

Language education reflects identity and facilitates social mobility. In multilingual contexts, language education policies must balance the preservation of a cultural heritage with the development of global competence (Hornberger, 2021). In the past twenty years, reforms around the world have attempted to put learners' linguistic repertoires at the centre of language education by promoting mother-tongue education, acknowledging translanguaging practices, and pursuing emerging technologies. Moreover, there are three remarkable and noteworthy developments made in this field. First, the United Nations Educational, Scientific and Cultural Organization (UNESCO) has endorsed the principle that children learn best in their home

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language especially in the early grades. Second, translanguaging is now being recognized as an asset in pedagogy instead of a problem. Third, AI and EdTech now intersect with classrooms as enabler and disruptor (Kasneci et al., 2023). However, the transition from policy formulation to classroom practice seems complicated. For instance, even as India's National Education Policy (NEP) 2020 calls for instruction in a regional language until grade five or beyond (Government of India, 2020), the questions remain about teacher readiness, curriculum alignment, and the development of like resources. Similarly, even though translanguaging can enrich bilingual learning contexts, many teachers resist its adoption because they were trained in monolingual ideologies (Ossa-Parra & Proctor, 2023). Finally, even though AI tools promise to be inclusive, they often exacerbate differences by constructing additional barriers for low-resource languages and learners who lack digital connections (Zheng et al., 2024). Therefore, this paper examines the factors involved in translating 21st-century language education policy into practice. It explores what has worked really well, where obstacles persist, and how to move towards a more inclusive, equitable, and contextualized language education practice.

UNESCO's Global Vision and National Adaptations: Policy Frameworks in Language Education

UNESCO has been at the forefront of advocating for linguistic diversity in education, recognizing language as both a human right and a determinant of educational equity. The Language Matter: Global Guidance on Multilingual Education (UNESCO, 2025) makes recommendations for multilingual education policy based on five pillars- sociolinguistic mapping, mother-tongue instruction in early years, teacher education programmes, curriculum alignment, and community engagement. Notably, it also highlights that globally 40% of learners have no access to education in their home language, with that number growing to 90% in low income contexts. Beyond the 2025 framework, UNESCO's earlier Global Education Monitoring Reports linked language education policies to Sustainable Development Goal 4 (UNESCO, 2023).

The National Education Policy (NEP) 2020

India's National Education Policy 2020 represents a landmark shift toward multilingualism. It articulates the need for mother-tongue or regional language instruction until at least Grade 5, preferably Grade 8 strengthens the three-language formula, and promotes the use of local languages as medium of instruction in higher education (Government of India, 2020). Furthermore, the policy was accompanied by technology interventions, such as an AI translation platform (Anuvadini, UDAAN etc.), and DIKSHA digital repository that has local language materials available in thirty six languages. Yet, the problem of scaling teacher training and localised resource development has not been resolved. The Indian scenario illustrates how progressive frameworks require not only technical solutions but also sociocultural alignment, making language education a deeply political and community driven enterprise.

Regional Reforms

Language reforms and movements are global phenomena. For instance, in Bangladesh, mother tongue based multilingual education (MTB-MLE) was established in 2017 for indigenous learners who had historically been marginalized in mainstream Bengali-medium education (Dkhar, 2023). Similarly, African countries such as South Africa and Ethiopia are grappling with how to maintain home-language instruction while also addressing English or French as linguistic global lingua franca (Heugh, 2017). These varied contexts highlight a shared paradox: while policies often embrace linguistic diversity, in actual classroom practice the same language tend to revert to dominant ones due to factors such as examination pressure, teachers' ideologies, and parental preferences.

Pedagogical Innovations: Evidence and Practice

The advantages of MTB-MLE are widely acknowledged. Thomas and Collier (2002) found that students who received formal schooling with strong first-language instruction consistently outperformed their peers from other language backgrounds in terms of long-term academic achievement. Similarly, in Odisha, India multilingual programmes for twenty-one tribal languages have enhanced student retention and supported identity affirmation (Mohanty, 2019). Nonetheless, not all evidence is universally positive. The Philippines had a nationwide MTB-MLE policy in place, but certain areas reported declines in foundational reading scores and other literacy objectives due to a shortage of resources and poorly trained teachers (Ball, 2011). Overall, such mixed results seemingly suggest that the success of a new policy rests more with the quality of implementation, rather than the Policy per se.

Translanguaging Pedagogy

García and Wei (2014) have performed translanguaging as a theory of bilingualism and a classroom practice. Recently systematic reviews indicate that translanguaging is beneficial for sense-making, belonging, and engagement (Moraru, 2025). Teachers who engaged in translanguaging practices affirmed enhancing students' linguistic identities and moved from deficit to asset orientations (Ossa-Parra & Proctor, 2023). However, translanguaging is still a contested concept. For instance, some educators in the Philippines resisted MTB-MLE because they viewed pedagogy through a multi-lingual approach as confusing schools' delivery of the curriculum (Tai, 2022).

Digital and AI Innovations

Language education is increasingly influenced by digital tools. In India, IIIT Hyderabad's Adi Vaani is using AI-based speech synthesis and translation in tribal languages like Santali and Bhili, which is facilitating learning resources for education and health (Rao, 2025). At international level, non-government organizations (NGOs) such as 'Education Above All' are working with MIT and Harvard to design open-source AI tutors suitable for low-resourced contexts. Assistive AI technologies are equally beneficial for learners with disabilities. Estonia's AI Leap initiative is both integrating AI technology into their high schools and training 20,000 students and 3,000 teachers (Department of Education, U.S., 2023). Nevertheless, critics such as, Giannakos (2024) argue about the dangers of commercial EdTech that undermine pedagogy, mine student data, and exacerbate inequities. Furthermore, there is evidence that students from wealthier families are better at using AI tools than students who belong to disadvantaged backgrounds, contributing to the "AI literacy gap".

Policy Implementation: Gaps and Constraints

The effort to realize language education policies continues to encounter complicated ideological and practical issues. Teachers' beliefs and capacities often determine whether education reforms can be implemented or not, yet there are a large number of educators who are still steeped in a monolingual ideology and believe that encouraging the use of students' home languages is not effective (Cummins, 2021). In many cases, teachers are not able to implement multilingual pedagogy, create local resources, or use related technology sufficiently without proper professional development (Menken & Sánchez, 2019). Resource related issues also complicate the situation; in the Philippines, for instance, the mother-tongue policy was not taken seriously because of unavailability of local textbooks, a shortage of trained bilingual educators, and lack of infrastructure. In this case and with many others, what seemed to be a positive step forward

failed due to lack of institutional support (Tupas & Martin, 2016). Moreover, structural and systemic constraints hinder policy enactment. For instance, students in high-stakes tests or standardized assessments must use the languages privileged in the assessment, which pushes schools to adopt them instead of their home languages or change parental choices (Shohamy, 2017). At the same time, inequities pertaining to technology exacerbate such gaps for numerous educational technologies, today, rely majorly on artificial intelligence, which in its turn, disregard minority languages and magnify the impact of the digital gaps, particularly at the low end of the resource context (Warschauer & Matuchniak, 2010). Even the commodification of educational technology presents ethical dilemmas based on equity, access, and protection of student data (Selwyn, 2016). Such barriers highlight that without the factors, such as - infrastructural coherence, an aligned approach to assessment systems, sufficient resources, continuous professional development, strong accountability mechanisms, and effective governance structures for technological integration, language education policies are likely to risk producing aspirations rather than bringing genuine transformations.

Pathways to Effective Implementation

Significant hurdles in many contexts may always remain. However, there are variety of enabling factors that can strengthen the linkage between language education policy and classroom practices. For instance, teachers' continuous professional development is one important condition that promotes critical awareness of multilingualism, provides examples of purposeful and realistic ways to use learners' home languages in classrooms with dominant or global languages (Darling-Hammond et al., 2017). Furthermore, collaborating with educational actors to join hands in designing a shared curriculum would serve to be a welcome initiative. Furthermore, the use of locally created materials guarantee that policies remain context-aware and culturally relevant. Additionally, impactful community involvement, with parents, local leaders, and cultural organizations engaging to improve language practices, creates larger ownership and legitimacy of multilingual reforms (Hornberger & Johnson, 2007). Moreover, the success of language education policies is often determined by coherent governance, which ensures that national frameworks, school-based initiatives, and assessment systems are aligned, thereby preventing implementation to be merely a symbolic action.

Technology, is equally a strong catalyst when applied fairly. Open-source digital platforms and AI-enabled tools can provide multilingual resources, translation assistance and personalized and individualized learning opportunities to enhance inclusion in education (Holmes & Porayska-Pomsta, 2022). Furthermore, to be effective, equity must be integrated into the design of such technologies, as they relate to minority languages and digital divide. For instance, AI-based e-learning tools often provide content only in English or other global languages. Therefore, incorporating tribal and regional languages (e.g., Santali, Kui, Ho, Juang, or Mundari in Odisha) would bridge the digital divide for marginalized learners. Moreover, international collaboration furthers these initiatives: cross-national initiatives in collaboration with partners such as UNESCO or regional networks allow the sharing of research, best case practices and models that lend themselves to scalability (UNESCO, 2023). Thus, the above-mentioned contexts, such as, teacher preparation, community involvement, technology and equity in policymaking and governance offer a coherent basis to translate language education policy and objectives into tangible realities in the classroom.

Recommendations

Prior to the implementation of any instructional policy, it is essential to conduct linguistic mapping of the communities there will be penetration, so the policy is relevant to the contexts and includes the balls of the communities. All induction programmes and continuous professional development must include multilingual pedagogy and literacy in digital, artificial intelligence (AI) for teachers who interact with diverse classrooms. Instead, assessments of learning should support multilingual practices in order to mitigate pressures on students that push them against dominant languages in schooling. In addition, digital approaches for low-resource languages will also need to be designed for offline access, so educators and learners can follow ethical principles in the development. Encouragement and support will need to be provided to teachers and learners with the least access to AI technologies, especially those working in the most disadvantaged communities. Finally, periodic tracking of progress through research, evaluating progress over time, and tracking impact systematically, will identify more responsive and equitable educational policies.

Conclusion

Language education in the 21st century stands at the crossroads; shaped by the twin imperatives of inclusivity and global competence and the change in the classroom dynamics with learners coming from diverse backgrounds. Policies worldwide increasingly recognize the value of multilingualism, translanguaging, and technology integration, yet their realization in classrooms remains uneven. This paper has highlighted the fact that the MTB-MLE certainly improves equity and foundational learning, translanguaging practices strengthen learner participation and identity, and digital tools expand possibilities for access, and eliminate persistent constraints that undermine progress. Furthermore, teachers' professional development, community participation, and coherent governance, as well as ethical use of technologies, can serve as strong vehicles of implementation. Moreover, the international frameworks, along with UNESCO offer guidance, but, ultimately, change is largely dependent on local approaches that align with the sociocultural context of learners. The reforms can be made constructive when collectively the policymakers, educators, and communities ensure the same and pave positively into practice. Moreover, language education policy simply entails that multilingual competence among children is not only empowering in nature, but also necessary for the advancement of social justice. Therefore, this is high time to create learning spaces where children in no way remain disadvantaged based on their language. And, those languages that children bring to the classrooms must be seen as a resource rather than a barrier. That is how, the language education endeavours can be made promising and transformative both at local as well as global spaces in the 21st century.

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Analysis of Language Textbooks Developed by NCERT in light of the Values Enshrined in NEP 2020

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Abstract

The National Education Policy (NEP) 2020 emphasises the integration of core human and constitutional values in the curriculum. It includes equity, inclusion, respect for diversity and promotion of multilingualism. This paper presents a critical analysis of language textbooks developed by National Council of Educational Research and Training (NCERT) in the context of the values and pedagogical approaches advocated by NEP 2020. Using content analysis method, the study examines language textbooks of grade six to assess the extent to which they reflect in the policy's vision including concerns towards national integration, development of human values, development of scientific temper, representation of diverse cultures and identities, and increased visibility of female characters in empowering roles in the textbooks. The findings reveal the strengths in the alignment of textbook content and design with NEP 2020 objectives.

Keywords: Policy initiative, curriculum, textbook, diversity, inclusion, representation

Introduction

The National Education Policy 2020 reiterates India's commitment to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" by 2030 as proclaimed by the United Nations in its Agenda 4 of Sustainable Development Goals. With the ever evolving, rapidly changing knowledge landscape in the global ecosystem, the education system in India is under transitory phase after the introduction of its latest educational policy in the 21st century. Education is now channelised lesser towards course-material and more towards learning to solve problems, critically analysing the content and the context, adapting and absorbing new knowledge in recently emerging fields of knowledge such as Artificial Intelligence and Digital Tools that combines Augmented and Virtual Reality, Metaverse and alike. Yet at the same time, the policy highlights that the curriculum must include basic arts, crafts, humanities, games, sport, languages, literature, culture and values in addition to Science and Mathematics to make education more well-rounded, useful and fulfilling to the learner (NEP 2020, p. 3)

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The educational policy, the subsequent curriculum framework and the textbooks so developed are closely interconnected in shaping the nation's education system. The educational policy sets the all-encompassing goals, values and priorities of education, guiding decisions on standards, funding and overall structure. It establishes the vision for what students should learn, whereas the curriculum framework translates the policy into specific learning outcomes, subject areas and guidelines. It outlines the content and competencies to be taught at various stages of education, ensuring alignment with national goals. Textbooks are the practical tools that implement the curriculum framework. They provide detailed content, activities and assessments that teachers have to deliver, ensuring that students achieve the learning objectives set by the policy and the framework.

Educational policies often establish national standards and benchmarks for student performance. The curriculum framework is designed to align with these standards, guaranteeing that the educational system meets the intended outcomes. Textbooks are then developed to reflect these standards ensuring that students receive instruction aligned with the policy goals, hence forth, textbooks serve as an interaction between state and the citizens and is the most potent tool to carry forward the policy's agenda. Henceforth, one can easily summarise that, books essentially communicate the important principles and features of any educational institute along with its curriculum. Textbooks are by far the strongest, functional means to transmit truth and question the existing body of knowledge (Vandana, 2013). It confirms the righteousness of the knowledge and values presented in them and indirectly refute and invalidate those values and knowledge which they exclude.

Need for the study- India is a land of heritage, culture and traditions, inheriting rich legacies in linguistic expressions, developed over thousands of years and manifested in the form of arts and literatures. Language is obviously, inseparably linked to arts, literature, culture and customs. Different languages perceive world in a different manner, and the particular mannerism is located in their social context and the structure of their language. The meaning of the words spoken, the undertone of the speech, processing of the texts inherent in the conversations among speakers of a common language is a reflection and record of a culture. Culture is thus, encased in our languages (NEP, 2020, p. 53). Therefore, in order to preserve and promote culture, preserving the languages are indispensable.

The National Education Policy 2020 visualises that student will be sensitised through the new school culture, brought in by teachers, trained social workers and counsellors in order to bring in an inclusive school curriculum. Therefore, the policy directs school curriculum to include, early on, material on human values such as respect for all persons, gender equality, inclusion and equity. It guides the curriculum to include more detailed knowledge of various cultures, religions, languages, and gender identities to sensitise and develop respect for diversity and directs to remove illustrations of any prejudices and typecasts from school, and curriculum and show the way to include related study resources relatable to all communities (NEP, 2020, p. 28).

To promote and preserve the languages and to inculcate in students the constitutional values, the National Education Policy 2020 therefore, called for the development of a new National Curriculum Framework as the bases for transforming the school education in the country. In the same spirit, the National Council of Educational Research and Training (NCERT) had launched the National Curriculum Framework for School Education (NCFSE) in August 2023, to develop an educationally robust and aspirational yet practically implementable curriculum that ensures the best possible education for all students with complete support from the system (NCFSE, 2023, p. 15).

The National Curriculum Framework for School Education 2023, aims to provide guiding principles, goals, structures and elements for the development of curricula, informed by which the syllabi, teaching-learning materials including play materials, workbooks, textbooks and assessment methods to be developed by the relevant functionaries (NCFSE, 2023, p. 21). Taking clues from the NCFSE 2023, NCERT had launched in June 2024, its new set of textbooks for grade six that include textbooks for all subjects- Languages including- Hindi (*Malhar*), English (*Poorvi*), Urdu (*Khayal*), Sanskrit (*Deepakam*), Mathematics (*Ganita Prakash*), Science (Curiosity), Social Science (Exploring Society, India and Beyond), Arts (*Kriti*), Physical Education and Well-Being (*Khel Yatra*), and Vocational Education (*Kaushal Bodh*).

In this context it becomes pertinent to locate the vision of NEP 2020 such as national integration, cultural rootedness, gender equality, inclusion and equity, respect for diversity, absence of biases and stereotypes, scientific temperament, environmental concerns, integration of various cultures, religions, languages, and gender identities in the newly developed language textbooks of grade six by NCERT.

Research Questions-

1. Are the textbooks adequate enough to represent and disseminate the values as enshrined in the NEP 2020 and reiterated by NCFSE 2023?
2. Is there adequate representation of different cultures, religions, languages and gender identities in the textbooks as proclaimed by the NEP 2020?

Sample of the study-For the purpose of the study textbooks of language- English, Hindi, Sanskrit and Urdu viz. *Poorvi*, *Malhar*, *Deepakam* and *Khayal* of grade six were selected.

Research method-For studying the textbooks, the technique of content analysis was used by the researchers.

Findings-The following themes have been identified during content analysis:

1. **Promoting National Integration through Textbooks-** The new textbooks in languages are working towards promotion of national integration, patriotism and Indian cultural identity and Indian rootedness. Nationalism is a feeling of 'We' that requires constant effort to be inculcated among its citizens (Kushwaha, 2015) and the best way to promote nationalism among the children is through textbooks and school curriculum. Henceforth, in order to develop the feeling of this oneness many of the chapters in all language textbooks include content that either focus on promoting nationalism or patriotism by poems, stories and texts that promote cultural heritage. In *Malhar*, the poems *Matribhumi* (Motherland), *Pushpa Ki Abhilasha*, (A Flower's Desire), *Aao Baccho tumhedik hayen Jhanki Hindustan Ki* (Come children, let me show you a glimpse of India) have a tone set in nationalism and patriotism. *Khayal*, the Urdu textbook, also includes two chapters *Veer Abdul Hameed* and *Missile Man* (biography of Dr. APJ Abdul Kalam), that promotes the feeling of nationalism among students.
2. **Promoting Cultural Integration through Textbooks-** In *Khayal*, *Fasloka Tyohar* (Festival of Harvest) promotes the Indian culture and civilization whereas chapters like *Satriya aur Bihu Nritya* (Satriya and Bihu Dance) and *Hind Mahasagar me Chhotasa Hindustan* (Mini India in the Indian Ocean) in *Malhar* explores the Indian cultural heritage and roots of Indian culture outside Indian sub-continent. *Poorvi*, the textbook for English language, has also included two chapters, titled *Hamara Bharat* (Our India)- Incredible India and National War Memorial

that focus on the Indian culture, tradition, customs and patriotism among students. Sanskrit textbook, *Deepakam* too reflects on Indian traditions, heritage and cultural identity by including two chapters *ShurahVayamDheerahVayam* (We are Strong, We are Courageous) and *AtithiDevoBhavah* (Guest is God).

3. **Developing Human Values through Stories, and Poems**-Integrating human values into textbooks includes intertwining social, moral and ethical, values in the curriculum, in conjunction with skills and academic knowledge. This approach aims to foster not only intellectual growth but also character development, integrity and a sense of societal responsibility. For example, in *Deepakam*, the chapter *ShurahVayamDheerahVayam*, (We are strong, we are courageous) focuses on helping people in distress and calamitic atrocities. The same chapter also mentions some famous female characters like *Arundhati*, *Draupadi*, *Savitri*, *Janki*, *Kannagi*, *Gargi*, *Meera*, *Durgavati*, *Lakshmibai*, *Ahilyabai*, *Chennamma*, and *Rudramba* from Indian history who have been known for their morality, valour, courage and boldness. Many shlokas have been incorporated in different chapters of *Deepakam* such as *VidyaDadatiVinayam* that loosely translates into 'knowledge imparts humility', or *Janani JanmaBhumischa* which means 'mother and motherland are superior to heaven', incorporates values into textbooks. In other language textbooks *Khayal*, *Malhar* and *Poorvi*, chapters like *Ehsan kaBadla Ehsan*, (A favour for a favour) *MeetheBol* (Sweet Words), *Pariksha*, (Trial), Goal, Change of Heart, The Unlikely Best Friend, A Friend's Prayer, and The Chair are all set to teach students values like empathy, respect, integrity, compassion, honesty, responsibility and social justice.
4. **Promising Pictorial Representation of Women in Language Textbooks**- All the four textbooks for languages have given ample space to both men and women in pictorial representation. The pictorial representation shows women in alternate professions such as Doctor, Lawyer, Policeperson, and Fire-fighter and men in the role of Chef or working along with the female in their home. The textbooks also focus on inclusion of differently abled children by representing them through pictures, mostly on a wheelchair. However, integrating gender perspective and inclusion of differently-abled people in textbooks do not specifically mean including pictures only. The pictures must be substantiated by supporting text and content otherwise the pictures lose their relevancy. The supporting texts that could have highlighted the importance of women in each walk of life or the text that talk regarding gender equality, empowerment and inclusion are missing from the textbooks.
5. **Representation of Women in Non-conventional and Alternate Professional Roles**- It is very inspiring to note that the Urdu textbook *Khayal*, has included a biography on Indian boxer *Mary Kom* that highlights the spirit, courage and resilience of *Mary Kom* in pursuit of her dream and career. The stories and biographies like that will definitely motivate young girls and students from marginalised community to come forward and make their career not only in sports but in any other field which they find interesting. In Hindi textbook *Malhar*, a story by *Jaya Mehta* highlights woman as a documentary film director. English textbook *Poorvi* highlights the courage and perseverance of a differently-abled woman *Ila Sachani* and her struggle of overcoming her disability.
6. **Development of Scientific Temper**-Developing scientific temperament through textbooks involves integrating content and pedagogy to foster critical thinking, inquiry and evidence-based decision making. This includes presenting scientific concepts in a way that encourages questioning, analysing and forming hypothesis alongside practical application of scientific methods in everyday life. Although, the analysed textbooks belong to language teaching the

NEP 2020 reinforces the integration of different subjects along with cross-cutting themes in action. Hence language textbooks have also incorporated chapters based on discussing scientific facts, concepts and theories through stories and poems. In *Khayal*, the Poem *ChaandPePahunchalnsan* (Humans have reached the Moon) is a very motivating and encouraging poem that piques the attention of students towards space and cosmos. In the same textbook, the biography of *Dr. APJ Abdul Kalam*, is titled as Missile Man. This chapter has a reference of Indian Space Research Organisation, National Aeronautics and Space Administration along with the guided missile system that was developed by *Dr. Kalam*. Teaching science through inspiring stories, and interesting narratives will inculcate in students the temperament where they develop scientific attitude and are receptive to novel thoughts and alternative explanations of the cause and event relationship. In *Malhar*, the chapter *Ped ki Baat* (Story of Tree) focuses on the growth and development of trees and plants including processes like photosynthesis, fertilization and pollination, highlighting the interdependence of plants and animals. The writer of this chapter is the famous scientist *Jagdish Chandra Basu*. This will also make students aware of the literary tradition in scientific community. In English textbook *Poorvi*, chapter like Spices That Heal Us talks about different spices used in cuisine for flavouring and the medicinal values of these flavouring agents. Overall, even the language textbooks, through its contents attempt to develop the mind set of inquiry and investigation among students.

- 7. Developing Sense of Attachment with the Environment-** It is reiterated here that NEP 2020 and NCFSE 2023 has shown concern towards environmental issues and sustainable development, henceforth, the curriculum framework guides to develop content that also addresses these issues among students in an engaging way. In Urdu textbook *Khayal*, through a story *ChidiyaKaGhonsla*, (Bird's Nest) the habitat and niche of different animals have been discussed in the chapter that grab the attention of the students towards the requirements of a comfortable space of living for all animals. The Poem *Abe-Rawa* (Flowing Water) in the same textbook, tells the happy story of a streaming waterfall in a playful tone that is quite lyrical to recite and engaging as well. It also presents an aesthetic depiction of water that freely flows amidst the mountains. *Neem Baba* and *What a Bird Thought* are the chapters in *Poorvi*, again highlighting the importance of plants and vegetation, flora and fauna in the daily life of human beings and the importance they held for a healthy environment. The Sanskrit textbook *Deepakam* tells the story of environment through its chapter *SahEvMahan Chitrakar* (God is the Great Painter) and *VriskshaSatpurusha Iv* (Trees are Gentle People). All in all, these textbooks contribute in developing a sense of attachment with the environment by providing information about nature's beauty, ecological diversity, biodiversity, interdependency and interconnectedness of one and all.

Conclusion- The National Education Policy 2020 makes significant connection between the language people use in their home, schools and society and how it shapes our ideas, thoughts and behaviour. The policy encourages gender sensitisation by integrating inclusive language and disseminating it through curriculum, textbooks and other textual and non-textual materials. The newly developed textbook take this stance on gender sensitisation by portraying women in alternative professional and empowering roles into consideration. As a result, language plays a significant role in the advancement of gender equity and justice. The process of gender sensitisation cannot be separated from language learning. While making students learn about a particular language, we ought to sensitise them towards all gender using a non-discriminatory, non-hierarchical, inclusive language. In such a task, textbooks play important roles because they

are the vehicle of not only curriculum implementation but they also promote and inculcate various values enshrined in the Indian constitution.

There has been a balanced portrayal of male and female characters through the stories, poems, thoughts and activities in the language textbooks. The biography of Mary Kom in the Urdu textbook promotes and motivate students to pursue sports and games. The textbook, thus, contributes to a worldview where students are expected to be assertive, courageous and ambitious and at the same time remain humble, generous, kind and supportive of all people.

In conclusion, the textbooks reviewed have shown commitment to nurturing a holistic educational experience that goes beyond mere academic learning. By thoughtfully incorporating themes of nationalism and cultural identity, these textbooks instil in students a strong sense of belonging and pride in their heritage, helping them appreciate the richness and diversity of their own culture. Simultaneously, the emphasis on human values such as sympathy, empathy, integrity and respect foster the development of compassionate and morally grounded individuals. The promotion of scientific temper through critical inquiry, reasoning and curiosity equips learners with the intellectual tool necessary to question, analyse and innovate in an ever-evolving world. Collectively, these textbooks serve as indispensable guides that not only impart knowledge but also shape character, vision and the ability to think critically and independently. The researchers sincerely appreciate the educators, authors and curriculum developers whose thoughtful work has created such a balanced and enriched learning materials, empowering students to become informed, responsible and proactive global citizens.

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Integrating Foundational Numeracy Skills with Environmental Exploration across the Foundational Stage

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Abstract

In the present scenario, the need for interdisciplinary learning has become increasingly evident, especially at the foundational stage of education. This paper talks about the integration of foundational numeracy and mathematics with environmental studies (EVS) to foster holistic learning for young children at the foundational stage. Traditional approaches to teaching math often isolate numbers and calculations from real-world experiences that results in limiting children's ability to grasp the hands-on exposure of mathematical concepts. By weaving together numeracy with environmental exploration, teachers can create an appropriate numeracy rich learning environment where children develop mathematical skills while understanding the world around them.

This conceptual paper talks about the strategies to merge foundational numeracy with environmental studies, focusing on activities that make learning both engaging and meaningful. For example, counting tree rings to understand patterns, measuring how much mugs of water is required to fill a bucket, or observing the patterns and designs on leaf shapes can provide children with hands-on experiences. This interdisciplinary approach aligns with today's modern pedagogical practices that emphasise active, inquiry-based learning and provides teachers with practical and doable ideas to incorporate numeracy in everyday experiences. This approach offers the potential to today's generation to become mathematically literate and environmentally conscious, so that they are capable to use their skills to solve real-world challenges.

Keywords: Interdisciplinary, Foundational Numeracy, Environmental Studies, Math, Foundational Stage

In a small school garden in rural Uttar Pradesh, a group of children aged seven-year-olds gathered around a *neem* tree. They were looking at the marigold flowers that they had planted few months back near the *neem* tree with the help of the school gardener. They were excitedly counting the bright marigolds as they want to use these for the upcoming *Diwali* festival. Under the guidance of their teacher, the children were engaged in an activity on festivals. They are supposed to explore how festivals connect to nature. As they carefully plucked the flowers for their school's celebrations, they were uncociously learning foundational math concepts. One child counted the petals to find patterns, another measured the height of the plants using a simple stick to compare growth, while the others sorted flowers by size and colour. We have to pluck only for *rangoli* and not more, "said Atul." How many marigolds do we need for the

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flower *rangoli*?” asked Meera, her fingers moved softly as she tried calculating and taking a spatial sense of the classroom-- how big would be the *rangoli*?” Through this hands-on project, the children not only deepened their understanding of math but also connected it to the rich cultural traditions of their community.

In yet another episode, the author talks about how children are learning in the midst of the preparations for the school *mela*. The school calls it ‘*Bal-Mela*’. A group of energetic 7-year-olds gathered at their school ground, and was quite eager to set up their mock stalls with the help of their teacher. Their teacher offered a math lesson with a fun twist and asked them to work on stalls and its layout. She tried weaving in foundational numeracy concepts along with environmental studies. “We need to arrange the stalls in a circle, so create a sketch map on the chart paper” suggested teacher. She then encouraged children to think and draw the same. “How many stalls can fit around the banyan tree if we space them equally, Malti quickly posed the query?” The children began discussing patterns. The teacher gave a hint and explain how arranging in an alternate manner like, larger and smaller stalls might be a good idea to balance the layout. They used sticks and pebbles to mark different spots, creating and exploring different patterns as they worked.

