

Education and Human Capital Formation in Emerging India: Integrating Skill Development and the Panchkosh Framework under NEP 2020

Srijan Anant^{1*}, Anubhav Vishwakarma², Smita Dikshit³, Piyush Gupta⁴,
Akansha Tandon⁵

¹Assistant Professor, Department of Commerce and Business Administration, University of Allahabad, Uttar Pradesh, India Email- srijan.monirba@allduniv.ac.in

²Assistant Professor, Department of Commerce and Business Administration, University of Allahabad, Uttar Pradesh, India Email- anubhav.monirba@allduniv.ac.in

³Assistant Professor, School of Innovation & Management, Erba Global Institute of Medical Technology, Andhra Pradesh MedTech Zone, India Email- smita2314@gmail.com

⁴Assistant Professor, Department of Commerce and Business Administration, University of Allahabad, Uttar Pradesh, India Email- piyush.foc@allduniv.ac.in

⁵Assistant Professor, Department of Business Management, School of Management, Gautam Buddha University, Uttar Pradesh, India Email- akanshatandon2320@gmail.com

*Corresponding Author

HOW TO CITE:

Srijan Anant, Anubhav Vishwakarma, Smita Dikshit, Piyush Gupta, Akansha Tandon (2026). Education and Human Capital Formation in Emerging India: Integrating Skill Development and the Panchkosh Framework under NEP 2020. International Journal of Special Education, 41(2), 727-749

ABSTRACT:

Education and skill development is a central issue in augmenting the productivity and employability in the emerging economies like India and human capital formation is a key determinant of the economic growth and development in such economies. The National Education Policy (NEP) 2020 is a broad-based educational policy to overhaul the education system in India with a focus on multidisciplinary learning, flexibility of curriculum, competency-based education, and skill-based education in accordance with global standards. The policy is aimed at building up the human capital by linking education with the needs of the labour market, encouraging innovation, inclusiveness and lifelong learning. This study aims at assessing the impact of education and skill development in the framework of NEP 2020 on human capital formation with a focus on the regional divide in North Indian perspective.

The methodology employed in the study is Systematic Literature Review (SLR) following the PRISMA 2020 framework, aimed at systematically identifying, screening, evaluating and synthesizing peer-reviewed studies in the period 2020–2026. The Panchkosh framework of Indian philosophy, which is a holistic model of human development, is also explored. The Panchkosh framework, which is derived from the Upanishad Taittiriya, is complementary to NEP 2020, which focuses on human capital going beyond employability to human development, by highlighting the aspects of physical growth, emotional development, intellectual development, ethical development, and overall personal development.

The results show that NEP 2020 makes a great impact in the formation of human capital by competency-based education,

COPYRIGHT STATEMENT:

Copyright: © 2026 Authors.

Open access publication under the
terms and conditions
of the Creative Commons Attribution
(CC BY)
license (<http://creativecommons.org/licenses/by/4.0/>).

vocational training, Digital Learning and Internationalisation in Higher education. The review, however, shows that some regional gaps remain across North India, such as Uttar Pradesh, Delhi, Haryana, Punjab, Himachal Pradesh, Uttarakhand, Chandigarh, and Jammu & Kashmir, where variation in the infrastructure of education, connectivity, institutional capacity, and policy implementation is still affecting the effective implementation of NEP 2020. The research brings together 50 peer-reviewed studies and finds that, though NEP 2020 has transformative potential, its long-term success would require equitable implementation across regions, better digital infrastructure, and the embedding of the concept of Panchkosh in order to ensure a more holistic human capital formation.

Keywords: Human Capital Formation, National Education Policy (NEP) 2020; Skill Development Employability, North India, Panchkosh Framework, Economic Growth.

1. INTRODUCTION

Human capital formation is the development of human resources, i.e., development of knowledge, skills, competencies and capabilities of individuals through education and training for improving productivity, employability and economic growth. Human capital is a key pillar of sustainable development, innovation, and competitiveness in emerging markets like India (Khan et al. 2025). According to Becker (1964) and Schultz (1961), investment in education increases the productivity of the workforce and therefore its contribution to long-term economic development, which is the Human Capital Theory. India's young population could reap a huge demographic dividend, but only if the country's education and skill development systems are of high quality. Although the access and enrolment in educational institutions have improved, issues like unemployment among graduates, skill mismatches and regional disparities persist, hindering human capital formation (Jain et al., 2025).

The National Education Policy (NEP), 2020, is a milestone reform aimed at revolutionizing the education system in India by promoting multidisciplinary education, competency-based education, vocational education, digital education and flexible curriculum. The policy fosters accessibility, equity, quality, and knowledge for

life by introducing measures like the Academic Bank of Credits, multiple entry–exit points, and internationalisation of higher education, connecting education to the labour market and meeting international standards (Biswal & Sasikala, 2026; Kalkar et al., 2024). The objectives of NEP 2020 are to enhance the skills of the labor force, foster innovation, promote entrepreneurship, and bridge the gap between academic and industry needs, embedding these goals within formal education. NEP 2020 seeks to augment both the skills of the workforce and innovation while giving a boost to entrepreneurship; it also aims to bring in a convergence between academic education and industry needs. (Sharma & Kumar, 2024).

The holistic education is a remarkable aspect of NEP 2020, closely resembling the Panchkosh philosophy of Indian education. The five Panchkoshs are based on the Taittiriya Upanishad and represents human development in five interconnected spheres namely Annamaya (physical well-being), Pranamaya (vitality and emotional resilience), Manomaya (mental and emotional development), Vijnanamaya (intellectual growth), and Anandamaya (ethical and spiritual development). These dimensions build upon NEP 2020 by encouraging the holistic growth of the human capital of the students, which is not just about employability but about a balanced growth of physical, intellectual,

emotional and ethical dimensions. The incorporation of the Panchkosh framework with modern education is a culturally relevant model for the development of competent citizens with innovative and social personality.

The implementation of the NEP 2020 is still in a state of fragmentation in North India even in Uttar Pradesh, Delhi, Haryana, Punjab, Himachal Pradesh, Uttarakhand, Chandigarh, Jammu & Kashmir. The implementation of the education policy is still influenced by the educational infrastructure, connectivity to the digital world, availability of teachers and their capacity of the institutions, which still has regional disparities, especially in rural and geographically remote areas (Raj, 2024; Kalita, 2024). When comparing educational infrastructure in urban centres with rural districts in North India, a few districts do have some considerable challenges in implementation, although the North Indian urban centres show a relatively strong educational infrastructure.

Despite the vast amount of literature on NEP 2020, there is still not enough systematic research that considers education, skill building, human capital development and Panchkosh in the context of North India. Hence, this research work is going to perform Systematic Literature Review (SLR) of the role of education and skill development under NEP 2020 in the strengthening of human capital formation as per the Panchkosh framework of Indian philosophy especially in North India.

2. RESEARCH OBJECTIVES

The research objectives of the study are as follows:

- To understand the concept and importance of human capital formation for India.
- To evaluate the role of education and skill development under NEP 2020 in enhancing human capital formation through the Panchkosh framework with special reference to regional disparities in North India.

3. METHODOLOGY

The methodological framework of the present study is as follows:

3.1 Research Design

The present study uses Systematic Literature Review (SLR) methodology to analyze the impact of education and skill development under the National Education Policy (NEP) 2020 on human capital development in India with a focus on North India. A systematic literature review (SLR) is a systematic and transparent research method that aims to find, assess and collate the existing knowledge of a topic. SLR is different from literature reviews in that it is a structured approach to the research process, involving minimal researcher bias and enhancing the reliability and validity of the findings.