As they marking the areas for each stall, the teacher encouraged them to think about the resources and environment—like using reusable materials to reduce waste, adding an important EVS lesson. Riya exclaimed, “Madam we can use cloth patterns as a *jhalari* for each stall, my mother does the same during Diwali. But how can we have different pattern for each stall?”

The teacher guided them by helping them explore materials like strings to measure distances between stalls and pebbles to count how many people might visit each stall. This helped children do sorting, comparing numbers, and finding ways to solve problems in much hands on manner. One group sorted eco-friendly banyan leaf plates by size and shape, discussing which ones would fit more efficiently on the stall tables. “How many plates do we need if each person gets only one?” Asked Malti. Atul posed another query-“But what if some people come back for more food—how many extra should we keep?”

By asking and answering such queries, the children practiced problem-solving. Children gained an understanding of foundational numeracy concepts like extending patterns, sorting, counting, and measuring, all while gaining awareness of sustainable practices for the *mela*.

The need for interdisciplinary learning at the foundational stage

The **National Education Policy (NEP) 2020** places a strong emphasis on building foundational literacy and numeracy as an essential aspect of foundational education. It highlights that without these skills, the rest of schooling becomes a challenge. This aligns with NEP’s vision of experiential learning, play-based pedagogy, and integration of knowledge with everyday life, ensuring that learners not only master numbers but also develop problem-solving and critical thinking abilities in contextually rich and engaging ways.

Interdisciplinary learning at the FS helps in holistic development by integrating various subjects like EVS, maths and art integration for cohesive learning experience. Rather than isolating concepts like FLN, and environmental studies, interdisciplinary approaches connect these fields, making learning more meaningful and applicable to real-world situations. For children, this approach nurtures 21st century skills by showing how different subjects are integrated and interdependent on each other. For example, combining foundational numeracy with EVS allows children to understand mathematical patterns, sorting and so many other concepts through

nature. This integration prepare the children for more complex cognitive activities in the later classes.

Foundational numeracy and Environmental Studies (EVS) are critical in shaping a child's early learning experiences. Numeracy equips children with essential skills in counting, measuring, sorting, recognising patterns, and solving problems, forming the basis for advanced mathematical understanding. EVS, on the other hand, encourages children to explore, observe and understand the world around them. This approach encourages children to think critically about the world and their role in it and at the same reduces pressure of reading more textbooks.

This article will demonstrate how the interconnectedness of numeracy and EVS can enhance children's understanding of mathematical concepts and also illustrate practical, real-world applications of foundational math skills that foster environmental awareness and responsibility.

Challenges of Traditional Math Teaching

Traditional math teaching often poses hurdles for effective learning and understanding among young children and that's why it is often found that children start becoming afraid of math right from the foundational stage because it was taught to them very mechanically without giving them any concrete experiences. As there's no connection, no play based mathematics and no process of learning mathematics, there's dislike and they got disconnected. This disconnection makes it difficult for children to see the relevance of what they are learning. And therefore it generally lead to a lack of interest and motivation towards math. When children are not able to relate mathematical ideas to their everyday experiences, they struggle to grasp the significance of these concepts. Like for example, the pre-school teacher starts directly with numbers, without giving children exposure to pre-number concepts or telling stories based on numbers. It has been seen that in typically traditional classrooms, math concepts often focus on rote memorisation rather than encouraging exploration and application. Young children may engage with abstract numbers and operations without understanding how these skills translate into practical situations. It results in superficial knowledge that does not transfer to real-world problem-solving and thus children start disliking math and face a failure as they move to classes 1 and 2.

Traditional and rote methods can lead to passive learning environments where children are not actively involved in their learning. This can result in poor retention of mathematical concepts, as children may quickly forget information because it was not presented to them in fun and hands-on manner. When children do not feel motivated in their learning, they lack interest and are less likely to develop an understanding of foundational numeracy skills. It is very common to see that children are not able to do an exercise in their textbook when asked to mark a biggest object with red colour and smallest object with yellow colour, it is because they were never given opportunities for hands on play or do concrete activities where they can sort and classify bigger and smaller objects/toys into categories. Thus they find doing the same on the workbook quite difficult and they cannot use the appropriate mathematical vocabulary.

Rationale for Integrating Numeracy and Environmental Studies

Integrating foundational numeracy and EVS offers many benefits that enhance the learning experience at the foundational stage. Experiential learning allows children to engage directly with their environment as it facilitates a better understanding of mathematical concepts through hands-on activities. By involving children in hands-on activities, such as measuring plants, counting leaves on twigs, or sorting natural materials, teachers can create meaningful

experiences that make abstract math concepts easier to handle. This makes math more relatable, fun, and enjoyable.

Enhancing critical thinking and problem-solving through real-world connect: Integrating numeracy with EVS encourages children to apply their mathematical skills to solve real-world problems. For example, measuring the amount of water needed to fill a bucket or to water the mini school garden allows children to think critically and use math in practical, relevant situations. This kind of context based learning helps children analyse, and evaluate, before they arrive to solutions.

Aligning with developmentally appropriate pedagogical approaches: The integration of foundational numeracy and EVS aligns well with developmentally appropriate pedagogical practices that emphasise inquiry-based learning. These approaches encourage children to ask questions, explore their surroundings, and find answers through investigation, exploration, and discovery and by working together. This alignment with modern pedagogical practices not only enhances the relevance of both subjects but also prepares children for later learning and allow them to learn about their immediate world without any pressure or curriculum load. Encouraging children to observe patterns in nature, such as the growth cycles of plants or animal behaviours, sharpens their observational skills, which are critical for scientific inquiry and mathematical reasoning.

Supporting diverse learning styles

This type of integration addresses diverse learning styles as well, like, it supports visual, auditory, and tactile learners. For example, visual learners can benefit from embossed diagrams and charts, while tactile learners learn better with hands-on activities such as measuring soil in the sand pit as they explore and use variety of measuring toys for sand pit. This differentiation enhances inclusivity in the classroom, ensuring all children can connect with the learning-teaching materials (LTMs). It encourages team work among children as they work together on themes/projects related to their environment. Group activities—such as creating a mini classroom garden or conducting a nature survey also—promote teamwork and communication skills. The teachers can also include handmade toys using materials from nature/low cost materials to create further interest and bring innovativeness to the activities for all children.

Building Resilience and Adaptability

Who doesn't agree of connections between experiential learning and EVS as it often involves 'what would happen if' type questions and brain storming where the teacher encourages children to predict—like weather changes or variations in plant growth. By engaging in these hands-on examples, children learn to adapt and respond to simple challenges that are age and developmentally appropriate. When children see the practical applications of math in understanding their world, they are more likely to get involved and take initiative in their learning and this would also help them to do self-assessment. This at the same time develops a respect for diversity and cultural heritage.

Strategies for Integration

There are variety of hands-on teaching-learning strategies that encourage exploration and application of foundational numeracy concepts and skills in natural contexts.

Have you ever wondered that children should be encouraged frequently to observe and explore numeracy around their immediate surroundings? *Asking them to imagine and predict the speed*

of a river's flow by timing, floating leaves, which vehicle will reach first or comparing the lengths of shadows at different times of the day? Isn't it fun? They may be encouraged to chart bird sightings, tallying them, and noticing patterns in their behaviour. Even organising and counting different types of rocks or shells found during a nature walk transforms mathematical learning into an exciting, real-world adventure.

Children can be engaged in counting activities by noticing tree rings on the barks, tree logs, collecting leaves, or counting natural objects like pebbles or flowers. These activities introduce children to concepts of patterns and sequences, as they can observe how many rings indicate the age of a tree or the number of leaves on a branch. This exploration fosters an understanding of numerical relationships and develops foundational counting skills.

The nature and natural resources offer plenty of opportunities for children to explore geometric concepts. Children can identify similar as well as comparative patterns on leaves or flowers, explore the shapes of various leaves and plants, and even create art using these natural materials. These activities promote visual-spatial skills and deepen children's understanding of geometry while connecting math to the environment around them.

Children can measure rainfall using child-friendly rain gauges, track temperature changes with thermometers, or measure the growth of plants as they reach early primary classes in a fun manner over time. These hands-on activities encourage children to apply measurement skills, reinforcing concepts of length, volume, and time while fostering a connection with the natural world.

After collecting data, children can be encouraged to participate in discussions about their findings, creating graphs or charts to visualise their results. This process of recording and interpreting data develops mathematical reasoning, as children start making predictions, and draw conclusions based on their observations. It bridges the gap between numeracy and environmental studies.

Integrating math teaching-learning activities with environmental challenges provides children with opportunities to apply their mathematical skills in meaningful ways. For example, children can be given simple day to day problems related to waste management by calculating how much waste is produced by their school or home. They can be asked to devise a plan to reduce it or they can explore and analyse water usage and discuss the strategies to conserve this very important resource. These integrated activities not only sharpen children's foundational numeracy skills but also instill a sense of responsibility and awareness regarding environmental issues. They also learn to take appropriate decisions.

Benefits of Integrated Learning

Integrating foundational numeracy with Environmental Studies (EVS) offers many benefits that enhance the educational experience for young children at the foundational stage, for example real/hands-on activities and experiential learning nurtures curiosity, encourages children to explore, ask questions, and actively participate. This integrated approach not only reinforces foundational numeracy but also cultivates environmental consciousness, helping children recognise their role in caring for the mother earth. As children learn to apply mathematical concepts to world around them, they become better informed.

The skills—such as critical thinking, problem-solving, pattern making, reasoning and collaborative learning—are crucial for later years. When teachers weave such activities, they encourage children to think critically about mathematical concepts in relation to their environment.

Children start getting prepared to handle problems in an ever-changing world. They also ask open ended questions and search for alternate solutions.

This integration aligns well with today's pedagogical approaches across the foundational stage education as this emphasises active, thematic, project based, inquiry-based learning and supports the developmental needs of young children.

For example, inquiry based learning involves children in the process of inquiry, encouraging them to ask questions and find answers through investigation and exploration. Like, a teacher might pose a question, "How many different shapes can you find in the garden?" This encourages children to explore and observe plants and natural objects. They identify and categorise various shapes, such as leaves, flowers, and pebbles. During a unit on measuring growth, children can plant seeds with the help of school gardener or a teacher and allowing them to measure their growth over time using rulers. They can be given measuring cups for watering the plants.

Implications for Teachers and Curriculum Design

This integration makes it easy to help children to reach to the desired learning outcomes. The following are certain ideas:

1. Teachers can organise nature walks and encourage children to count and classify the local plants and animals, observe their characteristics, and collect data on their immediate surroundings. They can also create a "Math and Nature Area" in their classroom, where they can be involved in activities like measuring plant heights, weighing pebbles/local fruits or sorting natural materials by size or shape.
2. Incorporating storybooks that blend math concepts with environmental themes/chapters from the textbooks can enrich the learning. Teachers can also use digital tools, such as interactive apps to create developmentally appropriate math games with environmental themes.
3. Aligning with the curriculum, competencies and learning outcomes as prescribed by the National Curriculum Framework (NCF, 2022), that emphasises holistic development and experiential learning, teachers can fulfil key objectives such as fostering critical thinking, creativity, and environmental awareness among children. Themes like sustainability, conservation, and responsible citizenship can be embedded into math lessons, helping children develop a sense of social responsibility while mastering foundational skills.

Conclusion

There is a need for bringing interdisciplinary teaching at the foundational stage. Teachers, and teacher educators need to work and explore more effective pedagogical practices that blend foundational numeracy and EVS, and making it a rich, meaningful and contextualised learning experiences for all children. Let us work collectively to turn each level of the foundational stage into a vibrant classrooms where numeracy and environmental consciousness thrive hand in hand, shaping a sustainable future for all.

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Analysis of School Boards Sampled Questions of Secondary Stage using Standards-Based Approach

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Abstract

School board examinations in India, conducted by multiple agencies such as CBSE, CISCE, and state boards, play a critical role in certifying secondary and senior secondary education and determining students' eligibility for higher education and employment. However, disparities in curricula, assessment practices, and question paper quality across boards have raised concerns about fairness, comparability, and academic standards. Research has highlighted persistent issues such as misalignment with curricular blueprints, overemphasis on rote-based recall items, lack of transparency in marking, and biases in question design. These issues include a predominance of basic-cognitive level questions, poor alignment with blueprints, testing of trivial content, ambiguous language, biases, and errors. These inconsistencies not only compromise the validity, reliability, and fairness of examinations but also create inequities for students from diverse socio-economic and regional backgrounds.

The National Education Policy (NEP) 2020 has talked about a systemic shift toward ensuring equivalence across boards to harmonize practices while respecting the diversity of boards. Lane et al. (2016) have identified applicable standards from the Standards of Educational and Psychological Testing for each component of test development, administration, and reporting processes. Drawing upon the Standards for Educational and Psychological Testing (AERA, APA, NCME, 2014), this paper argues for a standards-based approach to improve validity, reliability, and fairness in board examinations. By institutionalizing rigorous test development, piloting, and review mechanisms, equivalence can be ensured across boards, thereby promoting fairness, reducing inequities, and fostering competency-based learning as envisioned in NEP 2020.

Keywords: Standards-Based Assessment, Equivalence, School Boards and NEP-2020

Introduction

In India, at the end of the secondary (Class X) and senior secondary (Class 12) educational phases, students are required to take public exams, also known as board exams. Private examination boards like the Council for the Indian School Certificate Examinations (CISCE), state boards, and government examination boards like the Central Board of Secondary Education (CBSE) all administer board exams. A certificate indicating the successful completion of the secondary or

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senior secondary school stages will be awarded to students who pass the exams. Students who successfully complete their senior secondary board exams (Class XII) are qualified for higher education and employment.

Because of this, board exams are associated with high stakes, and depending on how well students perform, they may have life-altering consequences. Therefore, due to this these examinations must be of good quality and must not have undue negative consequences for any of the stakeholders in the Indian education system. On the contrary, board examinations put enormous stress on various stakeholders, especially teachers and students (Nawani, 2021; NCERT, 2006). The desire for securing high pass percentages has driven a culture of coaching and rote memorization in schools and tuition centers, with cheating being rampant during the actual examinations as well (Nawani, 2019). Board examinations also have an adverse impact on students from marginalized communities who face challenging circumstances and lack support like tuition classes (Nawani, 2021).

The problems associated with board examinations are not limited to their propensity for creating perverse incentives and distortions in the school system. Serious quality issues have been identified in the board examination question papers as well. These issues have been highlighted in research studies (Bhattacharji&Kingdon, 2017; Burdett, 2017; Educational Initiatives, n.d.; Oxford University Press, 2022). They have also been succinctly summarized in Position Paper 2.5 by the National Focus Group (NFG) on Examination Reforms for National Curriculum Framework (NCF) 2005 (NCERT, 2006). The issues listed and acknowledged are as follows:

- Misalignment with blueprints and prescribed curriculum
- Overemphasis on basic-order cognitive skills (**e.g., recall and simple comprehension**)
- Inclusion of trivial or non-essential content
- Inflexibility in marking schemes and scoring criteria
- Presence of biased or insensitive questions
- Use of ambiguous wording and technical errors

Paradigm shift in Assessment as per NEP 2020

National Education Policy (NEP) 2020 has proposed a slew of reforms to board examinations. These reforms include allowing students to select subjects of their choice, having more than one opportunity to write an examination, and offering two levels for some subjects, such as a basic paper and a higher/advanced paper. More importantly, NEP 2020 has proposed a shift to competency-based board examinations that only test the core competencies and skills of a given subject. This reform aims to reduce the content-heaviness of board examinations and help tackle the culture of coaching and rote memorization.

The need for educational reform in India has become increasingly important as the country strives to achieve equitable quality education for all students. Recognizing the disparities among various school boards, the NEP 2020 has recommended totakea significant step towards ensuring equivalence across educational boards in India. It ensures that students from various boards receive a comparable quality of education, enabling fair recognition of their qualifications, skills, and competencies, regardless of the board they belong to.

Equivalence among the School boards is crucial due to comparability of educational standards, curricula, assessment methodologies, competencies and outcomes across different school boards are totally different.

Restructuring assessment methodologies is essential to minimizing rote learning and focusing on critical thinking and the evaluation of core competencies. Furthermore, such changes will facilitate student mobility across boards and schools without disadvantaging them due to differing assessment systems. In this Paper authors try to analyse secondary stage question papers item using Standard based assessment approach.

Standards-Based Approach

A **Standards-Based Approach** is a framework for designing, administering, and interpreting examinations by following **established professional standards of testing** in this case, the *Standards for Educational and Psychological Testing* (American Educational Research Association [AERA], American Psychological Association [APA], National Council for Measurement in Education [NCME], 2014).

In examinations instead of focusing only on content coverage or rote performance, this approach emphasizes that every stage of assessment- **test development, administration, scoring, and reporting** must be evaluated against **quality criteria**.

However, to propose board examination reforms that will ultimately be successful, it is important to have a holistic overview of the test development and validation processes. The quality criteria used to evaluate them would be those of validity, reliability, and fairness, as proposed in the *Standards of Educational and Psychological Testing* (AERA, APA, & NCME, 2014), henceforth referred to as the *Standards*.

According to the *Standards*, validity is defined as “the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests” (AERA, APA, NCME, 2014, p. 11). This statement makes it apparent that validity is not a standalone property of a test. Instead, we speak of validity when we determine whether or not we can use a test score for a given purpose. This entails that the validity of a test score for a given purpose has to be proved, typically by adhering to the applicable quality standards and furnishing evidence of validity.

Reliability and precision refer to “the consistency of scores across instances of testing procedures” (AERA, APA, NCME, 2014, p. 33). These instances of testing procedures can be thought of as follows: a) different sets of a test, b) different occasions of a test, c) agreement amongst raters, and d) internal consistency among item scores. Reliability is directly related to validity. If test scores for examinees have low reliability, then we cannot be confident in interpreting them for our given use or purpose (AERA, APA, NCME, pp. 34-35).

According to the *Standards*, fairness is manifested by providing comparable treatment to examinees in terms of testing procedures, curriculum, and facilities; by accommodating examinees with special needs; by providing uniform opportunity for all examinees to learn the content; and by minimizing measurement bias (AERA, APA, NCME, 2014). Measurement bias occurs when test content favors certain subgroups over others for irrelevant reasons, such as vocabulary, culture-specific examples, etc.

A lack of fairness in the testing process may lead examinees' test scores to vary not just because of differences in ability but also because of other irrelevant factors, such as cultural or socioeconomic factors. In such conditions, examinees' scores cannot be interpreted only as a measure of their ability for a given subject, resulting in the scores having poor validity and reliability.

Standards-Based Approach for Board Examination standardizations

For assessments to be of good quality, all test development, administration, and reporting processes must be robust. Or else, there may be threats to the validity, reliability, and fairness of test scores for their interpretations and uses. In that vein, Lane et al. (2016) have summarized the components of test development as shown in Figure 1.

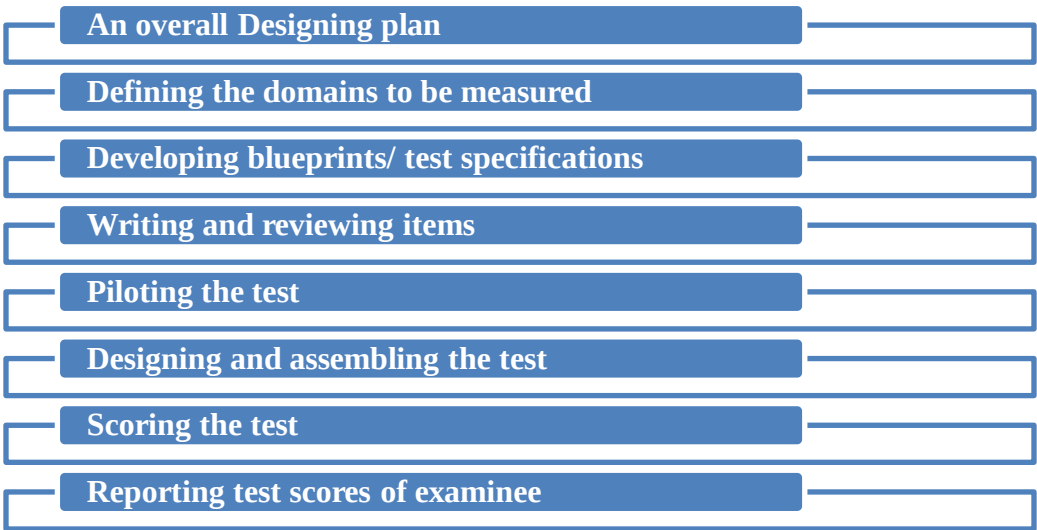


Figure 1: Components of Test Development (Lane et al., 2016)

Lane et al. (2016) have identified various standards as mentioned in the *Standards* that are applicable to the component processes. It is important to note that the *Standards* are not prescriptive. Not all standards are applicable to all examinations. Neither do the *Standards* mandate methods for ensuring the validity, reliability, and fairness of test scores. In any case, test developers and users must strive to ensure that they use the most rigorous methods possible for ensuring quality. The standards outlined by Lane et al. (2016) and those for board exams have been separated and simplified into checklist questions due to their broad and comprehensive nature, which is why they are included in this category. The list of test development processes and standards identified by Lane et al, (2016) is shown in figure-2. The process of converting the Standards to a checklist has been employed in other test validation studies, as demonstrated by Fan and Jin (2013) and Human Resources Research Organization, (2003)



Figure 3: Components of Test Development, Standards and Checklist for

Standards-Based Approaches to Ensuring Assessment Quality: Illustrative Examples

Illustration 1: Unfair, discriminatory, and construct-irrelevant material. For an instance a comprehension passage and associated multiple-choice questions (MCQs) phrased in a controversial manner and appeared to be gender biased. The passage was suggesting that women's emancipation had weakened parental authority, leading to undisciplined children and some of the MCQs were also appeared to be keyed in favor of chauvinist options.

The inclusion of such question violated **Standard 3.2** "Writing and Reviewing Items" stage of test development (see Figure 2) by introducing unfair, discriminatory, and construct-irrelevant material.

- Are there processes to ensure that questions are fair and sensitive toward all examinees, across all groups?
- Are there processes to minimize construct-irrelevant characteristics (e.g., cultural, cognitive, social, physical) in questions?

Such biased content undermines the **validity of scores** for several reasons:

1. The question was apparently biased against female candidates, casting doubt on both the fairness of the paper and its relevance to English comprehension.
2. Exposure to biased items may cause irritation, anxiety, or demotivation, which in turn reduces performance. In such cases, lower scores may not reflect poor English ability but rather negative affect and reduced motivation.

This violation likely resulted from insufficient care and sensitivity in item review. According to **Standards 3.3 and 4.8**, review processes depend on explicit considerations for diversity and inclusiveness in the recruitment of item writers and reviewers. This omission creates vulnerabilities in preventing construct-irrelevant bias.

This case underscores how the absence of explicit safeguards for neutrality and inclusiveness in test design can compromise fairness. The issue may be traced back to weaknesses in the review processes, where diversity in reviewers and explicit consideration of political and social neutrality was not adequately embedded in the guidelines.

Illustration 2: Lack of marking schemes for board examinations for students and teachers. There is evidence to show state boards in India remain reticent to publish marking schemes, which consequently restrict their potential levels of clarifying the type and structuring of expected responses.

This practice violates the checklist question under the 'Scoring the Test' component. Are procedures for scoring and scoring criteria available and presented in detail? If so, are these procedures robust enough?

The issue maps directly onto **Standards 4.18, 4.20, and 4.21** which state a scoring system should be clear and maintained universally. The lack of available marking schemes undermines score validity for the following reasons:

- If scoring procedures are not made public after the assessment, it undermines trust in the board's scoring system and thus the validity of scores for their intended purpose.
- A lack of detailed marking schemes leads to greater inconsistency and subjectivity among examiners' assessment. Scores' credibility may be at risk by examiners awarding credit based on irrelevant criteria, which can compromise their accuracy.

Illustration 3: Trivial Content such as in Question: List all of India's rivers that are more than a thousand kilometers long. This question violates **Standard 4.3** on Relevance and Depth, indicating that it emphasizes rote memorization over comprehension of geographical ideas. Since the evaluation does not evaluate higher-order thinking skills, this insignificant material may compromise its validity.

Illustration 4: Misalignment with the blueprint such as in Question: Derive the expression for the electric field due to a uniformly charged straight wire. This question breaches the **Standard 2.1** regarding Content and Cognitive Alignment. The derivation required by the question might

not be in line with the amount of cognition anticipated at this point. Because it might not precisely measure the desired learning outcomes, this misalignment may compromise the validity of the test.

Conclusion

The standards-based checklist is merely an initial attempt to guarantee quality in every aspect of test development. The existing test development procedures in India and the problems they cause need more investigation. Only then would it be feasible to pinpoint ways to raise the caliber of test development procedures and, consequently, the caliber of board exams.

In India, board exams continue to be crucial tests that influence students' academic and career paths. However, as this research shows, test design flaws including construct-irrelevant bias, misalignment with blueprints, opaque scoring, and limited inclusivity still pose an imminent risk to the validity, reliability, and fairness of tests. Illustrations highlight how the lack of clear standards and thorough review procedures can compromise credibility and equity.

A robust framework for tackling these issues is offered by the Standards for Educational and Psychological Testing (AERA, APA, & NCME, 2014). Assessments can be made more scientifically sound, equitable, and free of construct-irrelevant influences by applying the Standards to the many phases of test creation planning, item writing, piloting, scoring, and reporting using systematic checklists. A systematic change toward improving comparability, integrating competency-based assessments, and standardizing assessment procedures across boards is signaled by NEP 2020.

The dedication must go beyond technical compliance, though, to a more profound institutional culture of accountability, inclusivity, and sensitivity if reforms are to be successful. Important steps in this direction include enhancing the diversity of reviewers, giving clear marking guidelines, and fostering assessment literacy among examiners and item writers. Finally, implementing a standards-based approach will promote NEP 2020's goal of learner-centered, competency-driven, and equitable education in India while simultaneously preserving the integrity of board exams.

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Towards Critical and Creative Learners: HOTS Implementation in Kerala's Social Science Classrooms under OBE Framework

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Abstract

The twenty-first century education landscape demands learners who are critical, creative, collaborative, and problem-solving oriented. In this context, Higher Order Thinking Skills (HOTS) are central to Outcome-Based Education (OBE) and the National Education Policy 2020. This study explores the implementation of HOTS in high school Social Science classrooms in Kerala, where curricular reforms increasingly emphasize student-centered learning. Using a qualitative phenomenological approach, data were collected from classroom observations, interviews with teachers, students, and school leaders, and analysis of instructional materials. The findings reveal that teachers are making efforts to integrate HOTS through group discussions, debates, project-based tasks, and contextual case studies related to local socio-economic issues. However, challenges such as limited teacher training, exam-driven practices, inadequate digital infrastructure, and varying student readiness continue to constrain effective implementation. Strategies like Problem-Based Learning, contextualized assignments, and selective use of digital tools show promise in fostering analytical, evaluative, and creative competencies. The study concludes that while HOTS adoption is emerging in Kerala's Social Science classrooms, sustainable progress requires professional development, systemic support, and resource enhancement to fully realize the vision of OBE and NEP-2020.

Keywords: Higher Order Thinking Skills (HOTS); Social Science Education; Kerala; Outcome-Based Education (OBE); Teacher Challenges; Learning Strategies; Phenomenology

Introduction

Education today is no longer limited to memorization and recall (Hoque et al., 2018). The twenty-first century demands learners who can think critically, act creatively, and collaborate effectively to address real-world problems (Kennedy & Sundberg, 2025). This paradigm shift is reinforced by the *National Education Policy* (Ministry of Education, 2020), which emphasizes holistic, multidisciplinary, and outcome-oriented learning. Within this framework, Outcome-Based Education (OBE) has become central to school curricula across India, including in Kerala, where reforms aim to equip students with twenty-first century competencies (Suyatno & Wandika, 2020).

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At the heart of these competencies are Higher Order Thinking Skills (HOTS), defined in the revised Bloom's taxonomy as the ability to analyze, evaluate, and create (Anderson & Krathwohl, 2001). In Social Science education, HOTS are particularly significant, as the discipline engages students with social, economic, political, and cultural issues that require interrogation of perspectives, evaluation of evidence, and problem-solving (Handayani & Syukur, 2021; Harahap, 2023). Kerala's educational history, long linked to social reform and transformation, makes its Social Science classrooms a fertile ground for cultivating critical and creative citizens (Rachma, 2020).

Despite strong policy directions, the translation of HOTS into classroom practice remains uneven. Teachers struggle to design HOTS-based pedagogy and assessments (Ginting & Kuswandono, 2020; Widodo, 2019), while students accustomed to exam-driven approaches often experience difficulty adjusting to open-ended and problem-based tasks (Gradini, Novita, & Siregar, 2024). Infrastructural disparities, particularly between urban and rural schools, further influence implementation (Wulandari & Suparno, 2022). These realities reveal the persistent gap between curricular intent and classroom practice.

The present study investigates the implementation of HOTS in Kerala's high school Social Science classrooms, examining teacher practices, challenges, and strategies. By situating findings within existing scholarship on HOTS, OBE, and Social Science pedagogy, it seeks to contribute to the discourse on aligning policy reforms with classroom realities (Brookhart, 2010; Slavin, 2015; Savery, 2020). The following review of literature outlines the theoretical and empirical foundations of this inquiry.

Review of Literature

Higher Order Thinking Skills (HOTS) are at the heart of teaching and learning in the current era by taking learners out of rote learning and towards analysis, evaluation, and creativity. Anderson and Krathwohl's (2001) reconsideration of Bloom's taxonomy places HOTS at the centre of twenty-first-century education, while Brookhart (2010) found all students can build on these skills when educators employ systematic scaffolding. HOTS is especially applicable in Social Science education, as social science students deal with contested realities, evidence, and multiple perspectives. Policy contexts bolster this need – the National Education Policy (Ministry of Education, 2020) mandates outcome-oriented learning, and in Kerala, teachers should craft both experiences and assessments based on measurable outcomes (Outcome-Based Education (Darling-Hammond, 2017). Aligned with HOTS, OBE can effectively foster authentic learning experiences and promote real-world problem solving (Suyatno & Wandika, 2020), but its success depends on teacher competence, assessment reform, and institutional support.

According to studies, Social Science is considered an excellent place for HOTS, when it deals with inequality, governance, sustainability, and development. Slavin (2015) reported that cooperative learning enhances engagement and Savery (2020) recognized the role problem-based learning played in promoting analysis and evaluation. While the Indian Social Science curriculum is concerned with themes that develop critical thinking, education is often lecture based, thus limiting inquiry (Rachma, 2020; Handayani & Syukur, 2021). These practices have faced challenges that are still in evidence, with studies such as Ginting and Kuswandono (2020) identifying teachers' difficulties with HOTS-based assessment, Widodo (2019) reporting hesitation toward adopting HOTS-oriented pedagogy, and Wulandari and Suparno (2022) reporting infrastructural challenges. Moreover, despite the presence of digital resources, Harahap (2023) stated that teachers' unfamiliarity with technology inhibits their effectiveness in deploying them. Gradini,

Novita, and Siregar (2024) found inconsistent classroom translation despite the heavy emphasis on policy.

Recent literature from 2024–2025 also highlights these trends. Both in India and internationally (Ahmad 2024; Babu & Nair 2024; Chen 2025; Kumar 2024; López 2024), studies show that HOTS enhances analytical reasoning and conceptual transfer, but suffers from deficiencies in training and inflexible tests. Inquiry-based responses (Ramanathan 2024; Singh 2025; Thapa 2024) found from classroom-based studies support the power of structured questioning, inquiry tasks, and dialogic teaching in the classroom. Large-scale OBE evaluations (George 2024; Mathew 2025) demonstrate incongruence between expected results and measurements. International studies (Mendoza 2024; Raut 2025; Zhou 2024) highlight the criticality of ongoing professional development to promote HOTS incorporation. Research in Social Science (John 2024; Park 2025; Thomas 2024) noted that higher order learning will be enhanced by debates, projects, and case-based tasks. In general, there is literature that demonstrates a strong conceptual and policy commitment to HOTS, yet little in the way of formal classroom practice. In Kerala—where OBE is institutionalized and Social Science has a dominant civic role—systematic studies of the HOTS implementation are scarce, thus necessitating the study under consideration.

Methodology

The objective of the study was to investigate the application of Higher Order Thinking Skills (HOTS) on high school Social Science classes in Kerala, the challenges teachers in the school face while implementing HOTS as a component of the Outcome-Based Education (OBE) and the measures taken to overcome them. A phenomenological qualitative design was employed to capture how teachers and students experienced HOTS-based pedagogy in the daily classroom (Creswell, 2021). Government and aided schools were sampled purposively in order to capture urban, semi-urban, and rural contexts. The sample consisted of 12 Social Science teachers, 24 students from grades IX and X, three principals, and two school supervisors, giving an institutional overview of the school.

Data were collected through semi-structured interviews with teachers, observing classrooms, and document analysis. Interviews with teachers, students, and administrators were conducted using a uniform set of 10–12 open-ended questions on teaching practices, assessment methods, and student engagement in HOTS tasks; a complete schedule of these is found in an appendix. Classroom observations were carried out according to a systematic observation method through which teacher-student interactions, questioning patterns, group activities, and OBE-driven learning objectives were analysed. In order to catch the live dynamics of HOTS in the moment (i.e., analytical questioning, debate, project work, inquiry-based work, and problem-based tasks) which interviews may not fully facilitate, observation was necessary. Document analysis included lesson plans, unit plans, school-based assessment documents, and reflective notes, for verification of HOTS indicators and OBE alignment.

Since the study aimed to interpret the lived experiences of teachers and students (rather than test pre-defined hypotheses) data analysis followed Husserl's phenomenological approach (Husserl, 1970). Data were analysed by bracketing to eliminate researcher biases, horizontalization to ensure that participant statements were treated equally with significance, and phenomenological reduction to group important statements into relevant themes. Member checking, triangulation of interviews, observations, and documents, and preserving an audit trail of analytic decisions were used to confirm intersubjectivity and credibility (Bogdan & Biklen, 2019). This approach offered a detailed description of a holistic understanding of HOTS use in

Kerala Social Science classrooms, the constraints and barriers to implementation, and teachers' practice strategies for promoting critical learning and creativity within the OBE systems.

Findings of the Study

Participants were purposively selected to capture variations in HOTS implementation across Kerala's high school Social Science classrooms. The sample included teachers, students, principals, and school supervisors from government and aided schools situated in urban, semi-urban, and rural regions.

Table 1. Sample Description

Category	Details
Total Schools	9 high schools (5 Government, 4 Aided)
School Location Distribution	3 Urban, 3 Semi-urban, 3 Rural
Teachers (n = 18)	10 Female, 8 Male
Teacher Experience	6 teachers (1–5 years), 7 teachers (6–10 years), 5 teachers (10+ years)
Students (n = 48)	Grade IX (24), Grade X (24); 26 Female, 22 Male
Principals (n = 3)	2 Government, 1 Aided
School Supervisors (n = 3)	2 Academic Counsellors, 1 Block Resource Person
Total Participants	72

The sample represents a balanced representation across school types and geographic contexts, enabling examination of how institutional environments influence HOTS implementation. This diversity allowed examination of pedagogical readiness, institutional support and contextual constraints affecting HOTS implementation.

Implementation of HOTS in Social Science Classrooms

Across the 36 observed lessons conducted in 12 schools, the overall instructional pattern shows a discernible shift from conventional lecture-driven pedagogy to more participatory, inquiry-oriented practices aligned with Outcome-Based Education (OBE). Teachers increasingly adopted facilitator roles, structuring lessons around discussions, debates, and problem-based tasks that drew from the learners' immediate socio-political and ecological contexts. For instance, in a coastal government school, students analysed economic vulnerabilities faced by fishing communities due to declining fish stocks, while a semi-urban aided school used the case of the 2018 Kerala floods to examine sustainability, disaster response, and community resilience. These examples indicate a movement towards contextualised learning, resonating with constructivist approaches described by Slavin (2015) and Savery (2020).

A clearer picture of HOTS implementation emerges from the coded classroom activities. Environmental-justice debates were documented in seven classrooms (58%), where students compared competing claims regarding industrial pollution and assessed the credibility of evidence—an activity reflecting analysis and evaluation levels of HOTS. Map-analysis tasks appeared in nine classrooms (75%), involving interpretation of migration routes, climate zones, historical trade networks, or social reform trajectories, demonstrating application and interpretation skills. Group inquiries on social reformers, found in five classrooms (42%), resulted in students synthesising information into creative formats such as thematic posters, short role-plays, or concept maps. Most frequently, reasoning-based teacher questions occurred in twenty-eight lessons (78%), prompting students to justify causal relationships—for example, “Why do

constitutional rights vary across states?” or “What factors link monsoon patterns with agricultural decisions?”

Assessment Practices, Student Responses, and Institutional Variations

Assessment practices across the 12 schools indicated a gradual but uneven shift toward higher-order evaluation. Teachers reported reducing reliance on recall-oriented tests and increasingly adopting open-ended, performance-based tasks. Common assignments included position papers on environmental protests, student-designed campaigns on migration, and structured debates on constitutional rights, all of which correspond to analysis, evaluation, and creation levels in Bloom’s revised taxonomy (Anderson & Krathwohl, 2001). Despite these promising shifts, implementation remained inconsistent, largely due to the continued dominance of exam-centric expectations in state assessments. Student responses also varied noticeably. While most learners found contextual and real-life tasks more engaging, high achievers displayed better analytical depth and confidence in defending arguments, whereas weaker learners struggled with open-ended formats and required additional scaffolding and guided questioning. Students from migrant households showed particularly strong engagement with lessons on migration, labour mobility, and trans local experiences, suggesting that contextual relevance significantly enhances motivation. Institutional factors further shaped the extent of HOTS integration. Urban and semi-urban schools, supported by stable ICT infrastructure, frequently used digital tools such as online databases, YouTube explainers, infographics, and WhatsApp-based discussions to enrich inquiry tasks. In contrast, rural schools, constrained by limited internet connectivity and minimal digital resources, relied mainly on textbooks, charts, and teacher explanations. These disparities reveal that while pedagogical intent is broadly aligned with HOTS principles, the depth and quality of implementation are strongly mediated by resource availability—reflecting the wider structural inequities noted in Kerala’s educational landscape (Wulandari & Suparno, 2022).

3. Challenges in Implementing HOTS

Implementation of HOTS was constrained by a combination of teacher, student, and systemic factors. Teachers reported limited formal training in HOTS pedagogy and assessment, often depending on peer support or online materials. The pressure to align teaching with state exam patterns meant that HOTS activities were frequently treated as add-ons rather than integral components of instruction, echoing concerns noted by Ginting and Kuswandono (2020). Students, particularly those unfamiliar with analytical or open-ended questioning, experienced task-related anxiety (Gradini, Novita, & Siregar, 2024). Rural and low-income learners faced additional barriers such as inadequate learning materials, unreliable internet access, and lack of digital devices. Language also shaped performance: learners in Malayalam-medium schools struggled to articulate extended reasoning in English, which remains the dominant medium of written assessments. Institutional constraints further limited effective HOTS integration.

Frequent infrastructural disruptions—projector failures, low bandwidth, or absence of functional ICT labs—restricted the use of digital resources. Tight syllabi and limited instructional hours curtailed sustained project-based and inquiry-driven work, while examination structures that prioritize memorization weakened long-term adoption. Variations across school types were evident: urban schools benefitted from robust ICT investments; government schools showed stronger alignment with state reform guidelines; aided schools, though resource-constrained, exhibited notable flexibility and innovation through grassroots strategies. These intersecting barriers illustrate that HOTS implementation is shaped not only by teacher capacity and student readiness but also by broader structural and systemic conditions.

Implications for Practice and Policy

The findings indicate that while HOTS-oriented pedagogy is emerging in Kerala's Social Science classrooms, its sustainability requires systemic support. First, teacher professional development must shift from one-time workshops to continuous, practice-based training focused on designing inquiry tasks, scaffolding diverse learners, and aligning HOTS assessment with OBE requirements. Schools need structured mentorship systems—peer coaching, collaborative lesson planning, and moderated assessment—to strengthen pedagogical coherence. Second, differentiated learning support is essential to ensure equity: weaker learners require scaffolds such as guided questions, graphic organizers, bilingual explanations, and model responses, while high achievers benefit from extended inquiry tasks. Third, infrastructural investments must prioritize rural and aided schools, particularly in ICT access, digital content, and reliable connectivity. Addressing digital inequity is crucial for enabling statewide standards in HOTS implementation. Fourth, examination reforms must explicitly integrate HOTS-based tasks to counteract the dominance of recall-oriented models; without assessment alignment, classroom shifts will remain partial and inconsistent. Finally, curriculum planners should encourage localized, context-rich pedagogy by providing thematic resource packs, community-based project templates, and region-specific case studies. Strengthening these structural, pedagogical, and assessment mechanisms can bridge the policy–practice gap and support a more equitable, sustainable culture of higher order thinking across Kerala's Social Science classrooms.

Discussion and Major Findings

The findings reveal that Higher Order Thinking Skills (HOTS) are gradually gaining ground in Kerala's high school Social Science classrooms, though implementation remains uneven and context-dependent. Classroom evidence indicates a shift from teacher-dominated instruction toward student-centered practices such as group discussions, debates, collaborative inquiry, and contextualized project work. This aligns with Slavin's (2015) and Savery's (2020) assertions that cooperative and problem-based learning foster deeper cognitive engagement. Teachers frequently anchored lessons in local socio-environmental and political issues—fisherfolk crises, migration patterns, social reform movements, and the 2018 floods—demonstrating Kerala's distinctive strength in contextual pedagogy. Such localization not only promotes analysis, evaluation, and creativity (Anderson & Krathwohl, 2001) but also strengthens civic awareness and identity formation among learners.

A key emerging pattern is the partial yet positive adoption of student-centered strategies, especially in schools with motivated teachers and supportive leadership. However, the study also highlights a persistent gap between policy intent and classroom realities. Although OBE and NEP 2020 mandate higher-order learning outcomes, exam-oriented practices continue to dominate, echoing Ginting and Kuswando's (2020) argument that assessment is the weakest link in HOTS integration. Teachers often positioned HOTS activities as supplementary due to pressure to prepare students for recall-heavy board exams. Without systemic reform in assessment frameworks, innovation risks remaining episodic rather than sustained.

Teacher capacity emerged as a significant barrier. Many teachers expressed willingness but lacked systematic training in HOTS pedagogy and assessment, mirroring Darling-Hammond's (2017) call for continuous, practice-based professional development. Students also demonstrated differentiated readiness: high achievers engaged confidently with open-ended tasks, while academically weaker students—especially in Malayalam-medium settings or with limited resources—reported anxiety and difficulty in articulating extended reasoning, supporting

the findings of Gradini, Novita, and Siregar (2024). This underscores the need for structured scaffolding to ensure equitable participation.

Institutional and systemic inequities strongly shaped implementation. Urban schools with ICT infrastructure integrated digital media, online databases, and interactive tools, whereas rural schools relied mainly on analog resources due to poor connectivity, echoing Wulandari and Suparno's (2022). Nonetheless, resource-constrained schools displayed notable resilience, with teachers creatively using debates, role plays, and community-linked projects to cultivate critical thinking. Government schools benefitted from stronger policy-driven OBE support, while aided schools, despite limited resources, showed flexibility in experimenting with grassroots strategies.

Overall, the study indicates that HOTS integration in Kerala is at a transitional stage. Teachers are experimenting with innovative pedagogies, students are gradually acquiring analytical confidence, and institutions are opening spaces for reflective learning. Yet structural constraints—exam pressure, inadequate training, infrastructure gaps, and uneven digital access—continue to fragment implementation. The emerging patterns suggest that aligning policy frameworks with classroom realities requires system-level reforms in teacher training, assessment design, and resource equity. These insights provide the foundation for the study's concluding recommendations.

Conclusion

This study shows that Kerala's Social Science classrooms are gradually transitioning toward HOTS-oriented pedagogy, reflecting broader national shifts under OBE and NEP 2020. Teachers are beginning to implement contextual, inquiry-based, and discussion-driven practices, and students—especially those with strong academic backgrounds—respond positively to tasks requiring analysis, evaluation, and creativity. However, the findings reveal persistent gaps between curricular expectations and classroom realities. Teacher preparedness remains uneven, students demonstrate varied readiness for open-ended reasoning, and infrastructural disparities—particularly between urban and rural schools—continue to shape teaching possibilities. Assessment culture still leans heavily toward memorization, limiting deeper engagement with HOTS even when pedagogical innovations are attempted. The review of 2024–2025 scholarship affirms that sustained higher-level thinking emerges only when pedagogical design, assessment reform, teacher training, and institutional support work together. Addressing these interconnected challenges is essential if Kerala's Social Science education is to fully realize its potential for nurturing critical, reflective, and socially engaged learners.

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Art-Integrated Learning (AIL) for Professional Development of Future Teachers

Zara Shareef¹ & Raisa Khan²

Abstract

One pedagogical strategy that is crucial to aspiring teachers' professional development is art-integrated learning. This innovative method improves the teaching and learning process. Prospective educators can enhance their pedagogical abilities and engage students in more innovative and comprehensive interdisciplinary ways by incorporating the arts into their regular teaching practices. The purpose of this paper is to examine how AIL contributes to the professional growth of aspiring educators. Future educators can create multisensory, experiential, and student-centered teaching methods that accommodate the various learning styles of their students by incorporating different art forms, such as the visual, performing, and literary arts, into their lessons. The study also emphasizes the role and mandates of the policy perspective as stated in various official documents, including NEP 2020, NCF position papers, NCFTE, NCFSE, and others, which promote and support reflective practices that allow teachers to continuously improve their teaching strategies.

Keywords: pedagogy, professional development, Prospective teachers, art-integrated learning

Introduction

With the inception of NEP 2020 education in India is now focussing more on innovative paradigms of teaching and arts & aesthetics has been recognised as a significant and internal part of curriculum. Yet the focus is still on academics. Philip Rashad rightly mentions that "Art is the basis of human expression." Before children speak, they sing; before they write, they paint; and as soon as they stand, they dance. Students can directly derive meaning and understanding from the learning experiences, through the integration of the arts that fosters certain competencies.

When art is incorporated into teaching practice, it helps aspiring teachers apply art-based inquiry, investigation, exploration, critical thinking, and creativity for a deeper understanding of the concepts or topics. The goal of learning with and through the arts is to help the learner develop their cognitive, affective, and psychomotor skills. Art is incorporated into education at every level to help students connect with their immediate surroundings. In the teaching-learning process, teachers are essential. In this regard, teacher training is also crucial. As a result, art is

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incorporated into subjects as a teaching tool for engaging and experiential learning that supports future educators' professional growth. According to recent studies, AIL has a beneficial effect on the development of fundamental life skills like inquiry and communication skills, mental conditioning that results in balanced confidence levels, self-esteem, and an appreciation of arts & aesthetics, creativity and beauty, among other things.

When different forms of visual, performing and literary are incorporated into non-arts subjects, students' perspectives are expanded and they are able to recognize interdisciplinary connections between subjects, topics, and everyday life. By fusing artistic expression with fundamental subject areas, AIL becomes a transformative approach. Since AIL is an NCERT initiative founded on the suggestions of the NCF 2005 and position paper, the teaching and learning process makes use of art as a tool and medium. Thus, by providing the learners with necessary skills, encouraging creativity, and comprehensive student engagement, AIL can improve the professional development of aspiring teachers. "Educational and curriculum planners also seek to provide avenues for the professional development of teachers as part of implementing curricular reforms" states the 2009 NCFTE norms. Therefore, instead of using rote learning, current practices should be changed to more learner-friendly approaches that are better suited for strengthening conceptual learning and understanding. A person's creative expression can be verbal, written, visual, literary, digital, or any other medium that has the capacity to convey human ideas. As it was realigned by ncert and cbse following the implementation of nep 2020, art integrated learning is a pedagogical tool that is founded on learning "through the art and with the arts." It is a cross-curricular method of instruction that emphasizes cooperation between subject and art teaching and gives learners ample room and opportunity to express themselves freely. Observation, imagination, experimentation, knowledge application, and creation are the foundations of art-integrated learning. Role-playing, storytelling, nukkad natak, skit, creating sketches, dancing, singing, making the most of waste, paper quilling, collage-making, preparing or delivering presentations using digital media, stop motion pictures, photography, visiting educational institutions, art exhibits, museums, virtual tours etc. are examples of art activities used as teaching tools. In addition to making learning more interesting, this method gives students a variety of ways to communicate and express what they have learned.

AIL prioritizes:

First-hand information and introspection of the learner

The process itself as opposed to the result

The liberty to express oneself as one desires

The subjects' interdisciplinary connection

The enhancement of learners' soft skills

Peer collaboration and experimentation

The advancement of cultural and social values and capacities.

Review of the literature

According to Surbhi & Sharma A (2023), integrating art into other academic subjects is a way to teach non-art concepts and skills. Art makes abstract ideas simpler and more interesting. This would support the holistic approach and general development of the students.

M. Khadija (2024) examines the important role that the arts play in helping students develop their creativity and critical thinking skills. She makes the point that the arts should be taught in schools as a vital component of the curriculum because those skills help students develop holistically and are better equipped to handle difficult social, professional, and personal issues.

Madan (2015) conducted a study on art integrated learning, which focuses on improving pre-service and in-service teachers' competencies by teaching them how to incorporate art into curriculum transactions. She summed up by saying that arts integration gives teachers a range of ways to use visual, auditory, and kinesthetic learning modalities to represent content and reach a larger audience.

Viment-LaurinS, Winne E, and Golstein T.R. (2013) studied that art education is a way to cultivate abilities that are thought to be essential for creativity and critical thinking, motivation, self-assurance, and the capacity for effective communication and teamwork. Math, reading, and writing are among the academic subjects that benefit from arts education.

According to Pool, Jonelle, Dittrich, Charles, and Ken (2011), students are engaged and react favorably to instruction and learning that incorporates art-based methods.

Pre-service teachers' perspectives on teaching theory and carrying out hands-on activities with the arts in their own classrooms and other content-methods courses were examined by Dowdy & Campbell (2008). The art forms that are used include drama, cartoons, still photography, movies, and more gave pupils access to a variety of literary genres and different methods for reading and analyzing texts. Regardless of the subject matter, the teachers' comprehension of art-based literacy instruction improved.

Oreck (2006) identified the individual traits and variables that either encouraged or hindered the use of the arts in education. According to the study, educators described a range of ways that art-based professional development opportunities inspire them to be more creative in the classroom, broaden their teaching horizons, and discover successful ways to integrate the arts into the curriculum.

Additionally, the NEP 2020 emphasizes the need to move away from memorization and toward higher order thinking, critical thinking, and problem solving; to encourage interdisciplinary and experiential learning; and to empower students to appreciate and incorporate the indigenous knowledge legacy.

Teachers must receive professional development that enables them to become capable, self-aware individuals who can spearhead improvements in education. Teachers need to use a range of strategies to continuously engage in their professional development. Peer learning platforms that offer coaching and mentoring assistance must be made available NCFSE 2023, page 594

AIL Pedagogy Training for Educators

AIL facilitates a more dynamic and diverse teaching style by acting as an intermediary between theoretical knowledge and real-world application for aspiring educators. Since it engages all senses and fosters deeper learning, learning is actively constructed. It makes learning interactive, engaging, and meaningful while discouraging rote memorization. Pedagogical concerns in academic subjects are to be meaningfully incorporated with the help of local specific resources for effective teaching. Learning resources in academic subjects like ted talk, podcasts, documentaries, films, museums, and exhibitions, 5E and ICON Model, cultural experiences, role playing and simulations virtual field trips, conducting online research, popular apps, authentic

assessment task, real world application, connecting with community issues and writing case reports and teach them how to evaluate their own work. Only when a teacher is imaginative, creative, and enthusiastic about their work can students learn with joy. Proficiency in the following areas is required of the teacher: Arts as a pedagogical tool, utilizes materials that are readily available locally and incorporates diverse artistic techniques into teaching methods. Thus involving the students in a positive, fruitful process that helps them build their own knowledge by connecting the subject matter to the art experience.

Process-Based Teacher Education is suggested by NCFTE 2009

In art-integrated classes, students' expressions serve as the foundation for more meaningful connections between arts concepts, which in turn encourages them to find new ways to understand their own experiences. Every artistic endeavor should promote communication and teamwork, where the exchange of ideas fosters consideration and concern for various points of view and expression. For instance, students are far more likely to discover and recognize different kinds of triangles, circles, and amoeboid shapes when a teacher talks about the variety of organic and geometric shapes that can be seen in various examples of local forms of visual arts than if the teacher starts by drawing a triangle on the board and instructing students to use it in their artwork. Adult learners are the primary focus of teacher education programs. Through a range of self-directed activities, such as case studies, projects, seminars, and research activities, the emphasis must be on enhancing professional knowledge and abilities. NCFTE suggested process-based teacher education, which says "political, social, and ethnic understanding of the environments in which students learn and develop". In this regard the role of process based teacher education in ALL is as follows:

Process Oriented: The focus is on the process rather than the product which implies learners to think, evolve, reflect and design teaching activities which values novelty and meaning making over rote memorization.

Promotes inclusivity: The different art forms (visual, performing, literary etc) can be used as a medium caters to the diverse needs of the learners & context.

Dynamic classrooms: this would equip the teachers to experiment, improvise and integrate multiple art forms into different academic subjects.

Culture of creativity: Process based teacher education promotes the culture of creativity and critical thinking as there are no right or wrong answers in arts which fosters higher order thinking skills in the learners.

Democratic learning: process based teacher education encourages collaboration, experiential learning which cultivates democratic learning environment through self organised group projects (such as nukkad natak, mock parliament etc).

Holistic development: the process based training involves all senses of the learners which helps to develop the multiple intelligences of the learners.

Teaching students through folk culture and songs can be used to create a nonjudgmental, nonthreatening environment. This is an example of how theoretical inquiry can be combined with the learners' involvement in real-life situations.

Conceptual knowledge, which stems from observations, personal experience, and theoretical involvement. For instance, the students could be asked to create a collage of their best festival

memories by the prospective teacher. This aids in the evaluation of life skills and socioemotional abilities.

Knowledge produced through critical inquiry in the common context of teaching, learning, and social and personal experiences. Engaging the student in a lively discussion or involving them in their own learning are two examples. Students will share what they have seen or observed when teachers ask them about the current pollution issue.

Continuous engagement with long-term professional education combined with liberal arts, humanities, and science education. Consider STEAM education, for instance.

The interaction and confidence of aspiring teachers in a variety of subjects would be enhanced by the encouragement and promotion of group or team work, which aids in the development of psycho-social qualities. Take NSS camps and campus events, for instance.

Learners should be given the opportunity to examine their assumptions and place in society as part of the classroom discussion. They would be able to position themselves in a personal and professional context.

Through art activities, prospective teachers should elicit responses from students in order to encourage deeper conversations and introspection.

Learners should be encouraged to identify and articulate issues for critical inquiry and self-study by prospective teachers.

Learners should keep reflective journals in which they record their observations, thoughts, and conflicts. Being aware of the political, social, and cultural environments in which they thrive.

It can be difficult for aspiring educators to encourage creativity in the classroom. By encouraging educators to try out various artistic mediums, AIL encourages peer learning & team teaching. Teacher candidates can cultivate their own creative abilities and learn how to create lessons that stimulate creativity in their future students through workshops and group projects. This dual emphasis on creativity improves their capacity to foster critical thinking in their students while also enhancing their teaching toolkit.

Additionally, AIL assists the aspiring teacher in comprehending the psycho-social needs and characteristics of students, as well as their unique abilities and traits, preferred modes of cognition, motivation, and learning outcomes resulting from socialization in the home and community. It is important to highlight local resources, the arts, and culture.

By tying together different disciplines, AIL promotes an all-encompassing approach to education. In order to create a more connected curriculum, aspiring teachers learn how to incorporate language arts, math, science, and other subjects with art. In addition to enhancing the educational process, this interdisciplinary approach equips aspiring teachers to create lessons that accommodate a range of interests and learning styles, promoting inclusivity in the classroom.

Empathy and emotional intelligence are fostered by art-integrated learning (AIL).

Art has a special power to arouse feelings and promote empathy. Future educators can improve their emotional intelligence and learn to identify and deal with their students' emotional needs by getting involved in AIL. This ability is essential for establishing a secure and positive learning atmosphere where students feel free to express themselves while taking opportunities with their education.

AIL facilitates social interaction and professional collaboration

Projects involving art-integrated learning frequently call for cooperation with community members, educators, and artists. Through these collaborations, aspiring educators can expand their professional networks, exchange ideas, and learn from a variety of viewpoints. Their educational experience is enhanced by this collaborative spirit, which also gets them ready for future professional relationships. NCFTE 2009, p. 23, states that students should "develop professional skills in pedagogy, observation, documentation, analysis and interpretation, drama, craft, story-telling, and reflective inquiry."

Learning is inclusive in the practice of AIL

It makes sense to include students with specific requirements in art-integrated learning. They will enjoy access to an equal opportunity to participate in any form of artistic endeavor. The degree and severity of their disability can influence how enthusiastic and proactive they are. They would be empowered as learners if they worked independently and concentrated on what they "can do" and not what they "are unable to do." With plenty of support and assistance from the teacher, they ought to have the privilege of engaging in the activity at their own pace and through a variety of mediums.

In conclusion

One creative approach of teacher education is the professional development of prospective teachers employing art-integrated learning. Teachers' efforts to incorporate the arts into the subjects they teach are crucial to AIL's success. The teacher has to explore several kinds of art forms like visual, performing, literary, digital etc. techniques, and materials all while keeping clarity with regard to the goals and objectives of the lesson. They ought to take an active part in using and mapping local resources. Aside from this, a teacher ought to be open to participating in team teaching. Prospective educators can improve their lesson planning and instructional strategies, encourage critical thinking, and create more engaging learning environments by embracing the creative potential of the arts for holistic teaching. In the long run, emphasizing art in teacher preparation programs will enable teachers to stimulate their pupils and adapt to the unique needs present in modern classrooms, resulting in more efficient and significant ways of teaching.

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Role of Digital Tools in Enhancing Vocational Education: Opportunities and Challenges in the Context of NCF 2023

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Abstract

The National Curriculum Framework (NCF) 2023, aligned with the National Education Policy (NEP) 2020, envisions a transformative approach to school education in India. This paper explores the role of digital tools in vocational education, examining their potential to bridge skill gaps, foster inclusivity, and prepare students for the evolving job market. It also critically examines the implementation challenges and policy-level issues associated with NCF 2023, focusing on the integration of digital tools and vocational education. The main objective of this study is to examine how digital tools enhance the quality and effectiveness of vocational education in India, while identifying the challenges faced by institutions and teachers, such as infrastructure gaps, teacher readiness, and the digital divide. It also seeks to analyze how NCF 2023 supports digital integration in vocational education in alignment with NEP 2020, and to propose actionable recommendations for policymakers, educators, and industry stakeholders to effectively implement digital technologies in practice. This study employs a qualitative systematic literature review methodology, analyzing peer-reviewed articles, government reports, and case studies published between 2020 and 2025. A thematic synthesis approach was employed, studies were screened and analyzed for themes, key findings were grouped into categories and insights were synthesized. Through a detailed review of literature, identification of key objectives, and an in-depth discussion, the study highlights the multifaceted barriers to effective implementation and offers policy recommendations to address these challenges. This synthesis aims to inform policymakers, educators, and researchers on leveraging technology's potential while addressing systemic barriers in achieving NCF 2023's holistic vision for real-world vocational readiness.