The use of a SLR approach is suitable for this study, as the policy reform of NEP 2020 is a relatively recent one, and increasing numbers of literature have begun to examine the implications of this policy reform for education, skill development, employability, and workforce readiness. The research is a systematic review and synthesis of relevant studies to gain comprehensive understanding of contribution of educational reforms in the process of human capital formation and economic development under NEP 2020. Moreover, the SLR approach allows themes to be identified, policy outcomes to be traced, challenges in implementation to be identified and regional disparities on the effectiveness of the policy to be identified.

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework is used to ensure methodological rigor. PRISMA facilitates the identification, screening, selection and reporting of relevant studies in a standardized way, thus enhancing transparency and reproducibility. In the field of educational policy research, the use of PRISMA is especially helpful as it allows researchers to rapidly evaluate a vast amount of literature in an orderly fashion, while ensuring consistency in the process of selecting studies and evaluating them.

3.2 PRISMA Framework

The PRISMA framework was used to guide the selection of studies in four phases: Identification, Screening, Eligibility, and Inclusion. Only relevant and quality studies were included in the final review through these stages.

Identification

Identification phase comprised of detailed search of various academic databases for related studies on human capital formation, education reforms, skill development, employability and NEP 2020. The research objectives were used to develop search terms and combinations of search terms. The search process was limited to the period 2020-2026, which matched the time frame of introduction of the NEP 2020. In this phase, all potentially relevant studies were gathered and added to a database for further examination.

Screening

After identification, the duplicate records from various databases were deleted. The remaining studies were reviewed by their title and abstract to see if they fit the research topic. Research which was clearly not related to NEP 2020, human capital formation, educational reforms, or skill development in India was not included. This stage allowed the number of articles that needed to be assessed in detail to be reduced and still included potentially relevant articles for further evaluation.

Eligibility

The eligibility stage was a detailed reading of the selected studies, and included a full text examination of the studies. The articles were screened by the set inclusion and exclusion criteria. Special emphasis was given to the purpose of the study, methodology, geographical aspect and relevance to education and skill development of the NEP 2020. This stage resulted in the exclusion of studies that did not have empirical evidence, were not peer-reviewed

or did not directly contribute to the research objectives.

Inclusion

The last step was to identify studies that met all of the inclusion criteria. The final sample for the systematic review were these studies, which were analysed thematically in detail. The articles attached herewith gave evidence about educational reforms, vocational training, employability outcomes, preparedness of the labour market and implementation hurdles in the regions in relation to NEP 2020. The final selection allowed for a review of credible, relevant and high-quality scholarly literature.

3.3 Search Strategy

The search strategy employed was a deep search in order to find the necessary literature in a systematic manner. This was achieved by using multiple internationally recognised academic databases to ensure that there were a wide range of peer reviewed studies. The following databases were chosen:

- Scopus
- Web of Science
- Google Scholar
- ERIC (Education Resources Information Center)
- JSTOR

These databases were selected for their wide coverage of educational policy, human capital development, workforce studies and social science research. By using more than one database, publication bias was minimized and more studies of interest from a variety of academic viewpoints were captured.

The search used combinations of keywords and Boolean operators like “AND” and “OR” to get more precise search. The main keywords and other keywords that were found in the search are listed below:

Main Keywords	Alternative Keywords
Human Capital Formation	Human Resource Development
NEP 2020	National Education Policy
Skill Development	Vocational Education
Employability	Workforce Readiness
North India	Regional Education Disparities

Examples of search strings included:

- “NEP 2020” AND “Human Capital Formation”
- “National Education Policy” AND “Skill Development”
- “Employability” AND “Vocational Education” AND “India”
- “NEP 2020” AND “North India”
- “Education Reform” AND “Workforce Readiness”

The search strategy aimed to include studies relating to the outcomes of recent educational reforms on skills acquisition and employability and human capital development in the Indian context.

3.4 Inclusion Criteria

Inclusion criteria were defined in advance, to ensure consistency and relevance in the screening process. The studies selected were based on these criteria, since they directly addressed the research objectives.

Table 1: Inclusion Criteria

Criteria	Inclusion
Publication Period	2020–2026
Language	English
Study Type	Peer-reviewed journal articles
Geographical Focus	India
Research Theme	Education, Skill Development, Employability, NEP 2020, Human Capital Formation

Source: Author’s Compilation

The selected time frame was considered as NEP 2020 that was launched in 2020 and the focused time frame was studies published after the implementation of NEP 2020. Only peer reviewed journal articles were used in the review, which provided high quality academic evidence. In addition, by concentrating the work of the review on studies carried out in India, it was

possible to retain the review in the context of national policy and research goals.

3.5 Exclusion Criteria

Several exclusion criteria were applied in the screening and eligibility phases in order to maintain the quality and relevance of the review.

Table 2: Exclusion Criteria

Criteria	Exclusion
Language	Non-English publications
Publication Type	Conference papers and abstracts
Source Type	Newspapers and magazine articles
Data Quality	Duplicate studies
Publication Period	Studies published before 2020

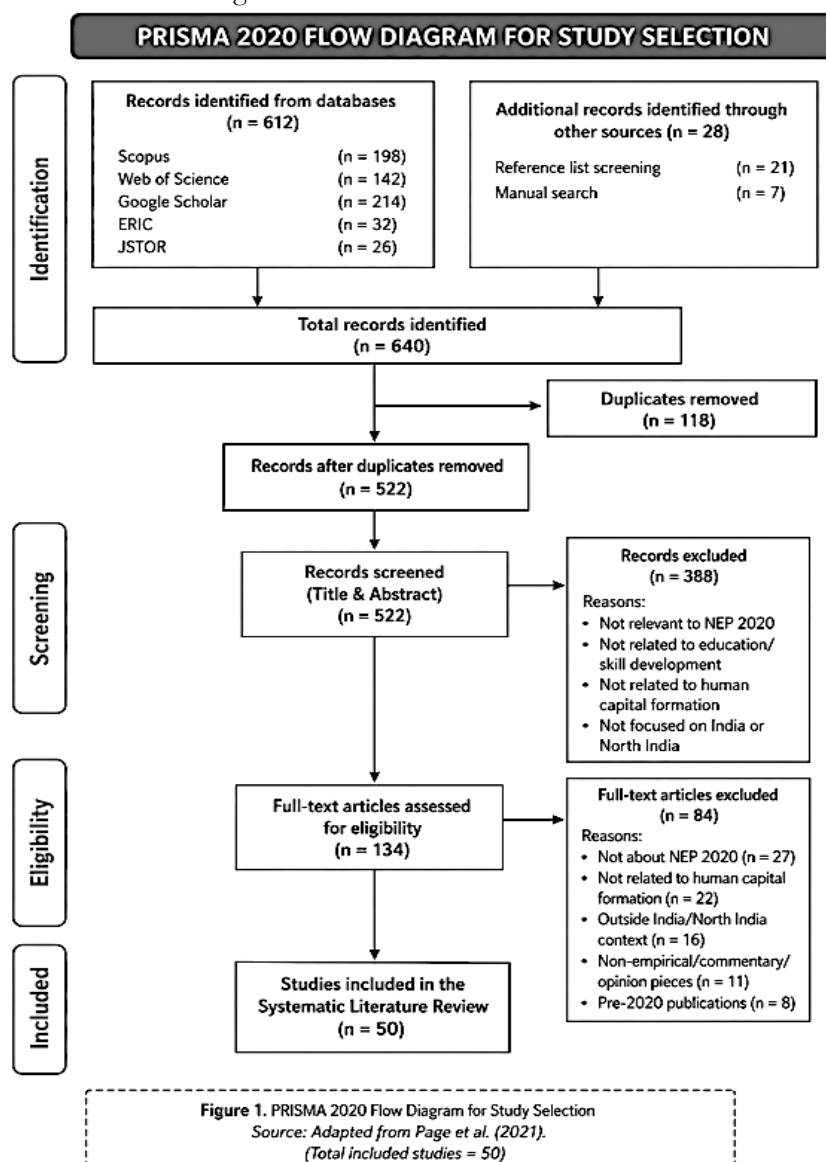
Source: Author’s Compilation

These exclusions helped to discard academic papers which were either not rigorous or lacked adequate methodological details or were not specifically connected with the implementation time of NEP 2020. This also eliminated the overrepresentation of findings from the same study.