Keywords: Digital Tools, Vocational Education, NCF 2023, NEP 2020, Technology Integration.

Introduction

The National Curriculum Framework (NCF) 2023, aligned with NEP 2020, foregrounds the integration of vocational learning from early grades, emphasizing real-world preparedness, life-skills, and employability. As India confronts a sizeable employability gap—nearly half of graduates reportedly not job-ready—educational institutions are urged to align curricula with

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market dynamics and incorporate AI and digital competencies as essential components of learning.

Globally, vocational training has undergone a digital transformation. Systems like Europe's dual model blend workplace and classroom learning through digital simulations; similarly, India is exploring how immersive tools and e-platforms can bridge theoretical understanding and applied skills.

The National Curriculum Framework (NCF) 2023, as part of the broader NEP 2020 reforms, seeks to transform education in India by emphasizing vocational education from early grades, integration of technology, competency-based learning, inclusivity, multilingualism, and Indian Knowledge Systems. Its intent is to move away from rote memorization toward inquiry-driven, experiential, and competency-based pedagogy, with digital tools identified as critical enablers of these shifts. In alignment with these goals, NCF 2023 highlights the early introduction of vocational subjects, adoption of skill-based assessment practices, and provision of equitable access to quality education.

The policy ecosystem supporting vocational education includes several national digital initiatives. Platforms such as SWAYAM and MOOCs provide scalable e-content, assessments, and interactive forums, while Virtual Labs and the National Digital Library of India (NDLI) extend access to practical training resources. DIKSHA enhances multilingual digital learning with teacher training, open resources, and interactive textbooks. The Academic Bank of Credits (ABC) creates flexible pathways by digitally storing and transferring academic achievements, with potential to integrate vocational credits. Skill India and state-level programs, such as UP's apprenticeship initiatives and Chandigarh's digital expansion, further operationalize these reforms, while AI governance initiatives at institutions like IIT Delhi ensure ethical integration of emerging technologies.

Digital tools offer multiple opportunities to strengthen vocational education. Personalization and accessibility are enabled through adaptive platforms and MOOCs, reaching even rural learners. Cost efficiency and scalability are achieved through shared resources, such as VR labs in ITIs. Student engagement improves with immersive, gamified, and reflective learning approaches. Teacher training benefits from online professional development resources, keeping educators updated on pedagogy and technology. Additionally, digital platforms foster industry collaboration, aligning curricula with real-world demands and offering students timely feedback that enhances employability.

Despite these advances, early evidence highlights gaps in implementation. PARAKH's Rashtriya Sarvekshan 2024 found that less than half of schools offer skill-based courses in higher classes, with only about 29% of students opting for them, showing limited uptake. Even relatively resource-rich states like Uttarakhand are lagging in areas such as digital infrastructure, curriculum restructuring, and teacher training. Furthermore, policy directives like prioritizing mother-tongue instruction face challenges of translation, teacher proficiency, and availability of quality content. These findings suggest that while the policy intent and ecosystem are robust, practical hurdles remain in scaling vocational education effectively across diverse contexts.

Review of Related Literature

Hernández-Serrano, M. J. (2025) presents a flexible framework that integrates digital and social competencies in vocational education. The author discusses how combining these competencies can enhance the effectiveness of vocational training programs. Ilescu, D. (2025), explores evidence-based approaches to enhancing vocational education by integrating digital tools. It

discusses the potential of digital tools to improve learning outcomes and employability in vocational education. Papazoglou, M. (2025) discusses the future of vocational education and training (VET) in a digital age, stressing the necessity of including every learner and educator in the digital transformation. It outlines strategies for integrating digital skills into vocational education curricula. Rahmawati, S. (2025) explores the complexities of digital competence in vocational education, emphasizing the need for alignment with industry requirements. It discusses the challenges and strategies for integrating digital competencies into vocational training programs. Swaramarinda, D. R. (2025) analyzed the growing demand for digital skills in the digital economy and its implications for vocational education. The study examines how vocational education programs can adapt to equip students with the necessary digital competencies, addressing both opportunities and challenges in this transformation. UNESCO (2025), this article explores four strategic ways in which Artificial Intelligence (AI) and digital tools can help modernize Technical and Vocational Education and Training (TVET) systems to align with the evolving global job market. The focus is on leveraging technology to enhance learning outcomes and better prepare students for future employment. Wang, Y. (2025) discusses the digital transformation of vocational education, examining its connotations, challenges, and potential pathways. The author emphasizes the need for a strategic approach to integrating digital tools in vocational education to enhance learning experiences and outcomes. Xu, S., Wang, L., Zhu, S., & Dai, Y. (2025) provides quantitative evidence on the factors influencing digital literacy among higher vocational students. The authors analyze various determinants and propose strategies to enhance digital literacy in vocational education settings. Anwar, C., Sofyan, H., Ratnaningsih, N., & AM, M. A. (2024) investigates the impact of infrastructure and social support on vocational teachers' digital technology practices during the Industrial Revolution 4.0, with a focus on the mediating role of technology self-efficacy. The research highlights the importance of teacher confidence and support systems in effectively integrating digital technologies into vocational education. Gu, M. (2024) provides an overview of the role of digital technology in vocational education, highlighting innovative teaching techniques facilitated by technology. It discusses how digital tools can enhance teaching and learning experiences in vocational settings. Würges, S. (2024) examines how experienced support from teachers' influences trainees' acceptance of digital tools like note-taking apps and video conferencing systems in vocational education. It emphasizes the importance of teacher support in the successful implementation of digital tools. Zhang, X. (2024) investigates how digital technology usage influences student satisfaction among Chinese higher vocational college students, mediated by learning experience and engagement. The findings underscore the importance of enhancing learning experiences to improve student satisfaction in vocational education. Jia, W., & Huang, X. (2023) emphasize the critical role of digital literacy in vocational education, highlighting its necessity for students to thrive in the modern workforce. The authors discuss the integration of digital literacy into vocational curricula, exploring pedagogical approaches, best practices, and challenges.

Significance of the Study

This review paper critically examines the role of digital tools in transforming vocational education in India, contextualized within the National Curriculum Framework (NCF) 2023 and aligned with the National Education Policy (NEP) 2020. Through an extensive literature review, this paper identifies the implementation challenges and policy-level issues associated with NCF 2023, focusing on the integration of digital tools and vocational education. Through a detailed review of literature, identification of key objectives, and an in-depth discussion, the study highlights the multifaceted barriers to effective implementation and offers policy recommendations to address

these challenges. This synthesis aims to inform policymakers, educators, and researchers on leveraging technology's potential while addressing systemic barriers in achieving NCF 2023's holistic vision for real-world vocational readiness.

Research Questions

1. How do digital tools enhance the quality and effectiveness of vocational education in India?
2. What challenges do vocational education institutions and teachers face in implementing digital tools, particularly concerning infrastructure, teacher preparedness, and the digital divide?
3. In what ways does the National Curriculum Framework (NCF) 2023 facilitates the integration of digital tools in vocational education in alignment with the objectives of the National Education Policy (NEP) 2020?
4. What actionable strategies can policymakers, educators, and industry stakeholders adopt to effectively integrate digital technologies into vocational education practices in India?

Methodology

Research Design

This study employs a qualitative systematic literature review methodology, analyzing peer-reviewed articles, government reports, and case studies published between 2020 and 2025. The selection criteria focused on studies that:

- Evaluated the impact of digital tools on vocational education.
- Discussed challenges and barriers to implementation.
- Explored the alignment of digital tools with NCF 2023 objectives.

Data Sources

Literature was retrieved from academic databases, including Scopus, Web of Science, ERIC, Education Research Complete, PubMed (for health-related vocational training), IEEE Xplore (for technology-focused studies), ProQuest Dissertations, and Google Scholar. Grey literature sources included NCERT/MoE documents, UNESCO, national think-tanks, and institutional project reports.

Inclusion Criteria

- Empirical qualitative studies, mixed-methods with extractable qualitative data, program evaluations with qualitative components, and high-quality grey literature (2020–2025) addressing use of digital tools in vocational/TVET/K-12 vocational contexts.
- Documents reporting stakeholder perspectives (students, teachers, administrators, employers), implementation experiences, and contextual facilitators/barriers.

Exclusion Criteria

- Purely quantitative experimental studies without qualitative data, higher-education non-vocational technology studies (unless explicitly vocational), and publications before 2015 (to maintain relevance to current digital ecosystems).

Data Analysis

A thematic synthesis approach was employed and the data was screened and analysed for the following themes:

1. Role of Digital Tools in Vocational Education.
2. Challenges faced by education institutions and teachers face in implementing digital tools.
3. Integration of Digital Tools in Vocational Education.
4. Strategies to integrate digital technologies into Vocational Education practices.

Key findings were grouped into categories:

(a) Challenges, (b) Curriculum Reforms, (c) Infrastructure Development, (d) Teacher Training and Capacity (e) Policy/Frameworks.

Discussion

Research Question 1: How do digital tools enhance the quality and effectiveness of vocational education in India?

The study found that digital tools such as Learning Management Systems (LMS), online assessment platforms, and mobile learning applications significantly enhance the delivery of vocational education. These tools allow flexible learning schedules, personalized learning paths, and access to a wide variety of instructional materials, improving both quality and effectiveness of training. Empirical data from case studies showed improved student engagement, better tracking of learning progress, and increased practical skill acquisition.

Research Question 2: What challenges do vocational education institutions and teachers face in implementing digital tools, particularly concerning infrastructure, teacher preparedness, and the digital divide?

The review revealed that many rural and semi-urban vocational institutes lacked reliable internet access, limiting digital tool usage. A significant number of vocational educators have low digital competence and inadequate training, making them reluctant or unable to use technology effectively. Students from economically weaker backgrounds struggled to access digital devices, creating inequitable learning opportunities.

Research Question 3: In what ways does the National Curriculum Framework (NCF) 2023 facilitate the integration of digital tools in vocational education in alignment with the objectives of the National Education Policy (NEP) 2020?

The analysis of policy documents showed that NCF 2023 and NEP 2020 strongly advocate the integration of digital tools in vocational education to foster skill development aligned with industry needs. Key strategies include promoting digital literacy, establishing digital infrastructure, encouraging industry-education partnerships, and competency-based curricula. However, the study found that while the policy framework provides clear direction, practical implementation mechanisms (funding, teacher training, monitoring systems) remain underdeveloped.

Research Question 4: What actionable strategies can policymakers, educators, and industry stakeholders adopt to effectively integrate digital technologies into vocational education practices in India?

Based on the findings of the study, targeted funding should be allocated for digital infrastructure in rural vocational institutes, supported by clear NCF 2023–aligned implementation guidelines. Mandatory digital literacy training must be provided for educators to enhance technology use. Additionally, industry-academia partnerships should be fostered to co-develop digital content and real-world simulations for vocational training.

Policy-Level Analysis

Strengths / Policy Enablers

- **Salient Features & Roadmap:** There is explicit recognition in NCF-FS and NCF-SE (the new frameworks under NCF 2023) of vocational education, technology integration, equity, inclusion, multilingualism.
- **Existing Digital Platforms:** Platforms such as DIKSHA, initiatives under Samagra Shiksha, and NCERT’s other programs (e.g., digital content, teacher training modules) provide foundational digital infrastructure.
- **Teacher Education Reforms:** New Integrated Teacher Education Programme (ITEP) and National Professional Standards for Teachers are policy levers aimed at raising teacher quality. These are supposed to include digital pedagogies.

Gaps & Weaknesses

- **Vague Roadmaps & Timelines:** While the policy provides vision, many state and local education authorities do not yet have detailed roadmaps (with resources, timelines) to operationalize digital tool integration or vocational upskilling.
- **State Autonomy & Resistance:** Some states are hesitant to adopt certain reforms, especially when they perceive them as undermining local curricula, language preferences, or autonomy. This slows the uniform application of NCF 2023 mandates.
- **Assessment & Accreditation Misalignment:** Boards and evaluation systems (school exams, vocational certifications) are yet to fully adapt to competency-based, formative assessments. The pressure and weight of high-stakes summative exams continues.
- **Underfunding / Implementation Lag:** Many policy documents expect large scale up, but funding / budget allocations have not always matched what is needed. Some government reports indicate under-utilization of funds.

Key Challenges in Implementation

Below are the core areas where implementation is encountering difficulties, especially in the context of digital tools and vocational education under NCF 2023.

ChallengeArea	Description&Evidence	RelationtoDigitalTools&VocationalEduc ation
Teacher Training and Capacity	Teachers are not always prepared to shift from traditional pedagogies to competency-based, digital, or experiential pedagogies. Training programs are uneven or insufficient.	For digital tools and vocational modes to succeed, teachers need both content knowledge (in the vocational domain) and technological/pedagogical skills (how to use digital tools, how to manage blended or interdisciplinary learning).

Challenge Area	Description & Evidence	Relation to Digital Tools & Vocational Education
		Lack of teacher readiness is a major bottleneck.
Policy & State-Level Adoption Gaps	Because education is a concurrent subject, implementation of policies depends heavily on state governments. Some states lag behind in adopting NEP/NCF reforms; differences in resource allocation, priorities, or political will cause uneven rollout.	For digital-vocational goals of NCF 2023, this means some states may not provide support for digital labs, partnerships with industry, or the necessary policy mandate, leaving schools in those states ill-prepared.
Curriculum & Assessment Reforms	The curriculum and assessment systems are deeply rooted in traditional summative exams. Transitioning to formative assessment, continuous evaluation, project-based and competency-based assessments is complex. Textbooks, exams, and teacher expectations all need adjustment.	Digital tools may allow new assessment forms (portfolios, simulations, peer assessments), but unless policy and assessment boards accept and recognize these, digital assessments remain peripheral. Also, vocational skills are harder to assess digitally without practical, hands-on components.
Resource / Funding Constraints	Though the policies set high ambitions, the financial allocations are often low, delayed, or uneven. Some schemes have been under-utilized; smaller & underfunded schools struggle more.	Digital tools, labs, skilled trainers, maintenance all require investment. For vocational education, tools and labs can be expensive. Without proper funding, many schools will not be able to provide quality digital vocational training.
Awareness, Communication & Change Management	Large scale change requires awareness among all stakeholders (teachers, school leaders, parents, students). There is risk of misinterpretation, resistance, or half-hearted adoption if stakeholders are not fully engaged or informed.	Digital tools and vocational learning represent significant departures from prior practices for many schools. If change management is weak, adoption will be patchy. Schools might have tools but use them poorly.
Equity and Inclusion	Socio-economic disparities, language barriers, gender gaps, and regional inequalities persist. For instance, many students in remote areas, or from marginalized communities, have limited access to devices or internet. Content in regional or mother tongue languages is inadequate.	Digital tools risk exacerbating inequality if not carefully designed. Vocational education through digital means must ensure inclusion, low barrier access, and local relevance.
Industry Engagement & Relevance	Vocational education's quality depends on alignment with industry needs, availability of apprenticeships,	Digital tools may provide simulations or virtual labs, but if curricula do not map to real industry practices, the skills

Challenge Area	Description & Evidence	Relation to Digital Tools & Vocational Education
	work-experiences, updated curricula. Many institutions lag behind in maintaining this alignment.	taught may not translate into employability.
Teacher Training and Capacity	Teachers are not always prepared to shift from traditional pedagogies to competency-based, digital, or experiential pedagogies. Training programs are uneven or insufficient.	For digital tools and vocational modes to succeed, teachers need both content knowledge (in the vocational domain) and technological/pedagogical skills (how to use digital tools, how to manage blended or interdisciplinary learning). Lack of teacher readiness is a major bottleneck.

Digital tools present a potent avenue for vocational education that is scalable, engaging, and aligned with future workforce needs. VR, AI, and blended platforms offer simulation-rich, personalized, and collaborative environments, especially aligned with Industry 4.0 competencies.

However, gaps persist: cost and infrastructure constraints, teacher digital competence, incomplete assessment models, and equity disparities challenge effective implementation. India's digital platforms (DIKSHA, SWAYAM, ABC, NDLI) however provide an enabling structural backbone, which, if complemented with capacity-building and regional customization, can realize NCF 2023's vision of real-world readiness.

Recommendations

Policy-Level Recommendations

Based on the challenges identified, here are policy levers / suggestions to improve implementation under NCF 2023.

Recommendation	Key Actions
Detailed State & District Roadmaps	Each state should develop a clear implementation plan with timelines, budget, capacity building, digital infrastructure, and vocational course mapping.
Strengthened Teacher Education	Expand ITEP and other teacher training to include digital pedagogical skills + vocational domain knowledge; ongoing mentoring, peer learning, & in-service training.
Enhanced Funding & Resource Allocation	Allocate dedicated funds for digital labs, vocational labs, maintenance. Consider matching grants or incentive schemes for under-resourced schools.
Localisation of Content & Tools	Tools and vocational curricula need to be adapted to local languages, cultural contexts, and relevant skills in local economies.
Assessment Reform	Boards and authorities to clearly define how competency-based and formative assessments will count in evaluations; accept portfolios, digital assessments, simulations.

Recommendation	Key Actions
Public-Private / Industry Partnerships	To ensure vocational training remains relevant and to share burden of infrastructure, partnerships with local industries for labs, apprenticeships, updated curricula.
Monitoring, Evaluation & Feedback Loops	Regular evaluation of implementation: tracking digital tool usage, access, skill outcomes; teacher feedback; adjusting policy accordingly.
Equity Safeguards	Special provisions for rural, tribal, marginalized groups — subsidies for devices/data, infrastructure, language support, digital literacy training.

To overcome the identified challenges and harness the potential of digital tools in vocational education, the following strategies are recommended:

- **Infrastructure Development:** Invest in upgrading digital infrastructure, including high-speed internet connectivity and provision of modern devices in educational institutions.
- **Teacher Training:** Implement continuous professional development programs to enhance educators' digital literacy and pedagogical skills.
- **Curriculum Reform:** Revise curricula to integrate digital tools and technologies, ensuring that they align with industry needs and future job markets.
- **Community Engagement:** Involve local communities in the adoption process to ensure cultural acceptance and relevance of digital tools.

Conclusion

Digital tools are transformative agents for vocational education, offering immersive, personalized, and scalable learning—key for real-world readiness under NCF 2023. Strategic use of VR, AI, LMS, and MOOCs can dramatically improve competencies and motivation—but challenges surrounding equity, infrastructure, teacher readiness, and evaluation must be addressed. Research-driven models, grounded in digital pedagogical theory and Indian context, will be pivotal in harnessing digital tools' potential for inclusive, quality vocational training. Bringing digital tools and vocational education under the NCF 2023 framework presents an ambitious, necessary reform. However, gaps in infrastructure, capacity, equity, and localized adaptability mean that without careful policy design and strong implementation mechanisms, the risk is high for uneven impact. Policy rhetoric is strong; the challenge lies in operationalization. Digital tools could deepen skills and employability, but only if supported by teacher readiness, assessment reform, and sustainable infrastructure. One critical insight is that digital tools alone are insufficient; they must be embedded within a system: curriculum, pedagogy, assessment, industry linkage, and local context all matter. The policy must provide not just vision but clear mandates, resources, accountability, and flexibility.

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Strengthening Health Education and HIV/AIDS Counselling skills through Training of the Trainers (ToT) in Odisha: A Case Study

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Abstract

Health Education is extremely important in improving public health settings, particularly in underserved population areas like Odisha, India. This qualitative case study assessed the ShaksamPrerak initiative, a capacity development program on counselling, referral and treatment of HIV/AIDS patient undertaken by Tata Institute of Social Sciences (TISS) in partnership with National Aids Control Organisation (NACO) and supported by PLAN International. The program used a Training of Trainers (ToT) model approach among HIV/AIDS counsellors of every district of Odisha by using e-learning methods with classroom-based training. Survey analysis and interview data collected from HIV/AIDS counsellors and (Auxiliary Nurse Midwives) ANMs and trainers yielded results highlighting improved clinical knowledge, communication techniques, and standardized services. It was found that interactive methods such as group discussions, roleplays, and case discussions enhanced participant's engagement with the program. However, different factors like language barriers, limited digital access, and a lack of mentoring support for ANMs after the training workshop hindered in proper implementation. The research suggests a participatory decentralized, and culturally contextualized approach with continuous mentoring and refresher training. Though the focus was on Odisha, the case study also provides informational insights that may be of interest to other Indian states and Low- and middle-income countries (LMICs), especially by suggesting the significance of preparing trainers as educators and community change agents.

Keywords: Health education, Training of the Trainers (ToT), HIV/AIDS, Counsellors, ANM, NACP

Introduction

Health education plays a crucial role in improving public health outcomes by providing knowledge, shaping attitudes and influencing and encouraging positive health behaviours at the community level (Rich et al., 2024). In a country like India, where related public health challenges are complex and contextually diverse, the success of health education initiatives depends on the skills and capabilities of health educators, community health workers, trainers, and educators. By virtue of its multiplicity of geographical diversity, tribal populations and its socio-

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economic inequalities, Odisha faces unique challenges and complexities with valuable opportunities in the field of health education (Kshatri et al., 2025)

The case study focuses on efforts being made to strengthen health education in Odisha by improving the quality and effectiveness of Training of Trainers (ToT) programs. The ToT programs are developed with the aim to improve knowledge and skills of master trainers who are educating frontline health workers like HIV/AIDS counsellors, Auxiliary Nurse Midwives (ANMs) and other community health personnel (Sahu et al., 2024). By enhancing the capacity development of trainers, Odisha aims to create a ripple effect, not only focussing on the change among trainers but also instilling a change across a population, by improving the flow of accurate, appropriate context specific, culturally sensitive health information which can reach to the remote populations. Over the last decade, many health initiatives have been started in Odisha aligned with national public programs like National Health Mission focussing on maternal, child health, nutrition, sanitation and disease prevention (Ghosh & Ghosh, 2020). However, the gaps remain in effectively transforming policy into practice at the ground level.

This research examines the structure, delivery, and outcomes of Training of the Trainer (ToT) programs in Odisha as an intervening factor in improving the delivery of health education. It also considers the challenges of diversity in language, limitations in infrastructure, and varying literacy level among health workers and beneficiary. By considering the successes and failures of these training initiatives, the study illustrates how systematic and appropriate training interventions can strengthen health systems and facilitate sustainable improvement in health. Ultimately, the study emphasises on the important contributions to the broader understanding of how well designed and well executed trainer development program can significantly impact on public health education in neglected and underserved areas such as Odisha. The insights drawn from this case study could be applied similarly in all states that need approaches for implementation when strengths of trainers can have an impact, especially in developing contexts around the world.

To ensure the accessibility of the program TISS has established 10 Regional Training Units (RTUs), each unit covers 3 states for decentralising training delivery mechanisms. This structure prepared for enabling facilitation on region specific elaboration tailoring with local needs and effective coordination with State AIDS Control Societies. One of the key pillars of SHAKSHAM PRERAK is its training materials. The training materials are designed to facilitate a more structured learning approach for participants. TISS, with its expertise in social science research and training, prepared a set of comprehensive materials based on NACO's programmatic framework. The materials were organized within and aligned to the NACP (National AIDS Control Program)'s goals, ensuring consistency and relevance across the country.

Odisha is primarily dealing with a complex challenge of HIV/AIDS. HIV (Human Immune Deficiency Virus) is a virus which causes in destroying immune system of a person after entering into the body. The individual who contracted HIV infection became in a condition known as AIDS (Acquired Immune Deficiency Syndrome). The rate of HIV infections is very high among certain groups like female sex workers, men who have sex with men (MSM), and among migrant workers that indicate HIV infection is relatively high in Odisha.

Stigma and discrimination with lack of knowledge on HIV transmission create obstacles in testing and treatment. Furthermore, rural and tribal groups do not have access to adequate health care which increases the challenge in terms of prevention and care. Nutrition deficiency, low ART (Anti-Retroviral Therapy) adherence, and gaps in counselling services result in poor outcome of the

program. Government organisations like Odisha State Aids Control Society (OSACS) and different NGOs are working on HIV/AIDS issue. Despite this HIV is spreading day by day. For overcoming these barriers and difficulties it is important for the initiatives like SakshamPrerak. It is headed by TISS (Tata Institute of Social Sciences) with its experience in the technical support, training, and capacity building towards providing the capacity building training of Counsellors and Auxiliary Nurse Midwives (ANMs) under the SakshamPrerak Program.

Objectives of the study

Following are the objectives of the study.

- To understand the effectiveness of the Training of the Trainers (ToTs) methods in improving the clinical knowledge, counselling techniques and skills of HIV/AIDS counsellors and Auxiliary Nursing Midwives (ANMs) of Odisha.
- To analyse the SAKSHAM PRERAK training materials and methods (Training Modules, role plays, group work techniques, case study discussions and facilitators guide) used in the training for improving standardised health education and HIV/AIDS services.
- To investigate the contextual challenges and barriers which create obstacles in organising Training of the Trainers (ToT) based health education in tribal and non-tribal districts of Odisha.

Review of Literature

Upadhyay et al. (2024) emphasised that primary health centre is vital for strengthening national health system. In spite of various initiatives India faces a significant challenges, such as inadequate infrastructure, workforce shortages and limited service availability. For bridging the gap between health care services at grass roots healthcare delivery and reducing burden on tertiary care of the community health officers, an online capacity program was organised by NHM (National Health Mission), Odisha and PGIMER, Chandigarh for enhancing CHO's capacity and skill and integrating tertiary care expertise into primary care. The training prioritised on gaps, curriculum development, platform development, platform like learning management system development and faculty recruitment from tertiary institutions (Upadhyay, Bhatnagar & Goel, 2024). However, the impact of the training program shows positive result, as it enhances the Community Health Officer's capacity with improvement in health care accessibility and tertiary care expertise linked with grass root health delivery.

Chakravarty et al. (2016) emphasized that blended training and Learning Approach (BTLA) is one of the training approaches to perceive the knowledge change of the participants in the study, including front line health worker, as they are the pillar of health system. The study tried to investigate the difference and effectiveness of traditional based training and e-learning trainings with classical classroom training in Odisha. The study focussed on two groups, one is CDPO (Child Development Project Officer) on reduction of stunting and the second one is Nutrition counsellors and Auxiliary Nursing Midwives (ANM) on management of Severe Acute Malnutrition (SAM). The training methodology used as BTLA comprised on e-learning modules (audio-visual content) with facilitated classroom sessions. Module covered on Nutrition basics, water/sanitation, Infant Young Child Feeding practices, Social and Behaviour Change Communication and Monitoring and evaluation. In the training, trainer played the role of a guide and facilitating discussions and demonstrations. However, the findings shows that BTLA improved knowledge among front line health functionaries and also maintain scalable, effective

model for capacity building in LMICs (Low Middle Income Countries). This can also reduce training costs and reach remote areas and provides evidence for future training policies.

Som et al. (2017) underlined that Integrated Management of Neonatal and Childhood Illnesses (IMNCI) is a community based child survival program rolled out in Odisha in 2006. For this, Anganwadi Workers (AWW) and Accredited Social Health Activist (ASHA) are trained to be the front line health worker. The training covers the topics such as serious bacterial infections, nutrition, diarrhoea management and immunization on managing illnesses of the child age group (2-59 months). The training includes hands on clinical session rather than Home Based New Born Care (HBNC) practices. However, the impact of IMNCI training shows that it enhances the AWW's knowledge, especially on neo natal care. AWWs are more likely embedded with communities and effectively positioned in child survival intervention in compare to ASHAs. This evidence supports reviving and funding IMNCI training for AWWs. IMNCI supports HBNC by covering older children and offers deeper clinical understanding.

Chase et al. (2024) highlighted that in India health workers especially Auxiliary Nursing Midwives (ANM) play a vital role in improving quality of immunization services and reducing vaccine hesitancy under the Universal Immunization program. Traditional classroom based cascade training faces various challenges like inconsistent quality, logistical complexity, lack of refresher training, and limited adaptability to evolving guidelines. So to avoid the challenges and enhancing capacity of every health worker John Snow India private limited with the support of Ministry of Health and Family Welfare (MOHFW) introduces (Rapid Immunisation Skill Enhancement) a digital Learning Management System (LMS) to classroom training. The LMS comprises different features such as five core modules. These are immunization scheduling, injection safety, cold chain management, adverse events and communication to tackle hesitancy. The module is prepared on the basis of interactive content with quizzes, games and certificates. The study revealed that the digital learning management system training has created substantial improvement in the knowledge of the ANM. This resulted into increase in the vaccine administration practices and communication with caregivers empowered female health workers and old staff by flexible and self-centred learning.

SakshamPrerak Training

Types of Training Materials: The program developed a diverse set of training materials-TISS designed e-learning modules to support in-person training. The training module contained explanatory educational videos, diagrams, and case-based exercise and activities that allowed for active learning and engaging for the participants. Trainers are provided with facilitator's guides with session outlines, discussion on doubts, and group activity instructions and guidelines. Learner manuals on the other hand simplified explanations, reference materials, and space for reflections. The curriculum incorporated case studies and role-play components to help build communication and counselling skillsets for trainees who are working with people living with HIV (PLHIV). Pre- and post-training evaluation forms, feedback questionnaires, and skill assessment checklists to measure knowledge gain and skill application are used for evaluation. We provided additional annexures including frequently asked questions, and referral directories to help the counsellors and ANMs with day-to-day work.

Curriculum Focus: The training modules were designed around three major areas: clinical competence: knowledge and understanding of HIV epidemiology, modes of transmission, treatment protocols, and referral services/protocols; counselling skills: developing empathy, maintaining confidentiality, ethical practice, and appropriate communication skills and

techniques; and programmatic knowledge: understanding the NACP's structure, data management, record-keeping, and record keeping and reporting protocols (Belay, Ruairc&Guérandel, 2019).

Impact of the Training Materials: The training modules of Saksham Prerak have been capable of influencing at different levels with Quality of Services Improved as now the counsellors and ANMs have a standardized knowledge and skills enabling them to deliver services in a consistent manner on HIV testing, counselling and treatment referrals both in states and cross state. The training programmes expanded its reach and access as health workers has multiplied the program's reach and ensured consistency and safe care for PLHIV and populations at high risk have access to supportive care across the country (Caulfield et al., 2019). Refined Communication skills through role-plays and group activity in the active training modules have resulted in the acquisition of empathetic communication skills required to reduce stigma and foster trust in relationships with clients (Bylund et al., 2008). Sustainability of capacity-building through development of region-specific trainers, along with region- and program-specific modules, means that there can always be an adaptation of the training and scaling - literally, the training can evolve over time and still be relevant (Kanyanda et al., 2021).

Research Methodology

This qualitative study designed was adopted with purposive sampling of the trainers, who have given training and HIV/AIDS counsellors and Auxiliary Nursing Midwives (ANMs) who have received the training from tribal and non-tribal districts across Odisha. Data were collected through survey (ANMs and HIV/AIDS counsellors) and in-depth interviews (Master Trainers) for thematic analysis of Training of the Trainers (ToT) outcomes, contextual adaptations and identifying barriers in the implementation.

Study Area

The study was carried out in the selected district of Odisha. It includes both tribal (Koraput, Kandhamal and Mayurbhanj) and non-tribal districts (Cuttack and Khurda) for understanding the health education needs and training delivery. The districts were chosen based on the active participation in the training program led by state and community health interventions. The population of the study are HIV/AIDS counsellors, ANMs, and Master Trainers who are involved in providing training.

Sample and Distribution

Total 84 respondents were participated in the study. Among them, 50 ANMs and 30 HIV/AIDS counsellors (from both tribal and non-tribal districts) and 4 Master Trainers were selected for the research. The study adopted purposive sampling for selecting respondents who have attended the trainings and have in-depth knowledge of the program.

Data Collection tools and techniques

Surveys: Structured questionnaire were prepared for collecting quantitative data from ANMs and HIV/AIDS counsellors on their knowledge skills and ideas about the effectiveness of the trainings.

In-depth Interviews: For collecting qualitative insights of the trainings, a semi structured interviews were organised for capturing the data about methodologies of the trainings, challenges based on context and sustainability of the training program.

“SAKSHAM PRERAK” Training

The “SakshamPrerak” initiative is training programme that represents an important collaboration between TISS (TATA institute of Social Sciences) and NACO (National AIDS Control Organisation) in the partnership with PLAN International. The programme is funded by Global Fund. The program focuses on providing training and capacity development of the Auxiliary Nursing Midwives (ANMS) counsellors as India’s HIV/AIDS workforce. The purpose of the training programs to standardise training process enhancing clinical and communication skills with the expansion of outreach at diverse regions of India. By developing training materials carefully, this attempt not only fosters technical expertise but also nurtures empathy, community engagement and accountability among frontline workers like ANMs and counsellors with the aim of better program delivery and outcome.

Survey and In depth interview

In order to understand the effective use of training methods and its experiences, challenges and training needs, the researcher used a survey tool for collecting insights of the training approach. (Cho et al., 2023)

The researcher also used in-depth analysis of tools for collecting contextual analysis apart from the surface level. In this context, the study tries to understand training methods, activity used in the training, information and knowledge sharing among participants which redefine the ToT framework (Ball & Nasr, 2011).

This study highlighted several important findings based on the responses from the survey and interviews conducted with master trainers who were involved in Odisha's health training programs) in this study. The findings showcase the successes but also the limitations and opportunities presented to improve ToT (Training of Trainers) frameworks in Odisha.

Data Analysis

The use of blended learning methods, specifically a combination of e-learning and classroom (facilitated) training, was significant for capacity development for those working with limited resources. This is consistent with Chakravarty et al. (2016) who reported that BTLA models increase knowledge retention and moderate costs. The integrated methods allowed training to reach remote communities in Odisha while still delivering quality training. The nine learning modules with facilitator guides, learner handbooks, and role-plays have also allowed for different learning styles as they relate to literacy variables. Structured training, with facilitator guides and learner handbooks that included role-plays, focused on accommodating different styles of learning while addressing the challenges of low literacy

The findings do align with Chase et al. (2024), as it supports the claim that digital Learning Management Systems (LMS) can bring improvement in knowledge and skillset to the frontline workers’ training environment. All of the risks associated with introducing interactive content, gamified quizzes, and scenario-based learning stimulated ANMs and counsellors into more reflection on their practices.

However, the analysis also highlights continuing gaps in the translation from policy to practice. Community health programs like the NHM (National Health Mission) and NACP (National Aids Control Organisation) are struggling to be implemented in districts, even after formal training, due to a variety of regional issues, because of geographical diversity, language diversity and limited monitoring. Upadhyay et al. (2024) observed that training only provides limited impact when there is a lack of infrastructure and systemic processes around the train-learning environment.

For tribal regions, where community health literacy is low, the trainer's ability to adapt training materials and expenses adds an important dimension to the training process. The detailed analysis also noted that there was a need for training design to be decentralised, to allow for trainers to adjust the content based on local health beliefs and practices.

Findings

The survey data indicated that over 85% of trainers found the structured training modules under initiatives like SHAKSHAM PRERAK to be highly relevant and easy to adapt across various regions. Trainers appreciated the inclusion of e-learning modules, role plays, and case-based discussions, which promoted active learning and contextual application of knowledge. Pre- and post-training evaluations showed notable improvement in understanding HIV epidemiology, treatment protocols, and communication strategies for working with vulnerable populations such as PLHIV.

However, trainers reported significant challenges as well. Language barriers, especially in tribal districts like Koraput and Kandhamal, affected knowledge transmission. Trainers found it difficult to fully engage with trainees when the content was not translated into local dialects. Moreover, infrastructure limitations, such as lack of stable internet and insufficient audio-visual tools in remote areas, impacted the full implementation of the digital modules.

In-depth interviews revealed deeper insights. Trainers expressed a strong sense of responsibility and motivation but also felt overwhelmed due to irregular refresher trainings and inadequate mentorship mechanisms. Some respondents noted that while initial training was impactful, ongoing support and periodic evaluation were missing. The interviews also emphasized the importance of culturally sensitive approaches and flexible modules that reflect local realities, especially for tribal populations.

Conclusion

This case study highlights the conclusion that the ToT (Training of Trainers) model is a fundamental building block of effective strengthening and improving public health education, particularly in underserved and under-resourced areas in regions such as Odisha. The SHAKSHAM PRERAK training materials designed and structured the programs in a way that definitely played a role in increasing clinical knowledge, communication and importance of standardisation in service delivery to trainers and trainees in measurable ways.

However, the real-world application of continuing education and improvement, even with the best ToT structure, are still impacted by contextual factors including enablers and barriers related to infrastructure, cultural diversity, and sustainability due to absence of continuous support.

The conclusions indicate that the ToT model needs to be more nimble, flexible, and inclusive, and it needs to provide national standardisation and local devolution of guidelines. There needs to be ongoing refresher courses, inclusion of local language adaptations, sustainable monitoring and evaluation metrics, and stakeholder participation to sustain a positive impact. The Odisha case study provides valuable lessons for other Indian states, as well as other LMICs, on the importance of investing in good quality training content, but also in empowering trainers, trainers being mentored, and the context of the ToT model.

Reimagining trainers engaged in public health education as trainers and change agents will support the public health education system in Odisha to create sustainable mechanisms for

health care delivery capable of addressing future health challenges with confidence, and cultural competency.

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A Study of Issues in Historical Teacher Training Programmes and the Emergence of NISHTHA

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Abstract

Education is an instrumental and intrinsic investment in developing a nation's economy and promoting the welfare of its citizens. The standard of education in any nation is directly proportional to the expertise, skill, and preparedness of its teachers. All at once, properly and effectively trained teachers can alter not only the fates of their students, but also that of a country. As the National Education Commission (1964-1966) observed, "The future destiny of India is now being shaped in her classrooms." Teachers play a crucial role in this whole process.

Teachers must also be properly trained and provided with modern teaching tools, and be aware of the new policies and initiatives that are added every now and then by the government in the education sector. But all this will only be possible when in-service teacher training, which enriches teachers' knowledge, skills, competencies, and effectiveness, is well developed. In-service teacher training in India has long been a point of concern, with criticism coming from various studies and reports, including the NCERT Report of 2016. These problems consist of short-term training, outdated curriculum and techniques, non-standardisation of materials, absence of follow-up, inadequate evaluation, non-implementation at the state level, and poor integration of technology. These failings have left weak links in a number of vital parts of the chain – in areas such as teacher development, classroom effectiveness, student performance, and the general quality of our education system.

To address these problems, the Government of India, in collaboration with other institutions, initiated NISHTHA in 2019 under the centrally sponsored scheme, SamagraShikshaAbhiyan. The programme seeks to enhance the quality of school education by implementing competency-based, child-focused, technology-based, and inclusive education, making it flexible and more accessible, providing practical learning and permanent professional growth.

Keywords: Teacher Training, Report, Shortcomings, NCERT, NISHTHA, Teachers, Education, Students

Introduction

Teachers are the builders of the future of a society or nation, and they are vital in molding the intellectual, social, and emotional development of students. The education of the nation largely rests upon the quality of education being imparted, and the quality of education is, in fact, what

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the teachers impart into it, depending upon their competency, efficiency, and their continuous professional development. Professionally prepared educators not only educate their learners but also form their personalities, higher values, morals, and instill in them a love of learning, at the same time constructing their overall character. They are conversant with how to utilize the untapped potential of students, improve instructional capacity in the classroom, embrace contemporary pedagogical practice, incorporate the use of technology, and accommodate the learning needs of various students in a student-needs-centred approach.

To overcome these shortages, the Government of India has been investing in in-service teacher training programmes for decades to enhance the standards of schooling and student learning. The government has further initiated many teacher training programmes over the years, through several institutions such as the NCERT and SCERTs, at both state and national levels, to provide modern teaching and classroom management strategies, and technology integration to teachers.

Even after so many efforts, the Indian education system still suffers from a lack of quality control because the in-service training programmes faced various types of constraints and limitations in their implementation. Several research studies and government reports have pointed to one-off or short-term trainings based on offline modes that rigidify teacher engagement, lack hands-on learning, and suffer from poor groundwork at the state level. The majority of these programmes do not embrace the holistic development of an educator, but merely consider one or two elements of professional development of the educator. While there have been programmes to improve teaching skills, management of the classroom, common core knowledge, and so on, many of them do not focus on mental health, social skills, emotional intelligence, relationships, and leadership skills. Consequently, such training programmes fail to make long-term contributions and sustained changes in teaching and learning practices.

In its attempt to address these concerns, the National Council of Education Research and Training (NCERT) conducted a comprehensive evaluation study in the year 2016 to examine the nature and quality of in-service training programmes implemented during 2012-2015. A total of 238 programmes from different constituent units, such as Regional Institutes of Education (RIEs), Central Institute of Educational Technology (CIET), and National Institute of Education (NIE) departments were scrutinized and the thematic relevance, target participants, instructional design, ICT use, training content, and participant engagement were considered in the review.

However, it is important to note that while the report provides a comprehensive overview of all 238 programmes, only 89 of them include structured evaluation and follow-up mechanisms. Consequently, the report's findings, impact assessment, and recommendations are primarily based on data and feedback from these 89 programmes. The remaining programmes lacked sufficient mechanisms for tracking outcomes and conducting impact analysis, highlighting a systemic limitation. The findings of this extensive evaluation revealed critical gaps that further undermine the effectiveness of teacher training in India, despite various investments of time and resources.

Objectives

This paper examines the challenges and issues faced by in-service teacher training programmes, highlighted in the NCERT evaluation report (2016). It assesses the 238 teacher training programmes organized by NCERT between 2012 and 2015, underscoring the need for a well-structured, standardised, and integrated teacher training model. Additionally, the paper offers comprehensive details about the NISHTHA programme, outlining its various phases, objectives, and unique features that distinguish it from previous teacher training initiatives.

Shortcomings Identified in the NCERT Report (2016)

The report highlights several issues and challenges in the in-service teacher training programmes organised by different constituent units of NCERT, which limit their effectiveness and have less impact on the professional development of teachers.

Short Duration of Training

The report indicates that approximately 66% of the training programmes lasted only 3 to 5 days, while only about 8.9% of the programmes had longer durations of 11 to 12 days. This brief timeframe is insufficient for teachers to adequately develop their skills or fully understand the concepts, which hinders their ability to apply what they have learned in their teaching practices. To achieve a deeper understanding of any concept or issue, sufficient time is necessary.

Lack of Structured Evaluation and Interactive Follow-up

To know whether any programme has achieved the goals or objectives that were set before organising any programme, evaluation, or follow-up is necessary. However, the report found gaps in follow-up mechanisms, communication methods, and documenting the practices. Out of 238 training programmes, only 89 programmes shared a detailed outline of their evaluation and follow-up mechanisms. Among 89 programmes, 61 programmes used a structured questionnaire that was designed by the department to assess the effectiveness of training, 18 programmes used semi-structured written feedback, 18 programmes conducted oral feedback, and two programmes were evaluated through an online mode.

Follow-up after training is one of the key components of any training programme to ensure its effectiveness, as it makes sure whether trainees are applying techniques and skills in the real classroom, clearing their doubts, if encountered, and seeking guidance after the training ends. However, the evaluation report of NCERT found that numerous in-service training programmes lacked structured follow-up mechanisms. Among the total, only 89 programmes had a proper evaluation system as mentioned earlier, only 57 programmes conducted follow-up activities, and the remaining 32 programmes did not conduct any follow-up with the state or stakeholders, making it difficult to track their long-term impact, and also reducing the effectiveness of the programme.

Lack of Documentation and Report Sharing

After the completion of any training programme, proper records have to be maintained and shared with the higher authority affiliated with that particular programme, but the findings of the NCERT Report 2016 highlight that out of 89 training programmes evaluated, only 74 programmes (83%) maintained the records, 15 programmes (17%) did not maintain any formal record, 53 programmes (58%) shared their reports with key stakeholders, 43 programmes shared reports with participants, 2 programmes shared reports with state authorities and only 1 programme shared the report with Union Territories (UTs).

Lack of Standardised Training Materials

Materials or contents are an integral part of any teaching training programme, without which the goal and objectives of that programme cannot be adequately fulfilled. These materials can be developed by subject-specific experts or procured from existing resources. However, the NCERT 2016 report identifies a gap in the development and distribution of training materials across programmes.

Only 60 % of the departments consistently developed and procured materials for all their In-service training programmes, with the Department of Elementary Education, DEE, having the lowest percentage of 56.6%. Many programmes relied on pre-existing materials like RMSA packages, NCF documents, NROER, and science/math kits, rather than developing new materials as per the specific needs of trainees and demands of the present time. Whereas 15% of the programmes did not have any standardised materials, leading trainers to develop PPTs and handouts during the session, and making it difficult for the trainee to retain or note down everything in a short period. In some cases, material was developed but not provided to participants.

Concept Notes were not properly developed and shared with all participants

Before organising any training programme, the participants and trainers should be informed about the purposes, objectives, themes, methodologies, and expected outcomes of the programme, so that they can be fully engaged in the training with a clear vision and goal. However, the NCERT 2016 evaluation report found several gaps in its development and sharing process.

Seventy five percent of departments developed concept notes for all the in-service training programmes organised during this timeline, but RIE Ajmer and DER conducted 33% of their programmes without them. Only 9 out of 20 departments shared concept notes with the participants in all their programmes. A total of 7 out of 20 departments did not share concept notes with their internal faculty, and additionally, about 60% of programmes did not share concept notes with another faculty member. In some cases, it was also seen that concept notes were only shared with the senior officials rather than the trainer or participants. This inconsistency in concept notes development and distribution created a gap in training clarity and effectiveness.

Not keeping in Mind the Personal Interests and Needs of the Trainee

About 92% of the teachers who participated in all these 238 programmes were deputed by their organisations instead of volunteering. The training coordinator had requested the heads of institutions like KVS, NVS, SCERTs, SIEs, and the directors of education to send their teachers for the training. This indicates that teachers had limited autonomy in choosing training. This may have impacted their full engagement in the programme.

Suggestions and Recommendations for Enhancing the Effectiveness of the Upcoming Teacher Training Programmes.

The report suggested several key recommendations aimed at improving the effectiveness and quality of future in-service teacher training programmes for the professional development of teachers. These suggestions focus on enhancing the overall effectiveness of teacher training, strengthening professional development, making the training more relevant, meaningful, and practical, and ensuring a lasting impact on classroom teaching practices. These recommendations emphasised proper planning, specialized courses, technology integration, continuous professional development, improved follow-up mechanisms, and so on.

The need for a more Structured, Long-Term, and Competency-based Training Model

There is a significant need to extend the duration of in-service teacher training programmes from brief, one-time workshops to a more structured and long-term approach to professional development. This would enable teachers to acquire essential skills and stay updated with

modern teaching methods and strategies through ongoing engagement in training programmes. Such initiatives require well-structured training materials, expert facilitators, and adequate infrastructure. Ultimately, this approach helps teachers gain a deeper understanding, enhance classroom practices, and achieve sustained professional growth.

Integrate Research, Development, and Training

Research, development, and training should be essential components of training programmes. By integrating these elements, the programme becomes more practical, needs-based, and impactful. This approach ensures effective training and facilitates real improvement in the teaching and learning process.

Development of Standardised Tools for Needs Assessment

Before organising any teacher training programme, it is essential to conduct a thorough needs assessment of the target population. The NCERT evaluation report suggests the development of standardised tools to accurately assess the specific needs of trainees before designing any training initiatives. Following a comprehensive pilot phase, these tools should be refined and finalised to ensure their reliability and validity. Additionally, the results should be communicated to state governments and union territories (UTs) to facilitate effective planning of training programmes.

Design a Specialised In-Service Course

The NCERT should provide a diverse range of specialised training courses for teachers, tailored to meet the unique needs of different states and union territories. These courses should encompass various areas, including curriculum development, inclusive education, information and communication technology (ICT) in education, adolescent education, guidance and counselling, as well as subject-specific pedagogy, and assessment and evaluation. By equipping teachers with comprehensive knowledge and skills in these areas, teachers can be better prepared to effectively tackle the challenges of the 21st century.

Enhancing the Quality of the Training System

The report emphasised the importance of improving the overall quality of in-service teacher training programmes. To accomplish this goal, it proposed several key measures, including better organisation, effective follow-up activities, the development of appropriate training materials, the identification of subject-specific experts to deliver lectures, the implementation of efficient feedback mechanisms, and the inclusion of hands-on learning and practical sessions.

Guidelines for effective implementation of In-service Training Programmes in States/UTs

To ensure high-quality teacher training at the state level, NCERT should establish detailed and clear guidelines to facilitate the effective planning and execution of training programmes. These guidelines must include comprehensive planning, need-based content, integration of ICT, careful selection of resource personnel, and overall effective training methodologies. Additionally, they must emphasize the importance of feedback and evaluation systems to monitor teachers' progress and enhance the overall impact of the training. Furthermore, the guidelines should promote collaboration between SCERTs, NCERT, and other stakeholders to develop consistent, practical, and skill-based training programmes nationwide.

Implementing an Online Professional Development System

NCERT should set up an Online Teacher Professional Development (OTPD) management information system to tackle and manage training programmes. The system should be connected with the states, allowing better monitoring, follow-up, and assessment of how training is benefiting teachers.

Planning and Publishing the Annual Training Calendar

While annual planning of the programme is conducted under NCERT, an annual calendar also needs to be developed by each department /constituency/or unit of the NCERT. This calendar should be reviewed and finalised by the Programme Advisory Committee, shared with all NCERT units and state education departments, and published on the NCERT website.

Ensuring Collaboration in Developing Training Materials

The NCERT 2016 report also suggests that all constituent units of NCERT should work in collaboration while developing the training content to prevent duplication of similar content. Besides this, all departments should be instructed to share developed material for feedback and wider distribution. This will ensure better quality in the materials and coordination within the departments.

Plan Training in Phases to reach all Teachers and Reduce Cascade Model Effects

There is a significant need for phased planning to directly train all teachers and educators in training, thereby minimising issues with the cascading model that lead to information loss.

Selection of Resource Persons for Training

The report recommends selecting Resource Persons based on their expertise in specific subjects and their relevant experience. Rather than inviting external members, it is advisable to choose faculty members from various constituent units within NCERT. Striking the right balance between internal faculty and external trainers is crucial to ensure quality and consistency in programme delivery.

Additional suggestions include reviewing the TA/DA rules in light of the geographical contexts of different states and Union Territories (UTs) to enhance financial planning. It is essential to obtain faculty consent in advance when inviting trainers from various NCERT constituents to facilitate the smooth functioning of the training programmes. Moreover, emphasising interactive and participatory methods is recommended in place of a sole reliance on lectures. Increasing the number of administrative and finance staff will also contribute to the effective management of the training initiative.

In response to the challenges identified and acknowledging the existing gaps in teacher training, the Ministry of Education, Government of India, in collaboration with organizations such as NCERT, recognized the need for a more sophisticated, well-structured, and research-based initiative. Consequently, NISHTHA, one of the largest teacher training programmes, was developed and launched in India

NISHTHA: A Transformative Approach to Teaching Training**Introduction**

NISHTHA, which stands for the National Initiative for the Holistic Advancement of School Heads and Teachers, is acknowledged as one of the largest teacher training programmes in the world.

Launched by the Ministry of Education's Department of School Education and Literacy in August 2019, this initiative is part of the centrally sponsored scheme known as SamagraShiksha. It is recognised as a significant advancement in teacher training within India.

The programme has been successfully implemented across all 33 states and Union Territories, in addition to eight autonomous organisations that operate under various Governmental Ministries. These organisations include the Central Board of Secondary Education (CBSE), KendriyaVidyalayaSangathan (KVS), NavodayaVidyalayaSamithi (NVS), Central Tibetan School Administration (CTSA), Atomic Energy Education Society (AEES), Eklavya Model Residential Schools (EMRS), and the Council for the Indian School Certificate Examinations (CISCE). Furthermore, NISHTHA engages faculty members from the District Institutes of Education and Training (DIETs) and State Councils of Educational Research and Training (SCERTs) and block and cluster resource coordinators.

NISHTHA aims to elevate the quality of school education and enhance student learning outcomes. To achieve this, the programme is focused on improving the professional competencies and skills of approximately 5.6 million government school teachers and school administrators across various levels of education.

NISHTHA employs a blended learning approach, combining traditional face-to-face training with online digital methods. Initially, the programme was launched in an offline mode covering 33 states and Union Territories. However, during the COVID-19 pandemic, to ensure continued learning for teachers and to reach a larger audience, the Ministry of Education (MoE) decided to transit the programme to an online format on October 6, 2020, through the DIKSHA portal in ten regional languages including Assamese, Bengali, Bodo, English, Gujarati, Hindi, Kannada, Odia, Telugu, and Urdu.

The National Education Policy (2020) prioritises the continuous professional development of educators. Paragraphs 5.15 and 5.16 of NPE 2020 reiterate the requirement for all teachers, school leaders, and teacher educators to complete 50 hours of professional development annually through either online or offline methods. In alignment with the objectives of the National Education Policy 2020, the NISHTHA programme has been extended to encompass secondary education, foundational literacy and numeracy (FLN), and early childhood care and education (ECCE) for secondary, primary, and pre-primary educators. Looking ahead, additional iterations of the NISHTHA programme will be introduced to meet the evolving needs of both teachers and students by the guidelines outlined in NPE 2020.

Overview of different Versions of the NISHTHA programme

NISHTHA 1.0 (2019-2021) Online as well as Offline Mode

Target Group: Elementary-level Educators and school Administrators from grades I to VIII.

NISHTHA 1.0 was originally implemented in a face-to-face format across all 33 states and Union Territories of India by the National Council for Educational Research and Training (NCERT), in collaboration with various State Councils for Educational Research and Training (SCERTs), District Institutes of Education and Training (DIETs), and other educational organisations. The initiative aimed to train approximately 1.75 million elementary teachers nationwide, enhancing their knowledge, skills, and competencies, thereby equipping them to foster a more effective and inclusive learning environment within schools and classrooms.

However, due to the COVID-19 pandemic, the programme transitioned to an online format via the DIKSHA portal on October 6, 2020. This shift ensured flexibility, accessibility, and affordability for educators, with a target to train 2.4 million teachers and school heads across India. The programme consisted of 18 modules, developed and implemented in Hindi, English, and Urdu by NCERT, and subsequently translated into eight additional regional languages by the respective state authorities.

The modules were made available on the DIKSHA portal, enabling educators to access them at their convenience and complete the course at their own pace. The platform can be accessed via both a mobile application and a web portal, thereby ensuring flexibility and accessibility. To enhance engagement and interactivity, various learning resources were incorporated, including quizzes, assignments, videos, animations, and discussion forums.

NISHTHA 2.0 (2021 -2022) Online Mode

NISHTHA 2.0 is an extension of the National Initiative for School Heads and Teachers' Holistic Advancements, focusing on the improvements and enhancements of the competencies and skills of secondary and senior secondary teachers (classes 1X to XII). Version 2.0 was launched on 29 July 2021 and was aligned with the Visions of the NPE 2020 by improving the quality of school education through capacity-building programme (NISHTHA). The programme aims to cover around 10 lakh teachers and school heads at the secondary and senior secondary levels. The programme had 13 courses, including 12 generic modules and 56 subject-specific modules. These courses covered all pedagogical concerns across subjects such as Mathematics, Social Science, Science, and languages. Every teacher had to complete all 12 generic modules and one subject-specific module of his / her area. NISHTHA 2.0 seeks to build upon the foundation laid by NISHTHA 1.0 and to continue working on the mission of enhancing teachers' skills and knowledge, keeping them updated to face the challenges of the 21st century, and improving students' learning outcomes and overall quality of school education in India.

NISHTHA 3.0 Foundation Literacy and Numeracy (FLN) for NIPUN Bharat – online

The shocking reports of the National Achievement Survey 2017 and 2021 compelled the Ministry of Education to develop this new version of NISHTHA 3.0 (FLN). The survey highlighted considerable gaps in foundational literacy and numeracy among early-grade students. It was found that numerous students in grade 3 struggled with basic reading, writing, and numeracy skills, while a specific percentage of students were not able to simply read the text below their grade level, affecting their overall learning process. To tackle this challenge, the Government of India came up with the NIPUN Bharat Mission in 2021 under NEP 2020, to ensure that every child achieves foundational literacy and numeracy skills by 2026-27, since achieving this goal required well-trained teachers equipped with effective teaching methodologies. To meet this need, the National Council of Education, NCERT, introduced another version named NISHTHA 3.0 -FLN under the NISHTHA programme, specifically designed to enhance foundational literacy and numeracy competencies among pre-primary and primary teachers across all states and UTs. The programme includes 12 structured modules developed by NCERT in collaboration by subject-specific experts, university professors, NCERT faculty, and experienced educators to ensure high quality. NISHTHA (FLN) aims to achieve the major objectives of FLN based on the recommendation of the National Education Policy (NEP) 2020 areas of these modules were;

1. To ensure an inclusive and conducive classroom environment where every child is welcomed and the needs of every child are effectively catered to by adopting different pedagogical skills and linking them to their daily life situations.

2. To foster reading and writing habits in children, ensuring they become confident and self-reliant in these skills, comprehend what they read and write, and achieve proficiency in them.
3. To ensure that all children grasp the concepts of numbers, measurements, and shapes, enabling them to think logically and solve problems independently through their numeracy and spatial skills.
4. To ensure the active engagement of all stakeholders—teachers, parents, communities, students, and policymakers—working together to build a strong foundation for lifelong learning.
5. To ensure a comprehensive approach to learning assessment through quizzes, projects, portfolios, role plays, games, oral presentations, short tests, and interactive activities.
6. To focus on the continuous professional development of teachers, head teachers, and education administrators through a variety of training programmes.
7. To ensure that high-quality and culturally sensitive teaching and learning materials are easily available to children in their home languages (mother tongue).

NISHTHA 4.0 Early Childhood Care and Education (ECCE) in Online Mode

Nishtha 4.0 is the latest version of the NISHTHA programme, launched by NCERT under the Ministry of Education, Government of India, in July 2021. This version focuses on early childhood care and education, aligning with the objectives of NEP 2020 to improve pre-school quality for a smooth foundation in learning. The target of this version is the Anganwadi workers, teachers, and educators involved in early childhood care and education.

Main objectives of the NISHTHA programme

The NISHTHA programme has the following main objectives.