3.6 Study Selection Process

The study selection process followed the PRISMA 2020 guidelines to ensure a transparent and systematic review of the literature. An initial search of the selected electronic databases (Scopus, Web of Science, Google Scholar, ERIC, and JSTOR) identified 612 records. An additional 28 records were retrieved through manual

searches of reference lists and other relevant sources, resulting in a total of 640 records. After removing 118 duplicate records, 522 unique studies remained for title and abstract screening. Following the application of the predefined inclusion and exclusion criteria, 134 full-text articles were assessed for eligibility. Of these, 84 studies were excluded because they did not meet the eligibility criteria, including lack of relevance to NEP 2020, human capital formation, or the Indian context, as well as publications predating 2020. Consequently, 50 peer-reviewed studies were included in the final qualitative synthesis of this systematic literature review as seen in PRISMA Flow summary in Fig.1.



Source: Author's Compilation

3.7 Data Extraction Process

After selection of the studies, data was systematically extracted from each included article on a standardised data extraction form. Study characteristics and findings were uniformly recorded in the extraction process. The data that has been extracted were arranged thematically in relation to the research objectives. Themes discussed were human capital development, educational reforms in the framework of NEP 2020, development of skills and employability,

readiness of the workforce, and regional disparity in North India.

The thematic organization allowed for the comparison of the examined studies and the establishment of common patterns, problems and opportunities. The synthesized findings guided the literature review and discussion chapter which led to scientific conclusions on the success of NEP 2020 in developing human capital and addressing educational inequalities in the region in India.

Table 3: Summary of Included Studies

Author(s)	Year	Study Aim	Methodology	Sample/Context	Key Findings	Relevance to Present Study
Becker	1964	Develop Human Capital Theory	Theoretical	Education and labour economics	Education is an investment that improves productivity and earnings.	Provides theoretical foundation for human capital formation.
Schultz	1961	Explain investment in human capital	Conceptual	National economic development	Education contributes significantly to economic growth and workforce productivity.	Supports the concept of human capital formation.
Romer	1990	Explain Endogenous Growth Theory	Theoretical	Knowledge economy	Knowledge, innovation and education drive long-term economic growth.	Supports the relationship between education and economic growth.
Sen	1999	Develop Capability Approach	Conceptual	Human development	Education expands individuals' capabilities and opportunities.	Explains inclusive education and human development under NEP 2020.
Sharma & Kumar	2024	Examine HRD strategies under NEP 2020	Qualitative Review	Indian educational institutions	Competency-based learning improves employability and workforce readiness.	Supports education–employability relationship.

Biswal & Sasikala	2026	Evaluate vocational education under NEP 2020	Policy Review	India	Vocational education enhances employability and practical skills.	Supports skill development objective.
Kalkar et al.	2024	Examine internationalisation under NEP 2020	Literature Review	Indian Higher Education	Global partnerships improve educational quality and competitiveness.	Supports global human capital development.
Raj	2024	Study inclusive higher education	Policy Analysis	India	Regional and social inequalities continue despite policy reforms.	Supports regional disparities theme.
Kalita	2024	Analyse NEP 2020 implementation	Analytical Study	India	Infrastructure, governance and funding remain implementation challenges.	Supports challenges in North India.
Sivaraman et al.	2026	Systematic review of NEP implementation	Systematic Literature Review	India	NEP strengthens skills but implementation varies across states.	Supports overall findings.
OECD	2023	Analyse global education indicators	Statistical Report	OECD countries	Skills improve productivity and economic competitiveness.	Supports employability and workforce readiness.
UNESCO	2023	Global education monitoring	International Report	Global	Digital education is essential for inclusive learning.	Supports digital learning under NEP.

Source: Author's Compilation

The extracted information formed the basis of the thematic analysis presented in Literature Review. Studies were compared according to their objectives, methodologies, and findings to identify common patterns regarding human capital formation, educational reforms, skill development, employability, and regional disparities under NEP 2020.

4. LITERATURE REVIEW AND THEMATIC ANALYSIS

This section presents a thematic synthesis of the selected literature on human capital formation, educational reforms under NEP 2020, skill development, employability, and regional disparities in North India. The reviewed studies were grouped into five major themes corresponding to the research objectives. Table 2 provides an overview of the themes, the key studies included, and their principal findings.

Table 4: Thematic Synthesis of Included Studies

Theme	Key Studies	Main Findings
Human Capital Formation	Becker (1964); Schultz (1961); Romer (1990)	Education enhances productivity, innovation and economic growth.
Educational Reforms under NEP 2020	Kalkar et al. (2024); Biswal & Sasikala (2026)	NEP promotes multidisciplinary learning, digital education and flexibility.
Education and Skill Development	Sharma & Kumar (2024); Biswal & Sasikala (2026)	Skill development significantly improves employability and workforce readiness.
Contribution to Human Capital	Sivaraman et al. (2026); OECD (2023); World Bank (2024)	Education strengthens productivity, innovation and global competitiveness.
Regional Disparities	Raj (2024); Kalita (2024); UDISE+ (2024); NSSO (2021)	Infrastructure gaps, digital divide and governance challenges hinder implementation in North India.

Source: Author's Compilation

Theme 1: Human Capital Formation and Economic Development in India

Human capital formation is the process of acquiring knowledge, skills, competencies and health that helps improve the productivity of people and the growth of the economy. The notion became popular in the work of Theodore Schultz, and Gary Becker, who claimed that expenditures on education and training should be treated just like investments in physical capital (Bai, 2024). Schultz (1961) highlighted that education increases labour productivity and national income, and Becker (1964) showed that such investment in education can lead to long-term economic gains such as greater productivity and income.

Human capital is one of the most important ingredients in the knowledge economy in modern economies. The knowledge economy is more than just the traditional factors of production, it depends on intellectual resources, innovation, technological progress and information processing (Hamed et al., 2024). With India moving towards a technology driven and service-oriented economy, the role of education and skill development has become a lot more pronounced in improving human capital. High educational

levels enhance the ability of individuals to be gainfully employed, as well as boost entrepreneurship and economic competitiveness and foster innovation capacity. India has one of the highest youth population demography in the world. The term 'demographic dividend' is used to describe the economic advantage of having a large number of working-age people compared to dependants (Kaur et al., 2022).

But this dividend is dependent on access to good education and skills. Failure to provide sufficient educational and vocational opportunities will make a large youth population a liability in employment and underemployment. Raju & B. Sai Chintan (2025) shows that human capital development is, however, one of the main factors that continue to shape India's economic revolution. The idea of improving learning outcomes, acquiring skills and entering the labour market through education is a main focus in national development policies and programs. This has led to the formulation of NEP 2020 which aims to enhance human capital by comprehensive education reforms in alignment with the labour market needs. The main goal of the policy is to build a knowledge society and promote critical thinking, creativity, innovation

and lifelong learning. The literature points to a link between consistent investments in human capital and increases in productivity, economic growth and technological change resilience. For this reason, education and skill development are increasingly considered to be effective means of sustaining development and improving global competitiveness (Bethencourt & Perera-Tallo, 2024).