- Promoting Inclusive and Equitable Education
- Teachers' Skills and Competency Enhancement
- Technology Integration in the Classroom
- Promoting Activity-Based and Experiential Learning
- Developing Critical Thinking Skills in Students
- Improve the Learning Outcomes of Students

Key features of the NISHTHA Programme

Holistic Teacher Training Approach

The NISHTHA programme adopts an integrated and holistic approach to teacher training, emphasising the comprehensive professional development of educators rather than merely focusing on subject knowledge or specific teaching skills. This programme encompasses training in social, psychological, pedagogical, and technological areas, ensuring that teachers can cultivate essential social skills such as collaboration, teamwork, communication, interpersonal skills, and leadership qualities. It also addresses psychological aspects like emotional intelligence and mental well-being alongside pedagogical strategies, including inclusive and differentiated instruction and competency-based assessments. Moreover, the programme incorporates technological skills utilising ICT tools and digital learning platforms. By addressing these diverse

aspects of holistic development, the NISHTHA programme enhances teaching quality and fosters greater student engagement.

Competency-based and Outcome-Oriented Training

The NISHTHA programme is a transformative initiative in the field of teacher training designed to enhance the professional capabilities of educators at all levels by focusing on the development of measurable competencies and practical skills rather than solely on theoretical knowledge. The training modules are strategically developed to cultivate real classroom competencies, thereby ensuring active student engagement. This programme emphasises the application of innovative pedagogical approaches and the implementation of varied assessment methods, all aimed at improving student learning outcomes. Additionally, it is essential that teachers not only grasp these new concepts but are also equipped to apply them effectively within their classroom settings. By fostering a comprehensive understanding of these practices, the NISHTHA programme aspires to elevate the quality of education and facilitate a more effective teaching-learning process.

Standardised and High-Quality Training Modules

One of the primary features of the NISHTHA programme is its well-structured and standardised training modules, which ensure quality, consistency, practical relevance, and uniformity in content across all teacher training sessions. These modules are developed at the national level for all states and UTs and have been developed with careful consideration of the needs of educators, equipping them with the necessary skills to address the challenges presented by 21st-century learners, particularly in diverse classroom environments. A wide range of themes have been covered in these modules, including curriculum and inclusive classroom, ICT in teaching, assessment, school-based assessment, guidance and counselling, mental health and wellbeing, gender sensitivity, competency-based learning, personal social qualities, leadership qualities, toy-based pedagogy, and art integrated learning. These modules are designed to be highly engaging and interactive to ensure that teachers can actively learn innovative pedagogical skills and apply them in real classroom teaching.

Follow the Collaborative Approach

The NISHTHA programme is a unique initiative in the field of teacher training where, for the first time, all agencies under the Department of Education have come together to work on one mission, which is to enhance the quality of school education and outcomes of students by enhancing the knowledge and skills of the teachers across India at different levels. The NISHTHA programme is primarily led by NCERT, which develops standardised training modules and implements them in different phases in collaboration and consultation with different institutions and organisations across the country.

Focus on Learning by doing

This programme places a strong focus on learning by doing. It enables teachers to make classroom learning more joyful and interactive. Research shows that the attention and memory of students improve when they learn through activities. Involving students in activities also develops their critical and problem-solving abilities. To achieve this aim of education, the NISHTHA programme trains teachers to use group work, role play, or field visits to make learning more dynamic and engaging.

A Versatile and Large-Scale Model

One of the appealing features of this programme lies in adopting both offline and online modes of instruction. In this programme, face-to-face instruction has been merged with digital learning to create a more interactive, engaging environment. The training was imparted through the DIKSHA portal, making it more accessible to educators across diverse regions. The programme allowed teachers to access the training material anytime, anywhere ensuring a long-term impact. Besides this, various social media platforms like WhatsApp, and Telegram were used to connect the teachers with peers, resource persons, and the technical team to ensure the smooth running of the programme.

Student-centric Learning

Education is more meaningful when it is learner-centered. A learner-centered approach focuses on active participation, personalized learning, and critical thinking. Teachers under the NISHTHA programme are prepared to adopt a learner-centered approach through a variety of teaching-learning strategies and techniques, such as personalised teaching instruction, group discussion, inquiry-based learning, problem-based learning, collaborative learning, reflective learning, and so on, to help in creating an interactive, engaging, and meaningful learning experience where the students actively participate and take ownership of their learning.

Inclusion and Equality

The most distinctive aspect of the NISHTHA programme is its exceptional focus on inclusive and equitable education. This exclusive concentration of NISHTHA converts all classrooms to a comforting environment where all students, regardless of their gender, caste, region, socioeconomic status, ability, etc., will be treated as equals. Educators are being trained to accommodate students with special needs, encourage learners of diverse backgrounds, and foster a gender-inclusive environment. It enables teachers to learn to recognize learning requirements, using creative methods, assistive devices, helpful procedures, and adaptable methods of evaluation. The NISHTHA programme contributes significantly to academic achievements and brings in the culture of diversity/ inclusion and equal access to all.

Continuous Teacher Learning

The programme NISHTHA aims at supporting continuous professional development (CPD) with appropriately organised and constantly active training system. Instead of quarterly workshops to educate/train teachers, it focuses on mentorship, a positive learning environment, and skills development. The programme enables teachers to learn modern skills in pedagogy, competency-based instruction, and technology integration skills to enhance teacher performance and student learning. Unlike conventional face-to-face CPD practices, the NISHTHA programme is progressive, dynamic, and gradual, and it goes through iterations of NISHTHA 1.0, 2.0, 3.0, and 4.0. All the phases are carefully crafted to comply with the needs and diverse levels of teaching and emerging issues, and policy changes in education. This is an active process that guarantees the continuous development of teachers in terms of their professional practice.

Conclusion

The National Initiative for School Heads and Teachers Holistic Advancement (NISHTHA) has provided a revolution in the world of in-service training of teachers in India. It has improved the design, implementation, and evaluation of training programmes, and has therefore managed to counter many of the weaknesses that the NCERT 2016 report identified in the existing in-service

teacher training programmes. Such problems as brief duration of training, absence of feedback mechanisms and follow-up, outdated content and methodologies, limited assessment, contextual flexibility, quality and accessibility issues, inadequate practical training, inconsistent topics and records, a lack of uniform instructor materials, and little implementation at the state level, as well as a failure to conduct a needs analysis of teachers and learners had been identified by the NCERT Report of 2016.

NISHTHA is a systematic, well-organised, competence-based, technology-integrated, research-focused approach that gives attention to practical applicability in view of the demands of the teachers and students. Its inclusive nature provides self-interest to the teachers, develops their pedagogical knowledge, enhances and promotes knowledge development, facilitates continuous learning, can be integrated into new initiatives and policies, and increases overall education quality at all school levels.

One significant change-making attribute of the NISHTHA programme is the way it fills knowledge gaps in accessibility, flexibility, relevance, and sustainability of training programmes. NISHTHA is not only an educational teacher training programme, but rather an initiative that will reinforce the roots of the education system in India. By enabling all teachers in the country to be highly trained and technologically competent, pedagogically oriented, and possessing 21st-century skills, NISHTHA aims at long-term professional development, novel approaches to teaching, and the establishment of an inclusive classroom environment. This initiative is establishing an international standard of in-service teacher training programmes, with their implementation supported by constant improvement, high-quality implementation, consistent involvement of teachers, and long-term policy support.

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Urdu Language, Skill and Employment: Promising Opportunities

Neeti Dutta¹

Abstract

Post NEP-2020, importance of getting education through mother-tongue or regional languages has gained importance. Government of India is making every efforts to provide educational resources (online or offline) in the regional languages so that students do not face any kind of problems related to educational material (online /offline). Government has also constituted Bhartiya Basha Samiti under Ministry of Education to prepare printed books in regional languages in different subjects. AICTE and UGC too have initiated to write text books in regional languages for undergraduate and post graduate programmes of liberal and technical education. State government like Chhattisgarh, West Bengal, Karnataka, Madhya Pradesh, Uttar Pradesh etc has initiated to provide general, technical and liberal education in regional languages. Urdu, the language of court and communication in pre-Independence time and still used in states like Karnataka, Maharashtra, as medium of instruction in schools has become a language of a particular community. Though, it is recognized as a scheduled language and 2nd or 3rd official language in some states like Bihar, West Bengal, etc, it is dying its own death as there is a general perception among the speakers of Urdu language, that job opportunity is limited just like any other regional languages. In such case, providing education and skill in Urdu medium is challenging. But in recent years, many companies based on IT, FMCG, Health, Education, Retail, and E-commerce are recruiting fresh and experienced general and vocational graduates having fluency in Urdu/Arabic language for their business expansion especially in middle-east and other Islamic countries. In fact, these companies' are looking for the people who are proficient in these languages along with their educational, professional and technical qualification. Therefore, Indian students who receive education through Urdu medium, they have array of jobs in offering in various sectors and industries.

Keywords: Skill, Employment, Urdu, regional language

Introduction

Skill Education has always been a part of our Indian culture. This was evident in many historical sites while doing excavation; various artifacts were obtained which are indicative enough that Indian artisans were highly skilled even at those times. In historical timeline, many of the past civilizations of India are named based on the metal used during that civilization like Copper Age (2000 BCE -700 BCE) (Saraswati-Sindhu civilization), Bronze-age Harappan Civilization(2500-1800BCE), Iron Age (1200-600BCE) as craftsman of that era design, develop and used those artifacts for their personal and occupational purpose. In fact, one of the prominent Historians of west Will Durant wrote in the Story of Civilization that “India and its people were scientifically

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and technically were way ahead from the rest of the world as they have the scientific knowledge of making artifacts which were both chemically and metallurgically resistant to environment. In fact, the wootz steel was the invented in India and later on exported to different parts of the world because of high quality". He further said that: "Every mature workman was a craftsman, giving form and personality to the product of his skill and taste. Even today, when factories replace handicrafts, and craftsmen degenerate into 'hands', the stalls and shops of every Hindu town show squatting artisans beating metal, moulding jewellery, drawing designs, weaving delicate shawls and embroideries, or carving ivory and wood. Probably, no other nation known to us has ever had so exuberant a variety of arts" (Source: <https://living-smartly.com/2023/08/william-durant-ancient-indian-64-kalas/>). Thus, it could be said that Indian society was always skill based for centuries till the advent of colonial rule. The self-reliance of India and other countries reliance on us had made India the global leaders of trade. In fact, the major of the part of the world economy was contributed by India and Indian skill-based work force was the driving force behind it. Unfortunately, regular invasion over India had not only destroyed the Indian Knowledge System but also demolished the traditional crafts based skills of India. When India got Independence from the clutches of colonial rule, India already lost skilled based industries and work force (mechanization). After Independence, rapid Industrialization resulted into mechanization of work force which needs educated people to run the industry. Still in some pockets of India traditional skill-based industries were also functioning but their numbers are dwindling and they are not being accepted in regular industries as they do not qualify as per the standards (education qualification set by government).

Post Independence, India expanded its skill base technical and vocational institutions which India inherited from colonial rule to the rising demand of skill man-power for the industries which were set up. Most of these vocational and technical institutions were providing skill-based education in the English medium (Joshi & Tripathi, 2023). Moreover, print materials too available in various skill-based courses are also in English make it further worse for students to sustain in skill-based programmes. So, many of the students who have studied till class X or XII in regional languages found it difficult to sustain their education in ITIs, Polytechnics & in Engineering colleges. So, medium of instruction act as deterrent for skill-based education. As already acknowledge by NEP-2020, education received through mother tongue will enhance the functional capacity of an individual. Therefore, for skill-based education, instruction through mother tongue/regional language in ITIs, polytechnic or engineering colleges would enhance not intellectual capacities but also functional capacities (see the development of nations like Germany, Japan, and South Korea etc).

Skill Education and Employment

In India, almost 4% of the population in the age group of 15-29 years had received any kind of formal training in vocational education whereas this percentage for non-formal vocational education and training was around 8% and almost 88% of the people in that age group do not have any formal training on vocational education (Kumar et al, p.2 cited from NSSO, 2004-05). Rest of the 88% population does not have any kind of vocational education. This picture hasn't changed much in vocational education as NEP-2020 highlighted that less than 5% of workforce between the age group 19-24 years have received any formal training. Agrawal (2012) in his research found out that rate of unemployment among vocational graduates was less than general graduates in the same age group. In terms of wages too vocational education graduates earned higher than the non-vocational graduates in the market whether they are employed in regular or casual jobs (cited in Kumar et al, 2019). Further Agarwal (2014) analyzed the data of

61st and 66th round of NSSO (2004-05 & 2009-10) and reported that population in the age group of 15-29 years had reported declining trend both in case of those received vocational education through formal (2.37% to 1.96%) and those through non-formal means (7.74% to 4.80%). The latest survey done by NSSO (2017-18) highlighted that almost 2% received vocational education and training through formal education and 3% received vocational training through non-formal means in the age group of 15-59 years. Vocational education through formal system was slightly higher in urban areas (3.3%) in comparison to rural areas (1.2%). What is surprising is that number of students receiving vocational education from recognized vocational institutes/ITIs was significantly higher in percentage in rural areas (24%) than in urban areas (8.3%). But the employment of these vocational secondary graduates is more in un-organized sector whereas in case of urban vocational graduates it is more in organized sectors. According to the latest Economic Survey report (2024-25) almost 4.1% population in the age group of 15-59 years have received training in vocational and technical education who are working in work-force and 11.6% have received TVET through non-formal means (hereditary). As the bulk of the work force are non-skilled. Report (2024-25) stated that *“Low educational skills in the workforce make a mismatch between their academic qualifications and job market demands. This mismatch has resulted in over 53 per cent of graduates and 36 per cent of postgraduates being underemployed in roles below their educational qualifications (p.399).* According to Agrawal & Agrawal, (2017), rate of returns for vocational graduates were significantly higher than general secondary education graduates in the age group 15-29 years. Moreover, the formally trained vocational secondary graduates have much higher daily wage than to non-formal vocational trainees indicating that formally vocational trained secondary graduate's had higher earning capacity. But it was quite surprising to note that unemployment rate among formal trained secondary vocational graduates were higher in tertiary sector in comparison to the non-formal trainees who generally have employment in primary and secondary sectors (cited in Kumar et al, 2019). This may be probably that at vocational institutes/ITIs skills were imparted which are more suited for primary and secondary sectors rather than tertiary sectors. Data showed that vocational education and training rates of return was much higher than any general education across the developing countries (Moenjak and Worswick 2003, Arriagada and Ziderman 1992, El-Hamidi 2006, cited in Kumar et al, 2019). Banerjee (2016 cited in Kumar et al, 2019), it was reported that labour participation ratio overall increase in manufacturing sectors across all social groups having vocational education and training but it was higher in general category in comparison to all other social groups. The study also reported that wage differential among the general category and other social groups was much less in manufacturing sectors in comparison to the wage differential between general and other social categories without having vocational education and training. There is abundance of literature available wherein vocational educational and training has following edge over general education:

1. Joining labour market and early having income
2. Low risk investment strategy than general education
3. Higher rate employability of women and men
4. Better access to jobs
5. Higher productivity
6. Provide safety nets for students who do not want to receive higher education
7. Cost effective than general education
8. Highly valued for low ability students

9. Vocational education and training were preferable among low low-socioeconomic status
10. Improved job opportunities if it is integrated with formal schooling

In the last decade, government of India has taken major initiatives in the skill development like Pradhan Mantri Kaushal Vikas Yojna (PMKVY) wherein it trained more than 2.78 crores workforce, 1.24 crores youth are trained through ITIs, 53 lakhs under Jan Sikshan Sansthan (JSS), 11.79 lakh under PM Vishwakarma etc. In 2018-19 where percentage of share of workers received vocational/technical training is only 11.3% which has increased to 34.7% due to sustained efforts of government focusing on skilling, re-skilling and up-skilling (see website of MSDE, 2025). All these suggests investments in vocational and technical education will help in increase in labour participation, increased earnings, higher employability, in comparison to general education. Also, formally trained secondary vocational graduates have higher labour participation ratio, higher earnings, than on-formal trainees. This indicates the relevance and importance of formal training in vocational education in contemporary times.

Education and Medium of Instruction

NEP-2020 says:

“Wherever possible, the medium of instruction until at least Grade 5, but preferably till Grade 8 and beyond, will be the home language/mother tongue/local language/regional language. Thereafter, the home/local language shall continue to be taught as a language wherever possible” (para 4.11 p.13).

Further, NEP has highlighted that:

“As so many developed countries around the world have amply demonstrated, being well educated in one’s language, culture, and traditions is not a detriment but indeed a huge benefit to educational, social, and technological advancement” (Para 4.15, p.14).

In fact, countries China, Japan, Germany, France, and other countries has become developed because they are able to provide education to their children in their own language. Though, all these countries have not so much diversity in terms of languages as India has but still following the footsteps one aims to be developed nation in forthcoming years.

Further, one needs to understand that cognitive neuroscience has proved that early formative years of child is crucial for intellectual development and if education is provided in home language/mother tongue it develops both the intellectual and functional capacities of the child. It further helps in development of second or third languages. Moreover, it also facilitates creativity and ability to express themselves effectively and expressively to others (Shiver, 2001).

In many states till elementary level, most of the of the public funded schools are providing education in state languages (first, second or/and third language) sometimes it overlaps with child mother tongue but beyond elementary level, language used in schools is predominantly English and in some states, it was offered in Hindi. Higher education in regional languages/mother tongue of students especially as medium of instruction was never its part, though many states of northern, central and western part of India, offer Hindi as medium of instruction in higher education.

Recently, on the recommendation of NEP-2020, All India Council for Technical Education (AICTE) has started offering technical education in various Indian regional languages like Hindi, Bengali, Marathi, Tamil, Gujarati, Kannada and Malayalam. It has been noticed by the NEP-2020 that many of the students do not go for technical education in technical institutions because all the

technical programs are offered in English language and students have fear and apprehension that they would not understand English language effortlessly. In fact newspaper clippings in the recent past highlighted that how engineering and medical education draws low or zero enrolment, when it is offered regional languages. The experts of the field highlighted that in the field of medical and engineering education, most of the publication takes place in English language and to compete globally, students need to understand English language. Moreover, experts echoed that if the students have to go for higher studies abroad, they have to learn and understand English language, therefore, introducing regional languages in medical and engineering education looks quite promising for those students who have completed their schooling through regional languages, yet students have to learn English if they have to stay connected in their profession and professional growth (TOI, 16 Sept. 2024)). Though, efforts have started from central government to translate or developed material in regional languages, and it is still in nascent stage, but definitely progress of the nation en-route through regional languages as only 4 to 5% of the population India speaks or writes English language and rest Indian languages. Central government has constituted Bhartiya Basha Samiti wherein one of the objectives is to promote Indian languages by making text material in Indian languages especially for different disciplines of higher education.

In fact, recently UGC constituted different regional committees on different languages to develop material in Indian languages of undergraduate and postgraduate programmes too. This effort of government is to have higher education in Indian languages. This will promote usage of Indian languages in higher education as well as many of the students who are not part of higher education, will facilitate them to receive higher education in Indian languages. This in turn will also increase gross enrollment ratio as well as enhance the education level of students which is directly associated with economic productivity of an individual as well towards contribution to national productivity.

Indian Languages and Employment

In India, prior to 1990s English and some foreign languages were the sources of major employment in industrial sectors, business houses, multinational companies, and off course in government sectors. Regional languages and their jobs are confined to limited sectors like teaching, translators, regional media houses, etc. But, as the market was open for the world, the job opportunities in the regional languages started opening. This was further catalyzed when the information and communication technology started penetrating into the life of common people be through electronic media, or through web of world. Companies like Google, Microsoft started hiring candidates who were skilled in regional languages to serve the needs of population who speak or write regional languages. Even the social media platforms, e-commerce market, digital marketing, digital content, regional broadcasting media etc understood the requirement that only English or Hindi cannot catered the need and requirement of people speaking regional languages in India like Bengali, Telugu, Tamil, Kannada, Punjabi, Malayalam, Marathi, Urdu and other regional languages and thus started hiring people proficient in speaking or writing in these regional languages in companies which are related to content creation, translation etc.

According to Economic Times 2017, Indians have downloaded almost 12.1 billion apps much more than US. The increasing penetration of internet has resulted into creation of employment opportunities for local languages. According to a report published by Reviere Indian language has created 10 million jobs by 2021 which would mean income growth of 400 million connected local language users. Regional languages like Bengali, Tamil, Telugu, Odia, Malayalam, Marathi, and

Hindi are creating digital language space either in the form of writers, translators, interpreters, language experts etc.

Today most of the recruitment portal uses English language for application. Most of the prospective employers are unable to understand the English language as they are proficient either in mother tongue or regional language. As a result, many of the prospective employers could not apply on the portal. With the growing usage of regional languages in the world of ICT and localization of job opportunities, it is possible that many of the recruitment agencies use regional languages for online application and thus help the knower's of local language to get the jobs (source: Growth of Carrere prospects for Indian language experts <https://www.language-services-bureau.com/blog /growth-of-career-prospects-for-indian-language-experts.php>). As per the study of British Broadcasting Corporation around 125 million out of the total 1.35 billion people know English (GOI, 2019). As people are well versed with regional languages, therefore, opportunities are growing in regional languages. In most of the non-metro cities recruiters are hiring people who are proficient in regional languages as they are more easily connected with the people, therefore, sectors like tourism, agritech, food processing, hospitality, microfinance retail and e-commerce are recognizing urgent need for hiring regional language experts and proficient. A study by KPMG and Google (2017) in their report revealed that almost 70 percent of internet users finds local language content to be more reliable than content available in English language. As a result, digital marketers with the knowledge of regional languages are creating job lakhs of lakhs job opportunities in the field of content creators, search engine optimization professionals, paid bloggers etc.

Further these jobs are not only in confined to traditional sectors but also in new age media house, FMCG business etc. In recent years regional languages are also creating job opportunities for students, homemakers, retired personnel, who want full time or part-time work from home option Government of India, have started several initiatives for the people proficient in Indian languages to have a level playing field with the ones with who have knowledge of English. These are:

1. Developing information processing tools to facilitate human-machine interaction in Indian languages to multilingual knowledge sources by Ministry of Electronics and Information;
2. In the development of software tools and applications for Indian languages, key initiative like Machine Translation System, wherein data is translated from English to any regional languages, Optical Character Recognition System, On-line handwriting Recognition system, Cross-Lingual information System, Speech Processing System wherein text in local language will be converted into spoken words of recognized language under language technology products and solutions, development of standards for linguistic resources, tools and applications for interoperability.
3. National Roll Out plan which aggregated Indian language software tools and fronts which are accessible through web-based data centre called Indian Language data Centre.
4. Language Technology standardization in collaboration with ISO, UNICODE, W3C, BIS, ELRA to ensure adequate representation of Indian languages in existing and future language technology standards.
5. Indian Language Internet Alliance (ILIA), spearheaded by Google and FICCI, is focused on popularizing Indian languages online and driving policy around it.

With all such concentrated initiatives both from public and private sectors, Indian language has become eligibility criterion is creating new job opportunities in India. There is increasing global trend among global tech companies to look at India as a large market for language technologies. India is emerging as a multilingual computing hub with expertise in vernacular application development (Source: GOI, 2019).

Status of Urdu Language & Education in Urdu medium

Urdu, as a language originated in India, was used as an official language in courts and the communicative language among Indians before India Independence. After Independence, Urdu becomes the official language of Pakistan and India adopted Hindi as an official language. Urdu as language was spoken by common people of India irrespective of religious affinity. But slowly and steadily, due to the rise in dominance of English language in India both in official documents as well as medium of instruction in general, technical, professional, and vocational institutions, English become the mainstay language in Indian education. Hindi assumes the status of Official language in 1963 through Official Language Act 1963 and highlighted that apart from English, Hindi will also be the official language of communication. Though, Urdu was part of the schedule languages in the first list of 1950 but slowly and steadily the usage of Urdu language was confined to literary and cultural activities in the country. Unlike other regional languages or scheduled languages, the employment market too was shrink for Urdu language. Print media which was the mainstay of communication among the people with the world started publishing news either in English, Hindi, or scheduled languages (state wise). Readers of the print media were also restricted to English, Hindi or scheduled languages spoken in the states. Textbooks and other resources materials used in schools and higher education institutions were mainly in English or Hindi language. In other words, Urdu becomes the non-functional language among common people (both as script and speech). Later, on Urdu language was commonly associated with a particular community which further marginalized the existence of Urdu language. According to 75th NSSO report (2017-18), only 12.2% of Urdu speaking household send their children to Urdu medium schools whereas almost 53.8% send their children to English medium school. This percentage is 20.8% for regional medium of schools and for Hindi medium schools which are marginally higher than Urdu medium schools i.e. 13.2%. So, it is clear indicate that even with Muslim community larger percentage of families send their children to other than Urdu medium schools. This state of affairs of Urdu medium schools may be poor quality of schooling, limited educational resources in Urdu medium, limited career options, high drop-out rates among Muslims even in Urdu medium, non-availability of scientific literature in Urdu, etc lead to sorry state of affairs among the Urdu languages. Moreover, linguistic skills in regional languages or in English will help them to understand and reap benefits at local, regional and national level. Similarly, as per Press Registrar General of India (erstwhile Registrar of Newspaper for India), in 2016-17, Urdu newspaper circulation is more than 3.24 crores (6.64%) of the total circulation occupying the third spot just after Hindi and English newspaper. In 2017-18, it slipped to 6th spot with total circulation more than 2.52 crores (5.88%) which is still higher than the other regional languages. But these figures do indicate a worrying fact like any other regional languages because of increasing dominance of English in Indian system.

According to Census, 2011 the number of people speaks Urdu in India is 5.07 crore whereas this figure was 5.15 crore in Census 2001. So, in a decade there was dip of almost 0.08 crore people. In terms of percentage, it is almost 4.19 % of the total population against 5.01% in 2001. According to 2001 census data, Urdu Language got sixth place among the most spoken languages but slipped to seventh place in the 2011 census. In almost 6 states Urdu has been officially

recognized as state language (Uttar Pradesh, West Bengal, Delhi, Jharkhand, Bihar, Jammu & Kashmir). Though, many of the states offer school education through Urdu medium. As per the UDISE data (2015), the number of Urdu medium schools in the country was 28,276 out of which 16382 are running under different state government. Following is the state wise breakup of the Urdu mediums schools:

State	Number of Schools
Andhra Pradesh	4067
Assam	68
Bihar	3624
Chhattisgarh	133
Delhi	113
Goa	33
Gujrat	144
Haryana	18
Himachal Pradesh	01
J & K	1367
Jharkhand	913
Karnataka	5227
Kerala	2
Madhya Pradesh	941
Maharashtra	5282
Manipur	4
Meghalaya	1
Orissa	283
Punjab	4
Rajasthan	574
Sikkim	1
Tamil Nadu	280
Tripura	3
Uttar Pradesh	3459
Uttarakhand	124
West Bengal	1610

Source: UDISE, 2015

In Karnataka, which has sizeable number of Urdu medium schools in comparison to other states in India has reported that there is a steady decline in students going for Urdu medium schools and reason reported that 1. Professional and technical language through Urdu medium serves no purpose 2. Urdu medium social and economic profile has been on decline 3. Gulf jobs for boys and matrimonial alliances for girls from countries like USA, Canada, Australia and western countries act as contributing factors to equip generations with professional and technical knowledge with proficiency in English language (Source: Siraj, n.d). In one of the articles by Shaban (2015) entitled *Urdu and Urdu Medium Schools in Maharashtra* author highlighted that due to constitutional obligation it is necessary to provide education to the child in mother tongue, however, it has been stark fact, education received through Urdu medium have bleak employment market. They even do not do well in where medium of instruction is English. Author further highlighted that many of Urdu speaking population has realized the Urdu may be

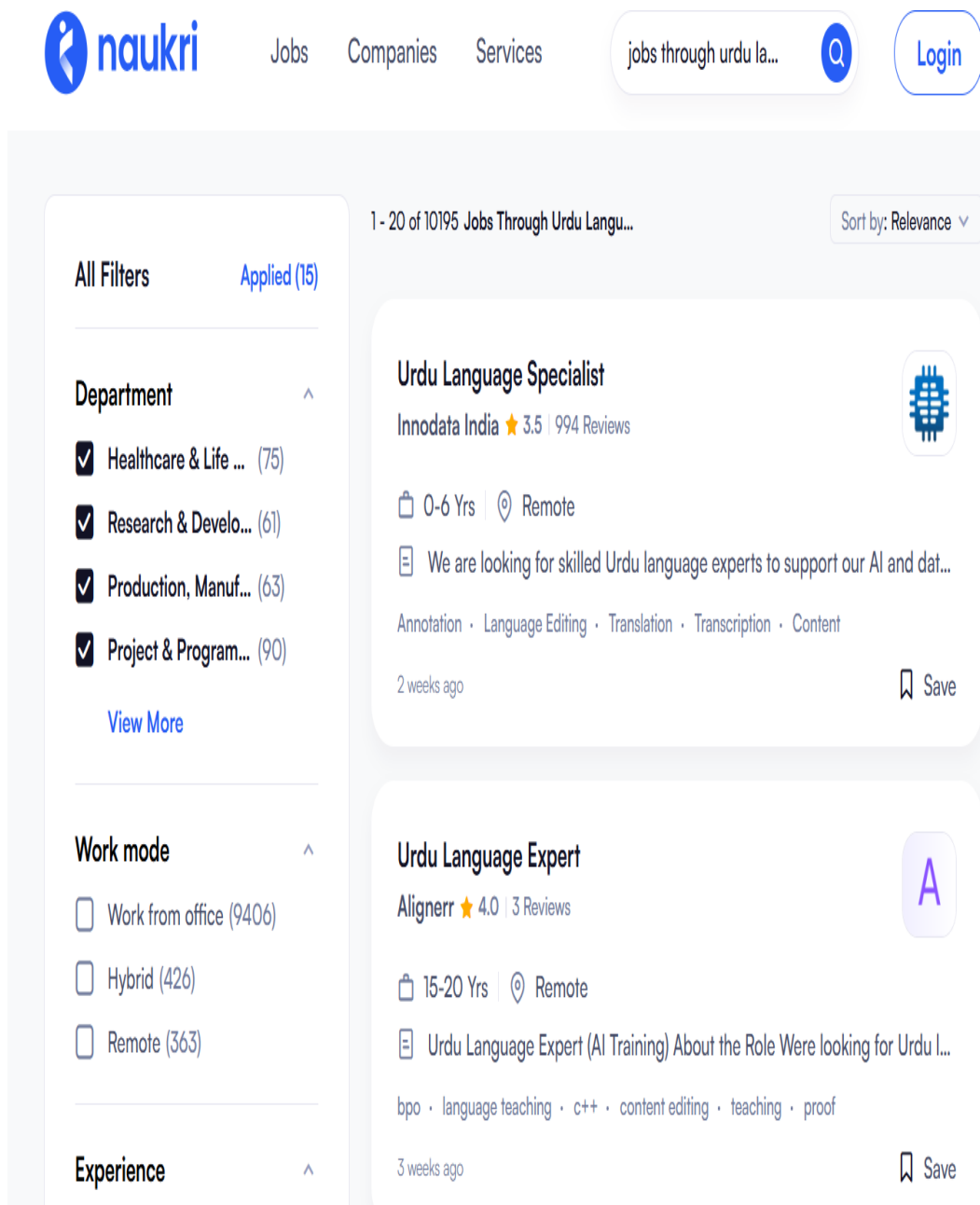
important for culture preservation but as far employment is concerned English is the necessary language in which children need to be proficient and that is why they are sending their children in English medium schools. **Rafiq Zakaria (2004)** one of the prominent educationists in Maharashtra quoted in the article:

It is no use educating children in Urdu, if, on completing the required course and obtaining degree in Urdu, they cannot get jobs or opportunities to better themselves and their families economically. Is it then wise to insist that Urdu should be made the sole medium of instruction in educational Institutions? There is, I hope, some possibility of its survival if it can be taught as compulsory subject, with emphasis on its literary aspect; the technical subject would have to be taught in English, if need be, with special oriental classes in English. This seems most unfortunate but there appears to be no other way to keep it alive (cited from Shaban, 2015).

Whereas another renowned scholar **Ather Farooqui (1994)** highlighted that what gives immense satisfaction that in Urdu medium school's regular classes are conducted, teachers are teaching to students and middle-class Muslims are ready to send to their children in Urdu medium schools. But countering to it Zakaria (2004) highlighted that scenario is fast changing and Muslims who can afford are sending their children to English medium schools. They prefer that their children to study Urdu as a one of the optional subjects in school or at home. In fact, Zakaria said that with spread in globalization, similar treatment is meted out to other regional languages of India.

Urdu Language and Employment

NEP-2020 recommended towards promotion of Indian languages and market forces offering employment to prospective employers having language proficiency, technical and professional skills and digital competencies irrespective of regional languages they have acquired education. Urdu medium students too need to demonstrate similar language proficiency, technical and professional skills and digital competencies then they will be easily absorbed themselves in any sectors of employment. One of the major portals called **naukri.com** has posted variety of jobs ranging from technical to non-technical, government to private, having degree in liberal to professional education, at various levels (entry to senior level). The data given below has been fetched from the website showing the demand of Urdu language knower's in different domains of work:



The screenshot shows the Naukri job portal interface. At the top, there's a header with the Naukri logo, navigation links for Jobs, Companies, and Services, a search bar with the text 'jobs through urdu la...', and a Login button. Below the header, the main content area displays job search results for 'Urdu Language Specialist' and 'Urdu Language Expert'. On the left, there's a sidebar with filters for Department, Work mode, and Experience. The Department filter is expanded, showing options like Healthcare & Life Sciences (75), Research & Development (61), Production, Manufacturing (63), and Project & Program Management (90). The Work mode filter shows Work from office (9406), Hybrid (426), and Remote (363). The Experience filter is also visible. The job results are sorted by Relevance. The first job is 'Urdu Language Specialist' by Innodata India, with a rating of 3.5 and 994 reviews. It is a remote position with 0-6 years of experience. The second job is 'Urdu Language Expert' by Alignerr, with a rating of 4.0 and 3 reviews. It is a remote position with 15-20 years of experience. Both jobs are listed as being posted 2 weeks ago.

All Filters [Applied \(15\)](#)

Department ^

- ☒ Healthcare & Life ... (75)
- ☒ Research & Develo... (61)
- ☒ Production, Manuf... (63)
- ☒ Project & Program... (90)

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Work mode ^

- ☐ Work from office (9406)
- ☐ Hybrid (426)
- ☐ Remote (363)

Experience ^

1 - 20 of 10195 Jobs Through Urdu Langu... [Sort by: Relevance](#)

Urdu Language Specialist

Innodata India ★ 3.5 | 994 Reviews

📅 0-6 Yrs | 📍 Remote

📋 We are looking for skilled Urdu language experts to support our AI and dat...

Annotation · Language Editing · Translation · Transcription · Content

2 weeks ago [Save](#)

Urdu Language Expert

Alignerr ★ 4.0 | 3 Reviews

📅 15-20 Yrs | 📍 Remote

📋 Urdu Language Expert (AI Training) About the Role Were looking for Urdu l...

bpo · language teaching · c++ · content editing · teaching · proof

3 weeks ago [Save](#)

Source: naukri.com, 2025

It has been found while searching on through “Jobs through Urdu Language”, naukri.com has given the result of almost 6117 jobs across India. These jobs are almost there in every sectors like engineering, data science, teaching, content writer, editor, journalism, translator, finance and accounts, research and development, logistics, security etc in multinational companies like Accenture, Google, Qualcomm, Infosys, etc. The minimum eligibility is any type of liberal, professional, technical degree or diploma. Maulana Azad National Urdu University (MANUU),

Hyderabad is exclusively established to provide general, technical, professional education in Urdu medium for the Urdu speakers of the country. In last twenty five years, it is providing campus placement to its students enrolled in different UG, PG and Ph.D programmes of different disciplines. The details of placement for the last three years showed in the table below:

Sr. No	Year of Placement	No. of Students Placed						
		Science & Technology	Social Science	Humanities and Arts	Management	Teachers	Misc	Total
1	2021-22	136	17	17	19	138	-	327
2	2022-23	22	16	21	0	173	-	232
3	2023-24	225	276	25	34	518	233	1311
4	Total	383	309	63	53	829	233	1870

Source: Annual Report of MANUU, 2021-22, 2022-23 & 2023-24

These students of MANUU are placed in variety of sectors: corporate, government, public sector undertaking, retail, IT sectors etc. Most of the jobs got by the students may not necessarily relate to Urdu language but it's the knowledge, competence and skills that students possess in their subject domains as well as in the job-domain which fetches them the job.

Sr. No	Month/Job Portals	Indeed	LinkedIn	Naukri.com	Internetshla	Jooble	Glassdoor
1	September 2025	75	190	10962	40	2968	44

Source: Above mentioned job portals

These jobs shown in different job portals ranges from simple translator to artificial intelligence language creator for people having knowledge of Urdu in different domains of subject knowledge: science and technology, IT, Translation, Content creation, academics etc. States like Karnataka, West Bengal, Bihar, Jharkhand, Telangana, Uttar Pradesh etc which have sizeable population of Urdu speakers are now being hired in state government. Central ministries also offer jobs in different departments example teachers, translators, courts, subject experts, trainers, etc. Moreover, journalism field recently started hiring candidates having flair in Urdu language because of increasing number of newspapers, media channels (both TV and print) along with social media platforms. This indicates that Urdu as language is not acting as deterrent as perceived to get a job in the market. As most of the languages of India are facing difficulties to survive because of the overwhelming influence of English language, Urdu is another language which is affected with it. But, Urdu as a language has opened up plethora of job opportunities in open market especially in software, online trading, content-creation, translators in BPO industries etc as globally sizeable population of 232 million Urdu speakers (Source: International Centre for language Studies, 2024). These companies require candidates' flair in language along with requisite skills as per the demands of the job. It is important to note that many tech giants' companies, FMCG companies, retail industries are hiring professionals of regional languages to do their business in tier-2 and tier-3 cities because of the majority population stay in these cities and probably these are cities which still remain untapped and companies want to increase their consumer base in these cities. It needs to be understood that language is the medium of

communication only, but key for today's job market is one possess 21st century technical, professional, digital, and soft skills for employment. In recent times these are the some of the top global companies who have recruited prospective employers from Urdu medium background:

1. Amazon for e-commerce
2. Google for translators, content creators, etc
3. Microsoft translators, content creators
4. Hindustan levers etc.

Recently, some of the educational institutions/organization is actively working to promote technical and vocational education through Urdu medium to improve the job opportunities in the market. Maulana Azad National Urdu ,Hyderabad is providing education through Urdu medium wherein technical, vocational, professional and liberal educations is provided to Urdu knowing students through regular and open and distance learning mode for the past 25 years. The universities are offering paramedical courses through Urdu medium. The focus of these programmes to prepare high quality industry based skilled health workers for the nation and for the world. Initial results of these programmes are quite encouraging as it provides employment opportunities to all the students in various government and private hospitals, nursing homes, diagnostic labs. This it is indicative that Urdu as language or medium of instruction is not acting as barrier in getting placement/jobs. The key requirement is that students have to be trained and showcase their technical, professional and soft skills in front of the employers. Similarly, National Council for Promotion of Urdu language (NCPUL) has diversified themselves and apart from promoting Urdu language in the country, it also offering several courses in technical and linguistic skills wherein prospective students through Urdu medium could learn various vocational skills in the field and enter in the market of emploement:

1. Computer Applications Business Accounting and Multilingual DTP Centre
2. Calligraphy and Graphic design training center
3. Persian, Arabic Proficiency courses;

Even, the National Institute of Open Schooling (NIOS) also has several vocational courses that are offered in Urdu medium (please refer to websites <https://www.nios.ac.in/online-course-material/vocational-courses.aspx>) wherein prospective students can do short term vocational courses for seeking employment. In many of the cases eligibility level is no formal education or some basic education.

Aptly said by Mario Pace (2021) that *“education and training aim to equip people with knowledge, know-how, skills and/or competences required in the labour market but in today's labour world, mastery in foreign languages is considered not just an excellent tool to bridge gaps but above all an instrument that enables workers to considerably improve their career prospects with several studies showing a very close connection between proficiency in languages and employability”*. (p.1)

Thus, market giants like Google, Amazon, Microsoft want to have larger consumer base and they found India is perfect because of large consumer base with diverse linguistic background, therefore they are eyeing on the these consumers. These consumers can be converted into their base if they start offering their products in the local languages as it will help the consumers to comprehend easily. Urdu as a language has a substantial base of consumers and therefore offering high quality and skill based education in Urdu medium in the Urdu educational

institutions will help them with good prospect of employment but also help them to overcome that fear psychosis of language-Urdu do not provide knowledge, skill and employment.

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Exploring Students' Career Outlook within STEM Education: Findings from Selected STEM Schools in Thane district of Maharashtra

Ramesh Harish¹ & Ravindra Ramesh Patil²

Abstract

STEM ('Science', 'Technology', 'Engineering' and 'Mathematics') education is designed to integrate disciplinary knowledge and real-world applications, nurturing problem-solving, creativity and career-oriented thinking among students. This study explores students' career outlook within the context of STEM education and examines how STEM exposure influences their interests, perceptions and career choices. The study adopted a descriptive quantitative research design and included 10th standard students from four STEM-implementing schools in Thane district of Maharashtra. Data were collected using a close-ended questionnaire and analysed through IBM SPSS software, with results presented descriptively through tables and charts. The findings revealed that students generally viewed their schools' STEM infrastructure as satisfactory, and it was found to enhance students' curiosity, motivation, and interest in STEM-related careers while shaping positive perceptions of its career benefits. However, students expressed limited confidence in their immediate employability after schooling, suggesting a need for stronger practical skill integration. Gender perceptions indicated slight biases, pointing to ongoing challenges in achieving full inclusivity within STEM learning environments. STEM education positively influences students' curiosity, motivation and career orientation but requires further strengthening in skill-based learning, infrastructure and gender-inclusive practices. Building robust, equitable and experiential STEM ecosystems can enhance students' preparedness for future academic and professional pursuits.

Keywords: STEM Education, Career Outlook, Gender Inclusivity, STEM Infrastructure, STEM Schools.

Introduction

"STEM education is an interdisciplinary approach to learning where rigorous academic concepts are coupled with real-world lessons as students apply science, technology, engineering and mathematics in contexts that make connections between school, community, work and the global enterprise, enabling the development of STEM literacy and with it the ability to compete in the new economy" (Tsupros et al., 2009). A core principle of STEM lies in using 'scientific, mathematical, technological, and engineering' knowledge to solve everyday and societal problems. This approach seeks to make the study of 'science, technology, engineering and

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mathematics' more meaningful and relevant (Soo Boon Ng, 2019). STEM education provides students with essential foundational knowledge in 'science, technology, engineering and mathematics' from an early stage, helping them make informed career decisions. Its interdisciplinary approach encourages the blending of ideas across disciplines, mirroring the collaborative and professional nature of the job environment in such fields. By engaging with real-world problem-solving experiences, students build resilience and develop the ability to handle challenges, thereby better preparing them for future career paths (National Research Council, 2014). Through experiential learning, experimentation, and interaction with real-world applications, students are encouraged to discover their interests, abilities and talents across different STEM disciplines. Participating in problem-solving tasks and project-based activities helps them develop essential skills like creativity, critical thinking, teamwork and qualities that are highly valued in the modern workforce (Soo Boon Ng, 2019). Engaging with STEM concepts through hands-on experiments and projects sparks curiosity and excitement, creating a strong basis for future career exploration (Becker & Park, 2011). Additionally, engagement with STEM disciplines nurtures curiosity and creativity, motivating students to follow career paths that reflect their passions and personal interests (National Science Foundation, 2011). Through the use of creative teaching approaches and by highlighting the importance of STEM subjects in solving global issues, educators can motivate and shape the next generation of innovators in the form of scientists and engineers (National Research Council, 2014). When it comes to women/girls, numerous interconnected factors affect their interest and participation in STEM, often interacting in complex ways. Social gender norms, parental expectations, peer pressure and conflicting aspirations can discourage girls from pursuing STEM fields. Furthermore, feelings of isolation in male-dominated classrooms, a sense of not belonging and the absence of visible female role models often contribute to women/girls avoiding or leaving STEM careers (Dasgupta & Stout, 2014). Encouraging girls to participate in STEM from a young age, while ensuring their educational experiences, including teaching methods, curriculum, and learning environment, are inclusive, gender-sensitive, and free from bias or stereotypes, is extremely important (UNESCO, 2017). Media representations of STEM professionals play a crucial role in shaping how adolescent girls envision their future identities. Presenting diverse and authentic portrayals of women in STEM fields is vital to challenge the prevailing dominant masculine stereotype (Steinke, 2017).

In summary, the reviewed literature sheds light on STEM education, emphasising its role in cultivating positive perceptions of STEM-related careers. Nonetheless, successful implementation requires thoughtful planning at the school level. Furthermore, the studies reveal persistent gender inclusion challenges, as many girls experience a sense of exclusion from STEM learning, which can result in long-term disengagement from these fields.

Against this background, the present study seeks to examine students' career outlook within the context of STEM education. It aims to investigate their interest in STEM disciplines, perceptions of career prospects, the influence of STEM education on their career decisions, and the presence of gender-stereotypical attitudes related to STEM. Through this exploration, the research intends to offer insights into the effectiveness of current STEM educational practices and identify possible areas for improvement.

Research Methodology

Research questions

1. What influence does STEM education have on students' career choices?
2. In what ways does STEM education generate students' interest in STEM fields?

3. How do students view the career prospects available through STEM education?
4. Which gender is perceived as more suited for pursuing STEM careers?

Objectives

The objectives of the study are as follows:

Primary objective: To explore students' career outlook within STEM education.

Secondary objective: To highlight the infrastructural components that facilitate STEM education.

Research design: The study is based on a descriptive, quantitative design.

Inclusion criteria

1. Schools where STEM education is implemented and are under the jurisdiction of the Thane Municipal Corporation.
2. Students of 10th standard who are exposed to STEM education.

Sample size: The study included a total of 120 students studying in 10th standard from 4 schools, with 30 students selected from each school. To maintain diversity and gender balance, each group of 30 comprised 15 male and 15 female students.

Sampling technique: Once the permission was secured from the school principal to carry out the study, a simple random sampling technique was employed to randomly select 30 students (15 Male and 15 female) out of the whole class in each school.

Tool of data collection: A closed-ended questionnaire was developed and utilised to gather responses from the students of the 10th standard.

Data analysis: The quantitative data were coded and analysed using IBM SPSS software, with the findings presented through tables, charts and descriptive summaries.

Findings

The findings from the study are as follows:

1. Socio-Demographic background

Table 1 highlights the socio-demographic background of the respondents. The study comprised a total of 120 students, with an equal representation of males (50%) and females (50%). The majority of participants (94.17%) were between 16 and 17 years of age, which is typical for students in the 10th standard, while smaller proportions were aged 14–15 years (3.33%) and 18–19 years (2.50%). In terms of religion, more than half of the respondents identified as Hindu (55.83%), followed by Muslims (22.50%), Sikhs (9.17%), Christians (5%), Buddhists (3.33%), and Jains (1.67%), with 2.50% choosing not to disclose their religion. Regarding social background, 40.83% of students belonged to the General category, 22.50% to SC, 19.17% to OBC, and 6.67% to ST, while 10.83% preferred not to state their background. Economic background data revealed that most respondents came from middle-class families (41.67%), followed by lower-middle class (26.67%), upper-middle class (15%), poor (5%), and rich class (1.67%), whereas 10% were uncertain about their economic status. Analysis of monthly family income showed that 29.17% of the students' families earned between ₹25,001 and ₹50,000, while 32.50% were unaware of their family income. Concerning place of residence, the majority resided in LIG flats (30.83%) and MIG flats (23.33%), followed by those living in HIG flats (8.33%) and slums (8.33%). A few (3.33%) lived in individually constructed houses, while 25.83% did not specify their housing type. Overall, the demographic profile reflects a balanced and socioeconomically diverse sample of 10th

standard students in Thane district, representing varied social, economic, and residential backgrounds.

Table 1: Socio-Demographic background of the respondents (n=120)

Variable	Categories, Frequency & Percentage	
Gender	Male – 60 (50%), Female – 60 (50%)	
Age (in years)	14–15 yrs – 4 (3.33%) 16–17 yrs – 113 (94.17%) 18–19 yrs – 3 (2.50%)	
Religion	Hindu – 67 (55.83%)	Muslim – 27 (22.50%)
	Sikh – 11 (9.17%)	Christians - 6 (5%)
	Buddhist – 4 (3.33%)	Jain – 2 (1.67%)
	Can't say – 3 (2.50%)	
Social Background	General – 49 (40.83%)	OBC – 23 (19.17%)
	SC – 27 (22.50%)	ST – 8 (6.67%)
	Can't say – 13 (10.83%)	
Economic Background	Poor – 6 (5.00%)	Lower middle class – 32(26.67%)
	Middle class – 50 (41.67%)	Upper middle class – 18(15.00%)
	Rich class – 2 (1.67%)	Don't know – 12 (10.00%)
Family Income (per month)	Less than ₹1,286 – 5 (4.17%)	₹1,286–₹5,000 – 12 (10.00%)
	₹5,001–₹25,000 – 16 (13.33%)	₹25,001–₹50,000 – 35 (29.17%)
	₹50,001–₹1,00,000 – 10 (8.33%)	₹1,00,001 & above – 3 (2.50%)
	Don't know – 39 (32.50%)	
Locality / Place of Residence	Slums – 10 (8.33%)	LIG flats (1BHK) – 37 (30.83%)
	MIG flats (2BHK) – 28 (23.33%)	HIG flats (3BHK & above) – 10 (8.33%)
	Individually constructed flat/bungalow – 4 (3.33%)	Don't know – 31 (25.83%)

2. STEM infrastructural components

Table 2 presents the STEM infrastructural components available in the surveyed schools. All four schools reported the presence of STEM laboratories and Do-It-Yourself (DIY) activity kits, indicating that these components are considered fundamental to the existing framework of STEM education. These facilities support hands-on experimentation and project-based learning, allowing students to actively engage with scientific and technological concepts. However, it was observed that Tinker Labs were absent in all participating schools. This absence suggests that Tinker Labs are not yet regarded as a mandatory or essential component within the current

STEM education framework being implemented at the school level. The findings highlight that while schools have incorporated basic STEM infrastructure such as laboratories and activity kits to facilitate experiential learning, there remains scope for enhancing the innovation ecosystem through the inclusion of advanced facilities like Tinker Labs.

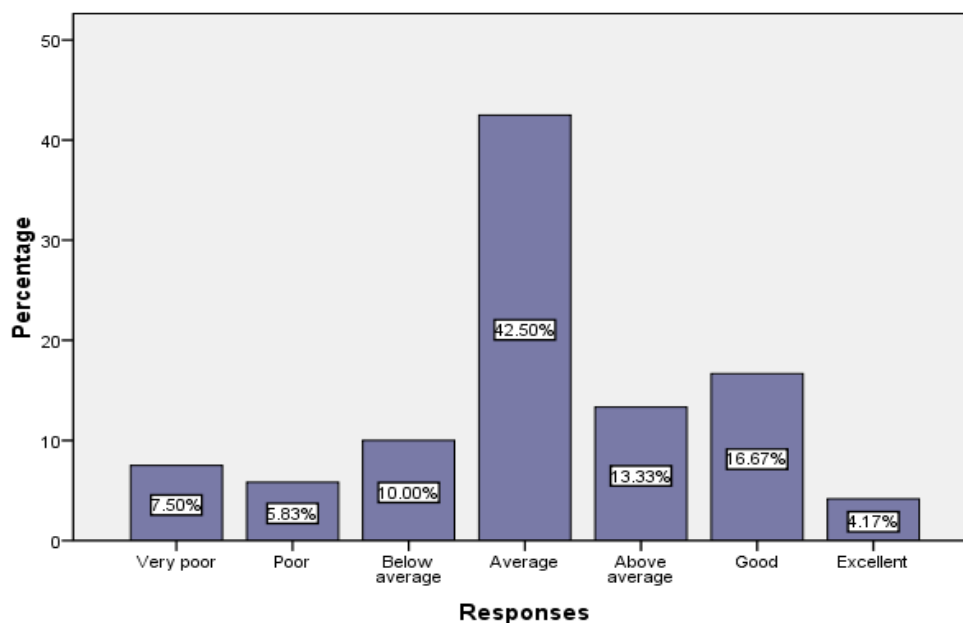
Table 2: STEM infrastructural components in the 4 STEM schools

School	STEM Lab	DIY Kits	Tinker Lab
S1	Available	Available	Not-Available
S2	Available	Available	Not-Available
S3	Available	Available	Not-Available
S4	Available	Available	Not-Available

3. Overall quality of STEM infrastructure

Figure 1 presents students' perceptions regarding the overall quality of STEM infrastructure in their schools. A majority of 42.5% rated the infrastructure as average, while 16.67% rated it good and 13.33% as above average. A smaller proportion of 4.17% rated it excellent, whereas a combined 23.33% rated it within the below average–very poor range. With a total of 72.5% rating the infrastructure between average and good, the findings suggest that students are generally satisfied with the quality of STEM infrastructure available in their schools.

Figure 1: Overall quality of STEM infrastructure

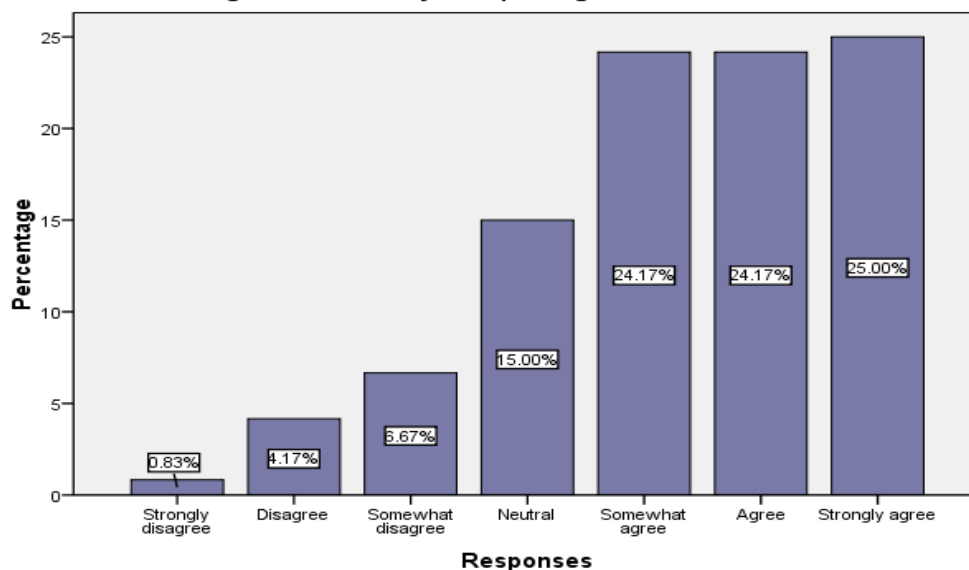


4. Curiosity in exploring a STEM career

Figure 2 illustrates students' responses to the statement that STEM education has simplified the teaching-learning process, thereby generating curiosity to pursue careers in STEM fields. Here, 25% of respondents strongly agree, and 24.17% each agree and somewhat agree. Another 15% remain neutral, while a combined 11.67% fall within the somewhat disagree to strongly disagree range. Overall, 73.34% of the respondents agree in varying degrees that STEM education has

simplified learning and fostered curiosity toward exploring careers in STEM fields, highlighting the positive influence of STEM exposure on students' career interest.

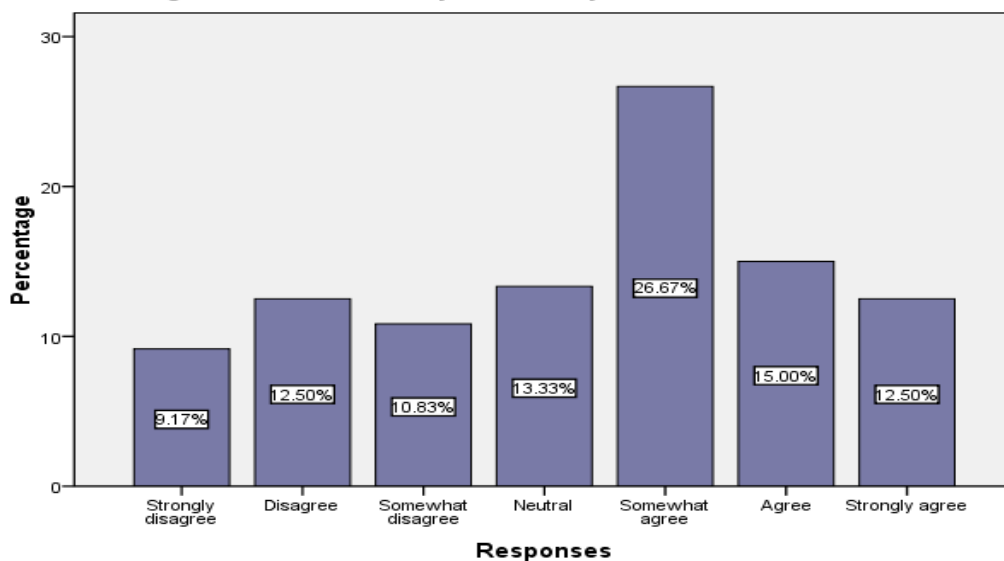
Figure 2: Curiosity in exploring a STEM career



5. Perception that the world is directly or indirectly connected with STEM

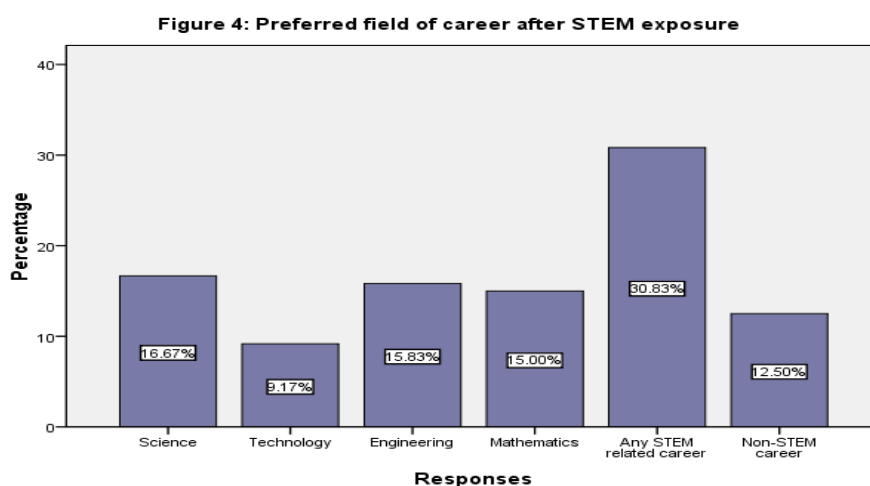
Figure 3 displays students' opinions on whether STEM education has helped them perceive the world as being directly or indirectly connected to STEM. Among respondents, 26.67% somewhat agree, 15% agree, and 12.5% strongly agree, while 13.33% remain neutral. A combined 32.5% fall within the somewhat disagree–strongly disagree range. Altogether, 54.17% of students agree in different capacities, indicating that more than half of the respondents recognize the omnipresent role of STEM in everyday life.