Theme 2: Educational Reforms under NEP 2020

National Education Policy (NEP) 2020 is one of the most important educational reforms since 1986. The Policy aims at developing an equitable, flexible, multidisciplinary and world-competitive education system. It aims to create a thriving knowledge society in India and to ensure access, quality, affordability and accountability at every level of education. Multidisciplinary education is one of the prominent changes in NEP 2020 (Farooqi et al., 2025). The policy breaks down the fixed subject disciplines and allows students to cross subject boundaries where and when they are interested and want to pursue a career. This strategy is designed to encourage creativity, critical thinking and all-round learning. The abolition of the triple divide between Arts, Science and Commerce reflects general international trends in Higher Education and is in support of a holistic imparting of skills that are needed in the contemporary job markets (Chau et al., 2023).

The Academic Bank of Credits (ABC) is another significant reform in which students will be able to gain academic credits from various institutions and transfer them between educational programmes. The ABC system is designed to be flexible and lifelong learning and also to allow for student mobility. The policy aims to increase participation in higher education and to minimise drop-outs in learners, allowing them to progress at their own speed. There are other new features in NEP 2020 as well, including Multiple Entry and Exit System, which will enable students to enter and exit educational programmes at various points, earning certificates, diplomas, or degrees based on the credits they have achieved

(Chandramana & Kurien, 2020). This reform acknowledges multiple pathways towards learning and is flexible to students whose financial, social or personal circumstances make it difficult to attend a college or university. Another key element of NEP 2020 is digital learning. The policy encourages the use of technology within teaching, learning, assessment and administration. With the advent of the COVID-19 crisis, online learning platforms, digital materials and virtual laboratories were of great importance. Digitalisation will be expected to advance educational access, flexibility, quality and facilitate lifelong learning opportunities (Haleem et al., 2022). Kalkar et al. (2024) state that NEP 2020 further enhances Internationalization by fostering international partnerships, bilateral degree programmes, academic mobility and research collaboration. These reforms are in line with international standards and will make Indian institutions more competitive in international rankings. Likewise, Biswal and Sasikala (2026) point to the focus on vocational education and skill integration in the policy, which marks a departure from rote learning to competency-based learning aligned with the needs of the modern job market.

Theme 3: Education and Skill Development for Employability

In the Indian education system, the issue of employability has become a paramount concern. Employers often cite a lack of skills in graduates, especially in areas such as problem-solving, communication, digital literacy and practical skills, despite the rise in enrolments. Skill development has thus emerged as a key goal of educational reform (Pal et al., 2023). One of the key focus areas of NEP 2020 is the importance of vocational education as a tool to enhance employability and the readiness of the workforce. The policy aims to mainstream vocational education and give learners practical exposure through internships, apprenticeship and/or experiential learning activities. In 2025, the policy looked forward to significant engagement with vocational education in the educational system. Competency Based Learning (CBL) is another

significant aspect of NEP 2020 (Ghosh & Deb, 2026).

Competency-based learning differs from traditional education in that it is more geared towards acquiring practical skills, critical thinking, working in teams and solving problems. These skills are becoming more sought after in the current rapidly changing jobs market, where technological disruption and automation are taking hold (Shaweta Miglani et al., 2026). The roles of industry-academic cooperation in bridging the learning gap between the educational sector and the industry are also emphasized. Educational institutions and employers can work together to develop curricula, arrange internships, provide certifications of skills, and create employment connections. Research on the NEP implementation shows that better linkages to industry are needed to enhance the employability of graduates and preparedness of the workforce (Jagadish & Rajashekhar, 2025).

Sharma and Kumar (2024) state that NEP 2020 has introduced a paradigm shift in the educational institutions, which focuses on human resource development based on skill acquisition, innovation and employability. Their research showed that educational institutions are more and more aware of the necessity of combining the teaching of academic knowledge and skills with the acquisition of practical skills to fulfil the needs of the labour market. Empowering skill development programmes is found to not only impact employment but also enhance productivity of the workforce, entrepreneurship and economic resilience in the literature. As a result, education and skill development are closely related to other goals of human capital formation and national development (Tripathi, 2023).

Theme 4: Contribution of NEP 2020 to Human Capital Formation

The main thrust of NEP 2020 is to enhance the quality of education, skill development, fostering innovation and preparing the workforce. There are various interrelated mechanisms by which policy helps to build human capital. NEP 2020 aims to enhance productivity through better

learning outcomes and building capabilities for present-day labour markets. Nurtured workers are more productive and flexible and can make contributions to technological innovation and organizational achievement. Second, the policy promotes innovation through interdisciplinary learning, research, creativity and problem-solving. Innovation plays a key role in the economic growth of knowledge economies, and relies strongly on the quality of the human capital (Rossi et al., 2024). Third, NEP 2020 encourages entrepreneurship through experiential learning, skill-based training and vocational education. Entrepreneurship is a factor in job creation, economic diversification and regional development. Fourth, the policy works towards strengthening the competitiveness of the education system in the country by making it on par with international standards. Features such as credit transfer mechanisms, cooperation with other nations and academic mobility enhance the recognition of Indian qualifications in the international arena and enable them to become part of global knowledge networks (Chankseliani et al., 2025). Kalkar et al. (2024) revealed that NEP 2020 enhances international cooperation and also assists in the internationalisation of higher education institutions. Overall, the literature indicates that NEP 2020 possesses significant potential to enhance human capital formation through educational modernization, skill development, and global integration.

Theme 5: Panchkosh Framework and Human Capital Formation

The Panchkosh framework, derived from the Taittiriya Upanishad, conceptualises holistic human development through five interconnected dimensions: Annamaya Kosha (physical body), Pranamaya Kosha (vital life force and physiological well-being), Manomaya Kosha (mind, emotions, and psychological well-being), Vijñanamaya Kosha (intellect, wisdom, and critical thinking), and Anandamaya Kosha (bliss, self-realisation, ethical consciousness, and spiritual fulfilment) (Madhu & Atchayasree, 2025). This indigenous philosophical framework closely aligns with the holistic vision of NEP

2020, which seeks to develop learners beyond academic achievement.

Annamaya Kosha aligns with NEP 2020's emphasis on physical health, sports, vocational education, and experiential learning, recognising that physical well-being forms the foundation for effective learning and employability. Pranamaya Kosha corresponds to the policy's focus on yoga, physical fitness, health education, and overall well-being, promoting vitality and resilience among learners (Malhotra & Kaushal, 2024). Manomaya Kosha is reflected in competency-based learning, socio-emotional development, communication, creativity, collaboration, and critical thinking, which strengthen learners' cognitive and emotional capabilities. Vijnanamaya Kosha aligns with multidisciplinary education, research, innovation, flexible learning pathways, and the Academic Bank of Credits (ABC), fostering intellectual growth, lifelong learning, and global competitiveness (Malhotra & Kaushal, 2024). Finally, Anandamaya Kosha corresponds to NEP 2020's emphasis on ethical values, constitutional principles, environmental sustainability, responsible citizenship, and character development, supporting the creation of socially responsible and ethically grounded human capital. In brief, the Panchkosh framework is a strengthening of NEP 2020, as it puts a greater emphasis on physical, emotional, intellectual and ethical development of human capital beyond employability and thereby facilitates sustainable and inclusive national development.

Theme 6: Challenges and Regional Disparities in North India

Although NEP 2020 has an ambitious vision of transformation within North India, its implementation is uneven due to varying educational infrastructure, digital connectivity, capacity of institutions and governance. Although the education resources are relatively better in urban areas of Delhi and Chandigarh, there are still rural areas in Uttar Pradesh, Himachal Pradesh, Uttarakhand and Jammu & Kashmir that are lacking in digital facilities and trained teachers. Persistent gaps in ICT

infrastructure, Internet enabled classrooms, etc. is also pointed out in the Report (UDISE+ 2024-25).

The digital divide further limits equitable access to online learning. The National Sample Survey (2020–21) reported considerable differences in internet access between urban and rural households, restricting students' participation in digital education. Additionally, teacher shortages and inadequate professional training hinder the adoption of competency-based learning and multidisciplinary education promoted under NEP 2020 (Jafar et al., 2023).