Figure 3: World is directly or indirectly connected with STEM



6. Preferred field of career after STEM exposure

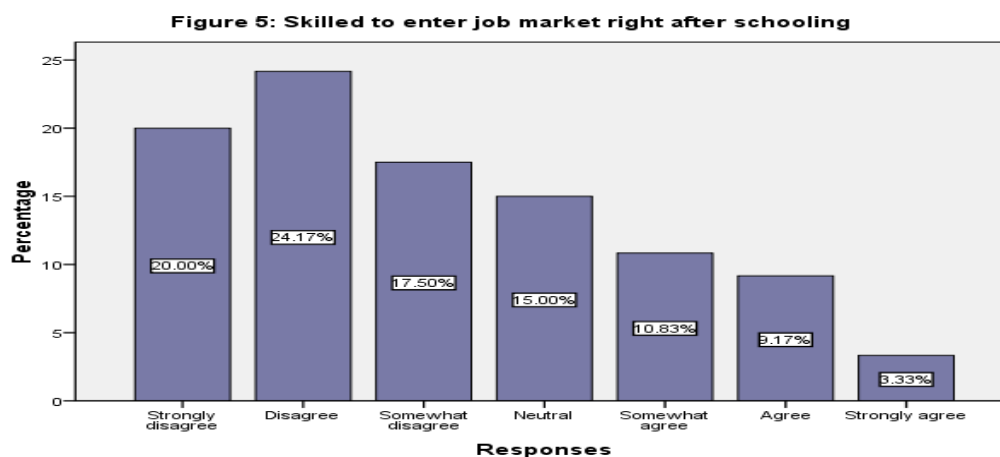
Figure 4 highlights students' career preferences after being exposed to STEM education from the school level. Overall, 87.5% of respondents aspire to pursue careers in STEM-related fields, with 16.67% preferring science, 9.17% technology, 15.83% engineering, and 15% mathematics, while 30.83% are open to any STEM-related career. Conversely, 12.5% of respondents opted for non-STEM paths. These results underscore STEM education's substantial role in shaping students' career aspirations and motivating them toward STEM disciplines.



7. Early entry in job market

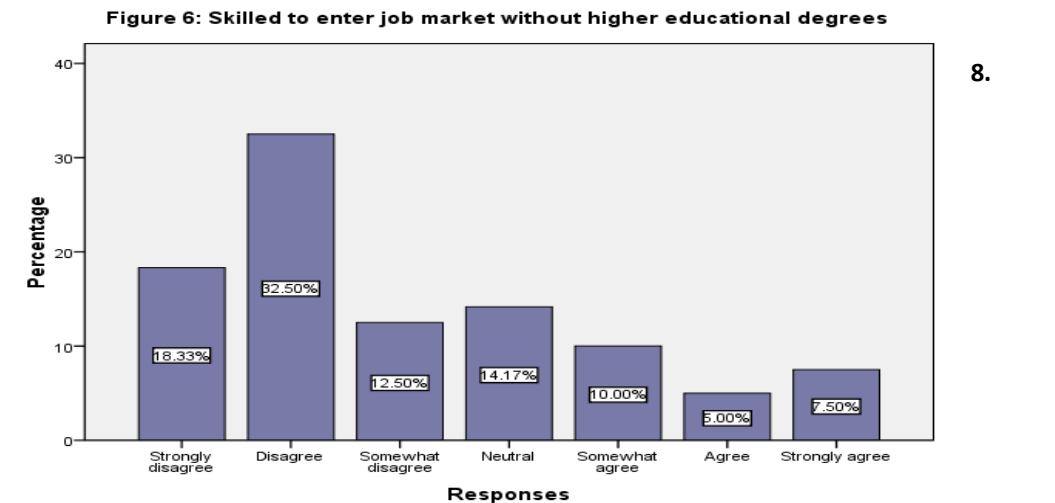
7.1 Skilled to enter job market right after schooling

Figure 5 represents students' responses to the statement that exposure to STEM education from school level has equipped them with sufficient skills to enter the job market immediately after completing schooling. Here, 24.17% disagree, 20% strongly disagree, and 17.5% somewhat disagree, while 15% are neutral. A combined 23.33% fall within the somewhat agree–strongly agree range. Overall, 61.67% of the respondents disagree in varying degrees, indicating that most students do not feel adequately skilled by school-level STEM exposure to enter the workforce directly after schooling.



7.2 Skilled to enter job market without higher educational degrees

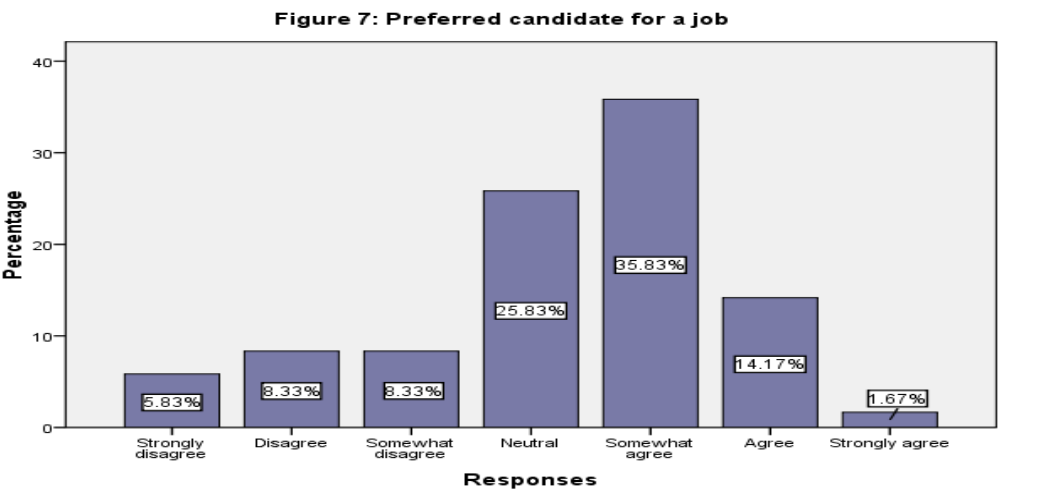
Figure 6 presents students’ views on whether exposure to STEM education enables them to enter the job market sooner, i.e., without pursuing higher educational degrees. Here, 32.5% disagree, 18.33% strongly disagree, and 12.5% somewhat agree, while 14.17% remain neutral. A combined 22.5% fall within the somewhat agree–strongly agree range. Overall, 63.33% of respondents disagree in varying degrees, suggesting that most students believe higher education remains necessary for successful employment despite early STEM exposure.



Competitive edge over non-STEM educated students

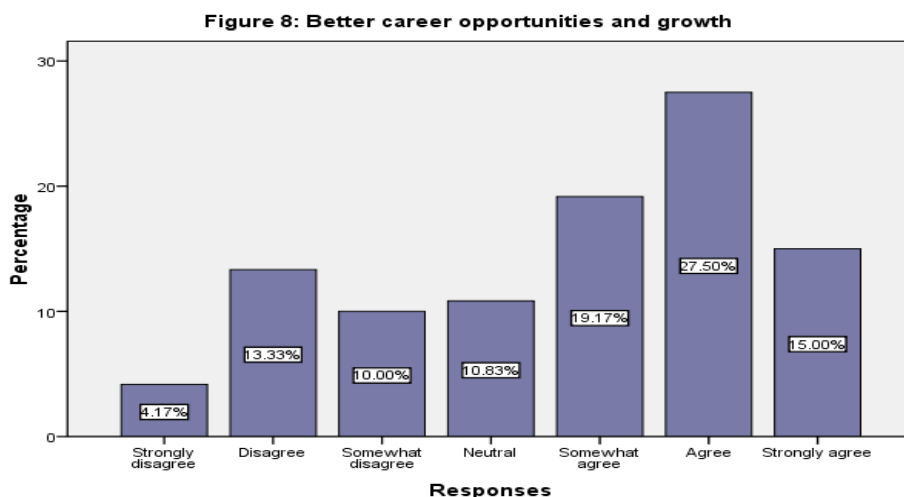
8.1 Preferred candidate for a job

Figure 7 illustrates students’ responses to the statement that STEM exposure from school level makes them preferred candidates for jobs compared to non-STEM-educated peers. Overall, 51.67% of respondents agree in varying degrees, including 35.83% who somewhat agree, 14.17% who agree, and 1.67% who strongly agree. Additionally, 25.83% remain neutral, while a combined 22.49% fall within the somewhat disagree–strongly disagree range. These findings indicate that a majority of students perceive a competitive advantage in job opportunities resulting from their exposure to STEM education.



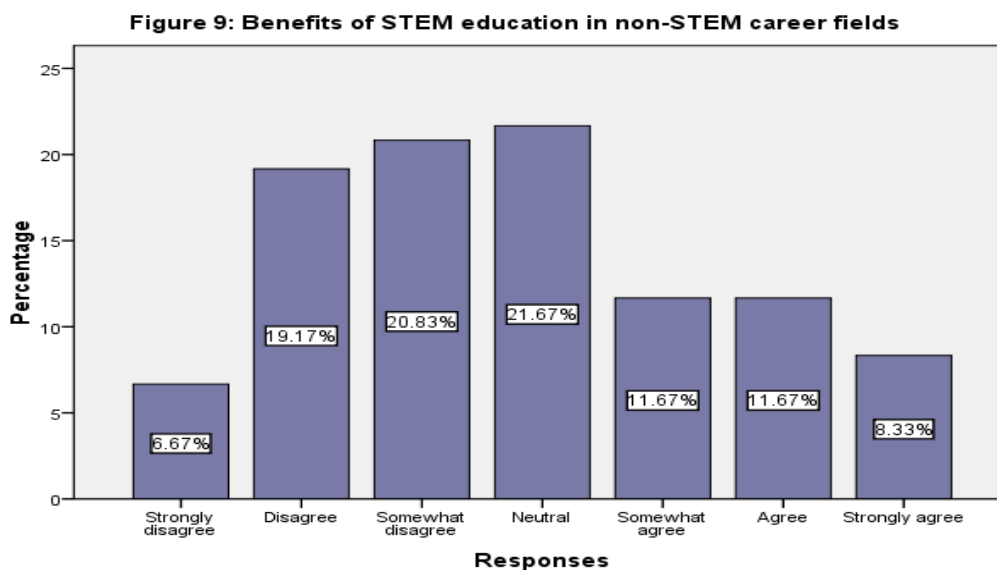
8.2 Better career opportunities and growth

Figure 8 illustrates students' perceptions regarding whether STEM education will offer better career opportunities and growth compared to non-STEM education. A total of 27.5% agree, 19.17% somewhat agree, and 15% strongly agree, while 10.83% remain neutral. A combined 27.5% fall within the somewhat disagree–strongly disagree range. Overall, 61.67% of respondents agree in varying degrees that STEM exposure will provide better career prospects and professional growth, reaffirming the perceived advantages of STEM-oriented education.



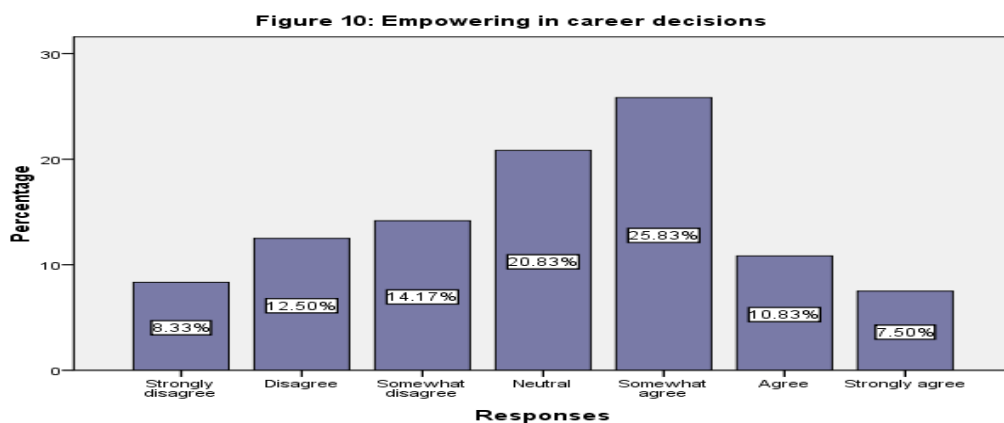
9. Benefits of STEM education in non-STEM career fields

Figure 9 shows students' perceptions of whether the advantages of STEM education can also be applied in non-STEM career fields. Here, 20.83% somewhat disagree, 19.17% disagree, and 6.67% strongly disagree, making up 46.67% who disagree in varying degrees. Meanwhile, 21.67% hold neutral opinions, 11.67% each somewhat agree and agree, and 8.33% strongly agree. Overall, most students were uncertain about the applicability of STEM competencies in non-STEM careers.



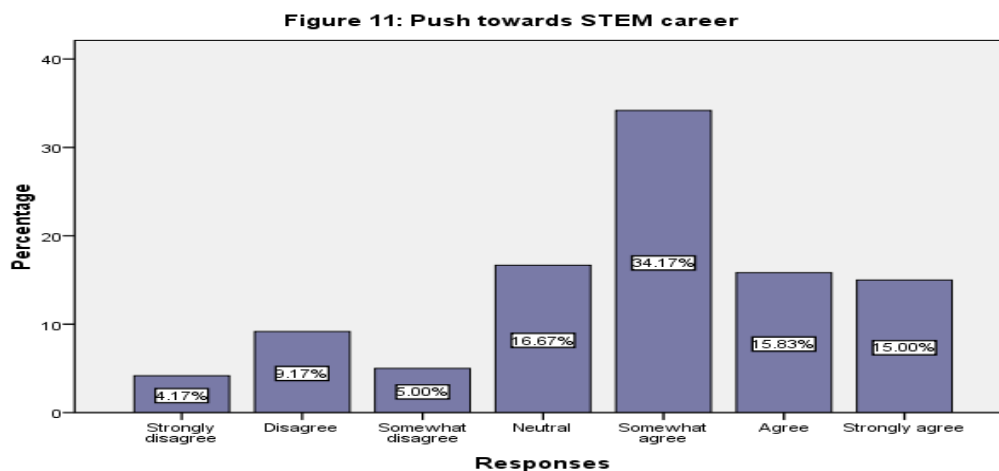
10. Empowering in career decisions

Figure 10 reflects students' responses to the statement that STEM education empowers them to make independent career decisions without external influences such as parents or peers. Here, 25.83% somewhat agree, 10.83% agree, and 7.5% strongly agree, while 20.83% are neutral. A combined 35% fall within the somewhat disagree–strongly disagree range. The responses reveal a moderate level of confidence (44.16%) among students regarding autonomy in career decision-making as a result of STEM exposure.



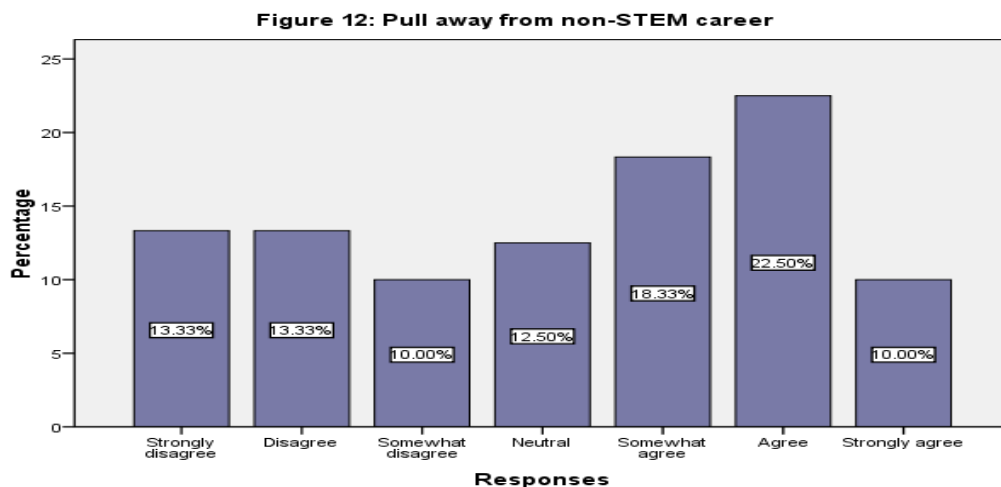
11. Push towards STEM career

Figure 11 presents students' responses to the statement that STEM education is encouraging them to explore careers in STEM fields. Here, 34.17% somewhat agree, 15.83% agree, and 15% strongly agree. Additionally, 16.67% are neutral, while a combined 18.34% fall within the somewhat disagree–strongly disagree range. Overall, 65% of respondents agree in varying degrees that STEM education motivates them toward STEM careers. This influence appears to be a **'positive push'**, aligning with earlier findings (Figures 2 and 4) showing curiosity and preference for STEM-related careers, as well as moderate degree of confidence in career decisions (Figure 10).



12. Pull away from non-STEM career

Figure 12 depicts students' responses to the statement that STEM education discourages them from exploring non-STEM careers. Here, 22.5% agree, 18.33% somewhat agree, and 10% strongly agree, while 12.5% are neutral. Additionally, 10% somewhat disagree, and 13.33% each disagree and strongly disagree. Overall, 50.83% agree in different capacities, while 36.66% disagree in varying capacities and with 12.5% being neutral, the findings suggest that while STEM education effectively motivates students toward STEM-related careers, it may simultaneously narrow their perception of viable non-STEM career options.



13. Suitable gender for STEM career fields

Figure 13 highlights students' perceptions regarding which gender is more suited for job roles in STEM fields. Here, 29.17% believe any gender is suitable, 34.17% perceive males as more suitable, and another 29.17% view females as more suitable, while 7.5% remain unsure.

Figure 13a further breaks down the findings to gender-wise responses. Among 60 male respondents, 15 believe any gender is suitable, while 21 each favour males and females. Among 60 female respondents, 20 believe any gender is suitable, 20 favour males, and 14 favour females. The findings indicate relatively balanced perceptions overall, though a slight tendency persists toward associating suitability of STEM career fields with males.

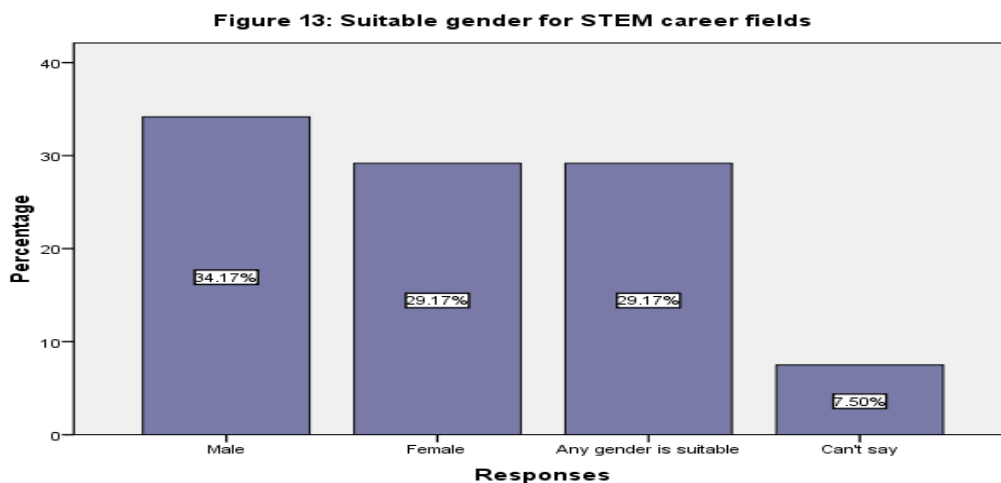
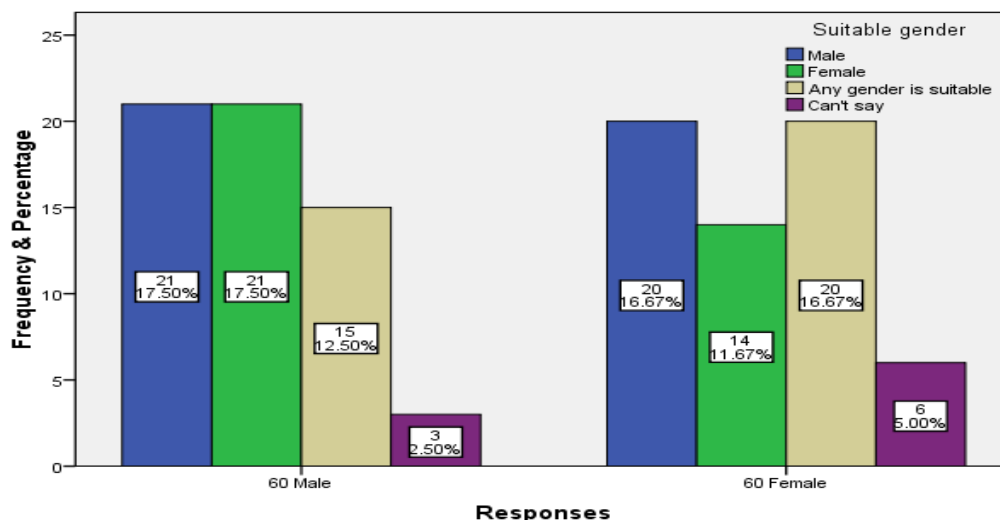


Figure 13a: Gender wise response



Discussion

The present study sought to explore students' career outlook within the context of STEM education and to understand how STEM exposure influences their interest, perceptions, and career choices. The findings collectively suggest that STEM education has a positive and multidimensional impact on students' curiosity, perception of relevance, and inclination toward STEM-related careers, while also revealing gaps in infrastructural support, readiness for employment, and gender perceptions.

A large proportion of students rated the overall quality of STEM infrastructure in their schools as average to good (Figure 1), indicating a reasonable level of satisfaction with the facilities available. However, the absence of advanced infrastructure such as Tinker Labs, as highlighted earlier, suggests that while schools provide basic resources for experiential learning, there is room for further enhancement to create more innovation-driven learning environments. Strengthening such infrastructure could encourage greater hands-on exploration and creativity. The data also reveal that STEM education effectively stimulates curiosity and motivation to pursue STEM careers. Nearly three-fourths of the students agreed that STEM education simplified the learning process and generated interest in exploring STEM careers (Figure 2). Similarly, more than half of the respondents perceived the world as being directly or indirectly connected with STEM (Figure 3).

In terms of career preferences, a substantial 87.5% of students expressed aspirations for STEM-related careers (Figure 4). Such positive orientation reflects the effectiveness of current school-level STEM initiatives in fostering STEM career awareness. However, despite this enthusiasm, students demonstrated limited confidence in their immediate employability after schooling. A majority disagreed that STEM education at school will adequately skill them to enter the job market either immediately after schooling (Figure 5) or without higher education (Figure 6). This suggests that while STEM programs succeed in sparking interest, they may not yet equip students with vocationally competitive skills. Bridging this gap would require curriculum

integration of advanced problem-solving, entrepreneurship, and technical competencies, ensuring alignment between classroom learning and workforce readiness.

Furthermore, the study found that students generally perceived a competitive edge for STEM learners over non-STEM peers. Over half agreed that STEM exposure would make them preferred candidates in the job market (Figure 7) and provide better career opportunities and growth (Figure 8). These perceptions mirror the broader societal recognition of STEM skills as drivers of innovation and employability in the global economy. Nonetheless, many students were uncertain about the transferability of STEM skills to non-STEM careers (Figure 9), indicating a somewhat narrow understanding of STEM's cross-disciplinary benefits. This underscores the need for educators and policymakers to highlight the versatility of STEM competencies in non-STEM domains. Integrating arts into the fold and further upgrading from STEM to STEAM can prove to be beneficial in this regard.

When assessing students' sense of agency, the findings indicate a moderate degree of confidence in their ability to make independent career decisions as a result of STEM exposure (Figure 10). This finding suggests that students are somewhat empowered by their exposure to STEM but still may require additional guidance and mentorship to develop a stronger sense of agency and decision-making autonomy regarding their career paths.

Though a majority of students felt that STEM education is positively encouraging them to explore careers in STEM fields (Figure 11), nearly half of the respondents expressed that STEM education discourages them from considering non-STEM careers (Figure 12). This suggests that while STEM exposure effectively directs students toward STEM-related professions, it may also inadvertently limit their perception of flexibility in career choices, indicating a need for more balanced career guidance that values both STEM and non-STEM pathways.

Gender perceptions presented an interesting dimension. While 29.17% believed that any gender is equally suitable for STEM careers, 34.17% viewed males as more suited, and an equal 29.17% favoured females (Figure 13). Gender-wise disaggregation (Figure 13a) revealed that both male and female students showed relatively balanced but slightly male-leaning perceptions of suitability. These findings reflect persistent, though diminishing, gender stereotypes in STEM, echoing observations from literary sources that gendered socialization, lack of female role models, and perceived masculine dominance may psychologically influence attitudes toward STEM careers. Encouraging gender-inclusive classroom practices, featuring female STEM professionals, and challenging media stereotypes could help mitigate such biases and promote equitable participation.

In summary, the findings affirm that STEM education at the secondary level successfully nurtures curiosity, interest, and career aspirations among students while promoting moderate self-efficacy in decision-making. However, challenges remain regarding advanced infrastructure, practical skill development, and persistent gender stereotypes. To realize the full potential of STEM education, it is essential to integrate robust infrastructural support, career guidance, and inclusive pedagogical strategies that ensure every student, regardless of gender or background can translate curiosity into capability and aspiration into achievement.

Recommendations

Strengthen and diversify STEM infrastructure: As most students rated the overall quality of STEM infrastructure between average and good and all schools lacked Tinker Labs, it is recommended that schools enhance existing facilities by establishing Tinker Labs, maker spaces,

and innovation hubs. Upgrading laboratories and introducing technology-rich environments would foster creativity, experimentation, and interdisciplinary learning that are the core elements of STEM education.

Increase emphasis on applied and employability skills: Given that a majority of students disagreed that school-level STEM education had skilled them sufficiently to enter the job market immediately after schooling, schools should integrate hands-on, project-based modules that build practical, industry-relevant competencies. Partnerships with local industries and vocational institutions could bridge the gap between theoretical exposure and workplace readiness.

Consolidate students' perceived career advantages of STEM: Since more than half the respondents felt STEM education provides better career opportunities and a competitive edge over non-STEM education, such positive perceptions should be reinforced through career guidance programs, internships, and mentorships that connect students with professionals in STEM fields. This will help translate perceived advantages into realistic career pathways.

Highlight the transferability of STEM skills: As many students were uncertain about the applicability of STEM competencies in non-STEM careers, educators should emphasize that STEM-based problem-solving, analytical, and digital skills are equally valuable across disciplines such as social sciences. Demonstrating cross-sector relevance through integrated projects could broaden students' understanding of STEM's utility.

Enhance student empowerment and career decision making: Findings revealed that only about half of the students felt empowered to make independent career choices. Schools should implement structured career counselling and decision-making workshops that nurture self-confidence and autonomy, ensuring students choose career paths aligned with personal interests rather than external pressures.

Sustain students' positive orientation toward STEM careers: With 65% of students acknowledging that STEM education motivates them toward STEM careers and 87.5% aspiring for STEM-related professions, schools should sustain this enthusiasm through continuous exposure to STEM role models, competitions, research projects, and innovation challenges. This will deepen engagement and maintain long-term interest in STEM fields.

Balance career guidance to avoid exclusion of non-STEM options: Career counselling should remain inclusive and balanced, presenting both STEM and non-STEM opportunities. This will help students make well-rounded, interest-based career choices.

Promote gender equity and inclusivity in STEM: As the study revealed slight male-leaning perceptions regarding STEM suitability, concerted efforts are required to make classrooms more gender-inclusive. Schools should highlight achievements of female STEM professionals, ensure equal participation in labs and projects, and organize awareness sessions challenging gender stereotypes. Teacher sensitization programs can further strengthen gender-balanced learning environments.

Implement continuous monitoring and policy support: In line with the overall findings, educational authorities should establish monitoring frameworks to periodically assess the quality of STEM implementation in schools. Regular evaluation, resource allocation, and data driven policy adjustments will ensure that STEM education evolves in response to students' needs and emerging career trends.

Conclusion

The present study highlights that STEM education plays a significant role in shaping students' curiosity, perceptions, and career aspirations. The findings clearly indicate that students view STEM as an engaging and relevant domain that enhances their understanding of the world and motivates them to explore STEM-related careers. Most students rated their school's STEM infrastructure as average to good, reflecting general satisfaction with the existing facilities. However, the absence of advanced spaces such as Tinker Labs points to the need for further strengthening of infrastructure to support deeper hands-on learning and innovation.

Although a large proportion of students expressed strong interest in pursuing STEM careers, their confidence in being immediately employable after schooling remains limited. Many students felt that while STEM exposure simplifies learning and builds career interest, it does not yet provide sufficient practical or job-ready skills. This suggests a gap between theoretical exposure and workplace preparedness, underscoring the need for increased emphasis on applied and industry-relevant competencies. Students also perceived STEM education as offering better opportunities and a competitive edge, yet many were unsure about the transferability of STEM skills to non-STEM fields, indicating a narrow understanding of its broader applicability.

The results further reveal a moderate level of student empowerment in terms of career decision making. While STEM exposure encourages exploration of STEM pathways, nearly half of the respondents felt it discourages consideration of non-STEM career options. This suggests the importance of balanced and inclusive career guidance to ensure students feel free to pursue diverse interests. Gender perceptions also reflected persistent stereotypes, with opinions divided regarding which gender is more suited for STEM careers, reaffirming the need for gender-inclusive practices and representation.

In conclusion, the study demonstrates that STEM education effectively nurtures interest, curiosity, and aspirations among secondary school students. However, to maximize its impact, it is essential to enhance infrastructure, integrate practical skill development, strengthen career counselling, and promote gender equity. Implementing these improvements, as reflected in the recommendations, will better support students in translating their STEM exposure into informed, confident, and well-rounded career choices.

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