Raj (2024) argues that socio-economic, geographical, caste, and gender inequalities continue to limit inclusive education despite the policy's emphasis on equity (Rangarajan et al., 2023). Similarly, Farahani, (2024) identifies governance issues, institutional constraints, and inadequate funding as key implementation barriers. Although states such as Delhi, Haryana, Punjab, Uttar Pradesh, Uttarakhand, Himachal Pradesh, Jammu & Kashmir, Chandigarh, rural–urban disparities persist. Therefore, strengthening infrastructure, expanding digital connectivity, improving teacher training, and enhancing institutional capacity are essential to ensure the equitable implementation of NEP 2020 and strengthen human capital formation in North India.

5. FINDING AND DISCUSSIONS

The results are a synthesis of the 50 peer-reviewed studies that were considered and included in the Systematic Literature Review (SLR) on education, skill development, and human capital development under the National Education Policy (NEP) 2020. The results are presented in terms of themes that were identified in the thematic analysis and related to the study's research questions. They are further interpreted based on a combination of Human Capital Theory (Becker, 1964), Endogenous Growth Theory (Romer, 1990), the Capability Approach (Sen, 1999) and the Panchkosh framework of Indian philosophy that provides a comprehensive understanding of the relationship between education, skill development, holistic human

development and economic growth. The literature reviewed invariably pointed to NEP 2020 as a paradigm shift towards competency-based education, multidisciplinary and skill-based approach which would enhance employment, innovation, productivity of human resources and human capital development. But there are also significant implementation hurdles in North India (UP, Delhi, Haryana, Punjab, Himachal Pradesh, Uttarakhand, Chandigarh and Jammu & Kashmir). The uneven distribution of educational infrastructure, digital connectivity, teacher availability, and institutional capacity persists and shapes the successful implementation of NEP 2020, especially in rural and geographically remote areas, which restricts its ability to contribute to equitable human capital development.

Finding 1: NEP 2020 Promotes Competency-Based Education

One of the most important conclusions drawn from the literature is that NEP 2020 enhances a shift from the traditional approach of 'rote learning' to competency-based education. The policy aims to foster critical thinking, problem-solving skills, creativity, communication, and analysis skills, not just about memorizing and performing well in exams (Biswal & Sasikala, 2026). The new teaching methods of multidisciplinary subjects, experiential learning, flexible curricula, and systems of the outcome-based assessment show a change in the process of teaching and learning, emphasizing the acquisition of new competencies needed for work in today's world. The policy promotes student involvement in project-based learning, group work, work experience and real-life experiences. The reforms are aimed at enhancing learning outcomes and also at helping students to adapt to the ever-changing workforce.

The Academic Bank of Credits (ABC) and Multiple Entry-Exit System are two additional features for competency development that enable learners to take on unique learning journeys. Students can acquire knowledge and skills from various institutions and educational experiences, promoting lifelong learning and flexibility. The

results of the research show that such reform is in line with international education reform which emphasizes competency acquisition and the learner-centered approach (Kalkar et al, 2024). The results indicate that competency education resolves the existing issues of low employment and skill mismatch of the graduates in India. Employers are increasingly seeking transferable skills which will allow employees to adapt to changing technologies and organisational needs. NEP 2020 focuses on fostering more skills to meet the demands of the labour market. Human Capital Theory sees competency education as an investment in productive skills that boost individual productivity and earning potential (Leoni, 2023).

Finding 2: Skill Development Improves Employability

The second key result is that skills development has a significant impact on employment and employment outcomes. Skill acquisition has been found to be one of the main aims of NEP 2020 by the reviewed studies. The policy acknowledges that qualifications are not enough to gain a job in the ever-competitive job markets. Multiple studies have shown that employers are often displeased by the mismatch between the skills graduates acquire and the skills they are needed to fulfill. Poor communication, digital literacy, teamwork, leadership and problem-solving skills are among the leading factors that have been cited to contribute to graduate unemployment and underemployment. NEP 2020 has thus introduced a thrust on skill development as a tool to prepare the workforce and increase employment opportunities. Ali's, (2024) study indicates that skill-based training, industry collaborations, and hands-on learning have been more prevalent in educational programs since the implementation of NEP 2020. The programs are designed to provide students with hands-on skills that impact their performance on the job and their chances for a career. In the same way, Biswal and Sasikala (2026) emphasize the significance of vocational and technical skills in meeting the labour market demands and minimized skill mismatch.

The use of digital technologies in education also plays its part in creating the employable learner by developing technological skills in students. Technological literacy is a must-have skill in several industries and has become a fundamental need in many fields with the development of automation, artificial intelligence and digital transformation strategies in the industries (Ng et al., 2023). The focus on digital education in NEP 2020 thus helps fostering skills that are more in demand in today's job markets. The results suggest that skill development is not just a crucial source of job creation, but also a source of increased productivity, income and economic participation. A person with relevant skills is more likely to get a job that is sustainable, make a contribution to the organization's performance, and be able to adapt to technology. The results are consistent with the Human Capital Theory Becker, 1964 that suggests that education and training constitute investments to boost the productivity and incomes of workers (Teixeira, 2014). Employability skills increase individual human capital and give better labour market results. Moreover, the results are congruent with the Capability Approach of Sen, which focuses on enhancing people's capabilities and opportunities to attain desired life outcomes. Skill development fosters employability and has an impact on the well-being of individuals and also on their economic opportunities.

Finding 3: Vocational Education Strengthens Workforce Readiness

A third major conclusion is that vocational education is an important part of the workforce readiness. In the past, it was believed that vocational education in India was not as prestigious as academic education. But NEP 2020 aims to change this mindset of the students by bringing vocational education into mainstream education and higher education system (Singh & Vembanan Gunasekaran, 2024). The reviewed studies have confirmed that vocational training plays a major role in workforce readiness as it equips learners with skills that are relevant and applicable to the job market and industry demands. NEP 2020 introduces the concept of

more exposure to vocational education, internships, apprenticeships, and experiential learning at different levels of education. The programs are designed to help make the transition from education to work smoother (Dr. Chandra Prabha Jaiswal & Akash Ranjan Panda, 2026).

Vocational education has been shown to complement and augment academic learning while bringing better technical skills, productivity and mitigating skill gaps in critical economic areas. Biswal and Sasikala (2026) state that vocational training is a pivotal tool to meet the employability issues in India and also for the economic development. Likewise, research on workforce readiness indicates that experiential learning experiences enhance graduates' confidence, flexibility and job performance. Labour market participation further enhances the preparedness of the workforce through industry-academic collaboration, where educational programmes are kept relevant to the needs of the labour market.

Cooperation between institutions and employers allows curricula to be developed, internships to be arranged, and exposure to the workplace to be provided, which helps to better prepare students for industry needs. The results further indicate that vocational education plays a role in entrepreneurship by equipping the enterprising people with specialized skills and hands-on experiences that can help them start their business ventures and become self-employed (Radhika P K, 2025). Vocational skills can be a vital means of participation in the economy and income generation in areas where there is a shortage of formal employment opportunities. Based on the endogenous growth theory, vocational education investments promote a more productive labor force and innovation, which are both key factors in economic growth. Human capital and the accumulation of knowledge are key to long-term economic growth, according to Oltulular, (2025). Vocational education thus plays an important role in the education systems' contribution to economic development and competitiveness.

Finding 4: Regional Inequalities Hinder Implementation

Although NEP 2020 aims at changing the picture, regional inequalities are always found in literature as one of the impediments to effective implementation of NEP 2020. There are wide disparities between Indian states with regard to educational infrastructure, availability of resources, institutional capacity and educational outcomes. Research shows that reforms in education often lead to a patchwork of results as a result of unequal financial resources, organizational systems, and management skills. Generally, states with higher institutional capacity and more investment in education are more likely to enact and sustain policy changes to be effective. Economically disadvantaged areas are more likely to have fewer resources to achieve policy goals, however.

Kumar, (2025) highlights that structural inequalities persist in access to quality education with those at the margins and disadvantaged areas. While NEP 2020 emphasizes on equity and inclusion, persistent socio-economic disparities have constrained the reforms' effectiveness. Poverty, lack of geographic access and social exclusion, and insufficient funding for public schools are among the factors associated with educational inequalities. The analyzed studies also indicate that the differences in teaching and learning conditions, such as teacher quality, education facilities and technological infrastructure, are one of the factors affecting unequal learning opportunities (Tochhawng, 2024). Those gaps impact students' access to supports for improvements in digital learning, competency-based learning and vocational training. The results prove that the strategies of the NEP 2020 must be region-specific, as they should tackle the regional problems and limitations.

National-level policy reforms will only have the desired effect if they are accompanied by targeted interventions that will mitigate regional inequalities. These findings can be understood in the light of the Capability Approach. It is Sen's view that development should be about

increasing the capabilities and freedoms of individuals, rather than just increasing economic resources (Terjesen, 2004).

Finding 5: North India Faces Infrastructure and Digital Challenges

Finally, the study sheds light on the regional differences in the implementation of NEP 2020 in North India Uttar Pradesh, Delhi, Haryana, Punjab, Himachal Pradesh, Uttarakhand, Chandigarh, and Jammu & Kashmir. Reviewed literature shows that the challenges of implementing competency-based education and skill development programmes are still ongoing, such as inequality in infrastructure, internet connectivity, institutional capacity, and teacher availability. Access to quality education is hampered by the provision of less classrooms, laboratories, libraries, trained teachers and technological resources in rural and geographically remote areas. Moreover, poor internet connectivity and digital infrastructure hinder the implementation of digital learning programs. Kalita (2024) points out that the governance problems, scarce resources and institutional constraints are some of the serious challenges undermining the implementation and achievement of the goals of NEP 2020 in the region.

Likewise, Raj (2024) observes that socio-economically disadvantaged and institutionally weak areas continue to have high levels of educational inequities. One of the most critical issues in north India is the digital divide. While access to technology has been a key priority for education in NEP 2020, the unequal access to the internet and digital literacy remains to be a challenge to participation in education and learning outcomes. In rural and lower income areas of the country, students have limited access to online educational materials, which can result in unequal opportunities to develop skills and receive a good education. The other issues of implementation are compounded by teacher shortages. Adopting a multidisciplinary curriculum, competency-based assessment and digital pedagogy demands lots of teacher training and professional development. But there are

challenges in hiring and keeping qualified teachers in many schools (Khan, 2025). The current results indicate that though NEP 2020 is a robust policy, it requires significant investments in infrastructure, digital connectivity, teacher training and institutional capacity building to be effective. If the underlying difficulties are not overcome, educational reforms can have differential effects among regions.

Further, the synthesis of the literature reviewed shows that North India is still grappling with operational issues in implementing NEP 2020, which stems from the educational infrastructure, digital connectivity, and institutional capacity gaps. The UDISE+ 2024–25 Report shows a significant disparity in the number of schools with internet facilities in the region (Ministry of Education, 2024). Similarly, the state of internet connectivity varies across different states and UTs, such as Delhi (5556), Haryana (18,539), Punjab (24,249), Uttar Pradesh (120,465), Uttarakhand (16,236), Himachal Pradesh (11,011), Jammu & Kashmir (11,883), and Chandigarh (207). The regional differences impact how the digital learning, competencies-based education and programs like the Academic Bank of Credits, as part of NEP 2020, are implemented. Moreover, Raj (2024) states that geographical and socio-economic disparities still exist in inclusive education and Kalita (2024) has identified governance issues, institutional capacity and resources as significant challenges for inclusive education in North India.

Overall Discussion

The synthesized findings as a whole show that NEP 2020 has a significant potential to foster

human capital creation by promoting competency-based education, skill development, vocational training and modernization of education. These changes are in line with the Human Capital Theory, which seeks to increase the productivity and employability of labour. The results also corroborate Endogenous Growth Theory where emphasis is placed on the importance of education, knowledge and innovation in economic long-term growth. The review also indicates that, however, addressing the digital divides, infrastructural gaps and persisting inequalities in the different regions of the country can ensure the success of policy implementation. The Capability Approach emphasises the need to make quality education and opportunities equally available to all persons, thus reducing the socio-economic and geographical barriers to benefit from educational reforms.

6. CONCEPTUAL FRAMEWORK

The conceptual framework highlights the linkage between the different educational reforms that were introduced as a part of the National Education Policy (NEP) 2020 and human capital in India. The framework suggests that the reforms of the NEP 2020 can improve the quality of education leading to skill development, employability, human capital formation and, in turn, economic growth. The impact of these relationships, however, is affected by the regional differences, especially in North India, where infrastructural constraints, digital disparities, and implementation issues could influence the effects of the policies as seen in Fig.2.

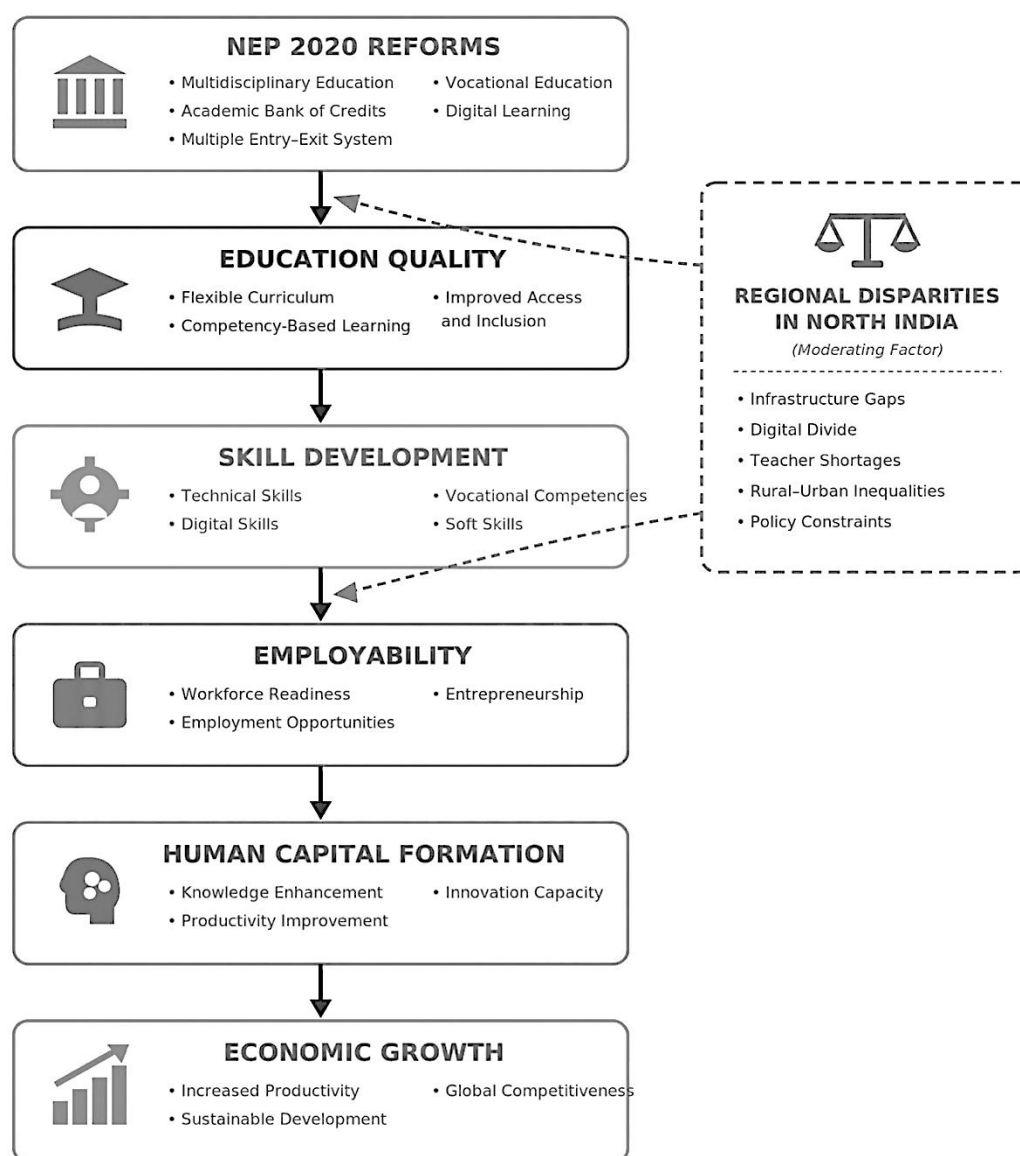


Figure 2. Conceptual Framework of NEP 2020 and Human Capital Formation in Emerging India

Source: Author's Compilation

It is based on three pillars: Human Capital Theory (1964) by Becker, Endogenous Growth Theory (1990) by Romer and the Capability Approach (1999) by Sen, which together account for the relationship between investments in education and increased skills, productivity and economic development.

7. CONCLUSION

The study aimed to explore the impact of the National Education Policy (NEP) 2020 on human capital development in India, focusing on the region of north India in terms of gaps and

difficulties faced. The systematic literature search took place using PRISMA guidelines, with a focus on recent scholarly literature from 2020 to 2026. The findings reflect that the NEP 2020 is a paradigm shift in education, moving towards modernizing the education system to meet the needs of a knowledge economy in India. The policy has made a major contribution by highlighting competency-based education and encouraging a focus on critical thinking, problem solving, creativity and the application of knowledge to learning over rote memorisation. The changes are likely to improve the quality of

education and equip pupils better for the modern world of work. The review also found that skill development is a significant factor when it comes to enhancing employability and workforce readiness. Vocational education, digital learning, experiential learning and industry engagement are integrated in order to connect knowledge with skills. The initiatives take special note of the problem of graduate unemployment and skill mismatch in the Indian labour market, which remains a critical issue. The results also show the significant role played by NEP 2020 in human capital development. The policy will boost India's ability to effectively leverage the demographic dividend by encouraging innovation, entrepreneurship, productivity improvement and world competitiveness. The reforms are aligned with Human Capital theory: education and skills should be viewed as productive investments which bring economic returns at the individual and national level. Although progress has been made, it is noted that there are some issues in implementation. Regional disparities are also a big challenge, especially in the northern states of Uttar Pradesh, Delhi, Haryana, Punjab, Himachal Pradesh, Uttarakhand, Chandigarh, and Jammu & Kashmir. The impacts of infrastructure gaps, digital gaps, teacher shortages and governance issues persist in constraining the effectiveness of policy implementation. The unevenness of these differences indicate that educational reforms may lead to differential effects unless targeted interventions are implemented to enhance the education in the disadvantaged regions. All the research aims of the study were successfully achieved. It explored the concept and importance of human capital formation in India, looked at the major reforms under NEP 2020, the impact of education and skill development on employability, the contribution of NEP 2020 to human capital development, and the regional disparities that impact implementation in North India. Theoretically, the study also adds to the literature by incorporating the concepts of the Human Capital Theory, Endogenous Growth Theory and the Capability Approach in the present times of educational reforms. The results show that investments in education and skill

development can boost productivity, innovation and economic growth and can also enrich the capability and opportunities of individuals. In practice, the study offers recommendations for policy makers, educational institutions, and educational stakeholders in educational planning and workforce development. The results highlight the need to enhance implementation mechanisms, strengthen educational infrastructure and ensure equitable access to good quality education in regions. Unlike conventional human capital theories that primarily focus on productivity and economic returns, the Panchkosh framework broadens the understanding of human capital by integrating physical, emotional, intellectual, ethical, and spiritual development. The findings suggest that NEP 2020 aligns closely with this indigenous philosophical perspective, making holistic education a key driver of sustainable human capital formation in Emerging India.

8. RECOMMENDATIONS

8.1 Policy Recommendations

- Strengthen Digital Infrastructure in North India: Governments must focus on the investments in broadband connectivity, digital devices, smart classrooms, and technology platforms in the field of education, especially in rural and under-served areas of North India. Better digital infrastructure will enable technology to help achieve the goal of educational equality and the use of technology to facilitate learning.
- Increase Vocational Training Centres: Provide more opportunities for vocational education and training by creating more vocational education and training centres. The centres should have industry-relevant skills in a regional economic priority and labour market needs.
- Improve Teacher Training Programmes: Professional development programmes should be implemented with a multidisciplinary perspective, digital pedagogical skills and competency base learning in order to equip teachers with the

skills needed to work in a competency-based learning environment. Ongoing training will be useful for implementing the NEP 2020 reforms.

- Enhance State-Level Monitoring and Evaluation: States should create effective monitoring systems to evaluate policy implementation, learning outcomes and institutional performance. Performance will be monitored routinely, helping to guide decisions and make them more accountable.
- Integrate the Panchkosh Framework into Human Capital Formation: Government of India and educational institutions need to mainstream the Panchkosh framework in education policies and curricula for the process of holistic human capital formation. The physical well-being (Annamaya), emotional resilience (Pranamaya), mental development (Vijnanamaya), intellectual capabilities (Manomaya), and ethical values (Anandamaya) should be developed through educational programmes and this will produce socially responsible and innovative citizens.
- Strengthen the Integration of the Panchkosh Framework within NEP 2020: The Panchkosh framework needs to be explicitly included in the implementation of NEP 2020 under Indian Knowledge Systems (IKS), value-based learning, yoga, ethics, experiential learning and multidisciplinary teaching. Teacher training programmes should also train teachers to adopt Panchkosh inspired pedagogies, in order for the holistic education vision of the policy to make a meaningful contribution towards sustainable human capital development.

8.2 Educational Recommendations

- Strengthen Industry-Academia Partnerships: There is a need to close the gap between education and industry so that courses are more relevant to the labour market. Partnerships may be used with curriculum design, internships,

apprenticeships and employment opportunities.

- Expand Internship and Experiential Learning Opportunities: Internship programs should be offered at universities and colleges where students learn first-hand of working in the workplace. Workforce readiness and employability benefits from experiential learning.
- Introduce Skill Certification Systems: National skill certification frameworks should be established to certify skills learnt in the formal education system, vocational training and the workplace. These certifications can lead to greater labour mobility and employer confidence.

8.3 Regional Recommendations

- Targeted Regional Interventions across North India: The Government of India should provide specific funding and intervention programmes on a state-wise basis in Uttar Pradesh, Delhi, Haryana, Punjab, Himachal Pradesh, Uttarakhand, Chandigarh and Jammu & Kashmir, with a view to enhancing the capacity of institutions, teachers, digital connectivity and education infrastructure. Focus should be on rural and geographically remote districts where lack of digital resources, qualified teachers and vocational education knowledge is impacting the implementation of NEP 2020.
- Rural Digital Literacy Programmes: Special efforts should be made to enhance digital literacy of students, teachers and the communities in rural areas. These programmes can contribute to narrowing the digital gap and to the use of technologies in education.
- Infrastructure Development in Rural Schools: Investment should be in enhancing school infrastructure, laboratory facilities, libraries, internet connectivity, learning resources in order to generate conducive

learning environment throughout North India.

9. LIMITATIONS OF THE STUDY

The study offers valuable insights on the role of education and skill development in the context of NEP 2020; however, some limitations should be noted. The research is purely secondary, meaning that it is based solely on published academic literature. Consequently, the conclusions are subject to the limitations of available and quality studies. Secondly, NEP 2020 is a recent policy change. As a result, few long-term empirical studies exist to assess its real effects on human capital accumulation, job market performance, and economic performance. Thirdly, the study is more inclined towards literature pertaining to India and North India. Findings may be more or less generalizable due to differences in implementation across states and/or the lack of region-specific evidence. Finally, methodological, sample and analytical variations between the studies reviewed could affect the consistency of results.

10. FUTURE RESEARCH DIRECTIONS

There are several areas for future research regarding education, skill development and human capital formation in the light of NEP 2020 in India, as follows:

- Empirical Studies on NEP Outcomes: Further empirical studies are required in the

future, as primary investigations, to evaluate the effect of NEP 2020 on the quality of education, skill acquisition, employability and productivity of the working force.

- Comparative Analysis Across Indian Regions: Comparative studies based on variations in the implementation of policy in north, south, east and west India could give insights into the practice and variations from region to region.
- Longitudinal Studies on Employability Impact: Long-term follow-up studies on students and alumni over several years will help to assess the long-term impacts of NEP 2020 on job market participation, income, career growth and job readiness.
- Evaluation of Digital Education Initiatives: Further research is needed to evaluate the impact of digital learning platforms and technology-driven learning on closing the learning gap and enhancing learning outcomes.
- Sector-Specific Skill Development Research: Research on the skills needed by specific industries and the training and development of the workforce could aid in aligning educational reforms to changing economic demands and technological advances.

REFERENCES

- Aithal, P. S., & Aithal, S. (2020a). Analysis of the Indian National Education Policy 2020 towards Achieving its Objectives. *International Journal of Management, Technology, and Social Sciences*, 19–41. <https://doi.org/10.47992/ijmts.2581.6012.0102>
- Aithal, P. S., & Aithal, S. (2020b). Implementation Strategies of Higher Education Part of National Education Policy 2020 of India towards Achieving its Objectives. *International Journal of Management, Technology, and Social Sciences*, 5(2), 283–326. <https://doi.org/10.47992/ijmts.2581.6012.0119>
- Ali, S. (2024, May 1). Enhancing Skill-Based Education in India: A Comprehensive Analysis within the Framework of the National Education Policy 2020. https://www.researchgate.net/publication/403610940_Enhancing_Skill-Based_Education_in_India_A_Comprehensive_Analysis_within_the_Framework_of_the_National_Education_Policy_2020
- Bai, Y. (2024). A Study of the Impact of Human Capital Investment on Organizational Performance. *Highlights in Business Economics and Management*, 32, 210–216. <https://doi.org/10.54097/qd8pxd61>

- Becker, G.S. (1964) *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. Chicago: University of Chicago Press. Available at: <https://press.uchicago.edu/ucp/books/book/chicago/H/bo3684031.html> (Accessed: 29 June 2026).
- Benoit, K., Noël, T., Essohanam, P., & Porto, B. (2022). Analysis of Human Capital Effects: A Systematic Review of the Literature. *International Journal of Human Resource Studies*, 12(4), 17. <https://doi.org/10.5296/ijhrs.v12i4.20506>
- Bethencourt, C., & Perera-Tallo, F. (2024). Public sector and human capital: on the mechanics of economic development. *Journal of Economics*, 143(1), 1–66. <https://doi.org/10.1007/s00712-024-00868-9>
- Biswal, S., & V. Sasikala, Dr. (2026). Vocational Education in the Context of NEP 2020: Policy Recommendations and Opportunities. *INTERNATIONAL JOURNAL of CREATIVE RESEARCH THOUGHTS*, 14(1). <https://doi.org/10.56975/ijcrt.v14i1.299861>
- Chandramana, S. B., & Kurien, A. (2020). Impact of New Education Policy 2020 on Higher Education. *Figshare.com*. <https://doi.org/10.6084/m9.figshare.13332413.v1>
- Chankseliani, M., Kwak, J., Hanley, N., Akkad, A., Crisostomo, M., & Wang, Z. (2025). International student mobility and poverty reduction: A qualitative study of the mechanisms of systemic change. *World Development*, 195, 107116. <https://doi.org/10.1016/j.worlddev.2025.107116>
- Chau, H., Bana, S., Bouvier, B., & Frank, M. R. (2023). Connecting higher education to workplace activities and earnings. *PLOS ONE*, 18(3), e0282323–e0282323. <https://doi.org/10.1371/journal.pone.0282323>
- Dr. Chandra Prabha Jaiswal, & Akash Ranjan Panda. (2026). VOCATIONAL EDUCATION AND SKILL DEVELOPMENT UNDER NEP 2020: OPPORTUNITIES, CHALLENGES, AND POLICY IMPLICATIONS. *EPRA International Journal of Multidisciplinary Research (IJMR)*, 638. <https://doi.org/10.36713/epra26647>
- Dr. Sunu Kalita. (2024). AN ANALYTICAL UNDERSTANDING OF NEP 2020 WITH PROSPECTS AND CHALLENGE. *International Education and Research Journal*, 10(4). <https://doi.org/10.21276/ierj24873341089559>
- Eduadmin. (2025, January 21). UDISE+ 2023–24: Insights and Perspectives by Prof. Arun C. Mehta Education for All in India. <https://educationforallinindia.com/udise-2023-24-insights-and-perspectives-by-prof-arun-c-mehta/>
- Farahani, F. M. (2024). Challenges and Barriers to Implementing Collaborative Governance for Linking Education and Industry. 6(3), 164–173. <https://doi.org/10.61838/msesj.6.3.16>
- Farooqi, M. R., Akhtar, M. A., & Sultana, T. (2025). Effectiveness of the National Education Policy (NEP) 2020 in Enhancing Higher Education in India. *International Journal of Science and Management Studies (IJSMS)*, 8(4), 203–210. <https://doi.org/10.51386/25815946/ijms-v8i4p117>
- Ghosh, J., & Deb, P. (2026, February 1). Vocational Education Scenario of India : Reassessment in the Framework of NEP 2020. https://www.researchgate.net/publication/403517044_Vocational_Education_Scenario_of_India_Reassessment_in_the_Framework_of_NEP_2020
- Gitesh Kalita. (2024). NEP 2020 policies for inclusive education. *The Scientific Temper*, 15(spl-2), 63–72. <https://doi.org/10.58414/scientifictemper.2024.15.spl-2.12>
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3(1), 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>
- Hamed, A. F., Salman, A. S., Muzaffer Yassen, Dhafer Asim Aldabagh, & Volodymyr Savenko. (2024). Human Capital Development in Knowledge Economies. *Journal of Ecohumanism*, 3(5), 798–816. <https://doi.org/10.62754/joe.v3i5.3938>
- Jafar, K., Kripa Ananthpur, & Venkatachalam, L. (2023). Digital divide and access to online education: New evidence from tamil nadu, india. *Journal of Social and Economic Development*, 25. <https://doi.org/10.1007/s40847-023-00236-1>

-
- Jagadish, B., & Rajashekhar, D. (2025). ENHANCING EMPLOYABILITY THROUGH NEP 2020 INTEGRATING SKILL DEVELOPMENT IN INDIA'S EDUCATION SYSTEM. *Int. J. Adv. Res.*, 13(12), 3107–4928. <https://doi.org/10.21474/IJAR01/22404>
- Jain, N., Goli, S., & Jana, A. (2025). Population age structural transition, demographic dividend and economic growth in India. *Humanities and Social Sciences Communications*, 12(1). <https://doi.org/10.1057/s41599-025-05042-0>
- Kaur, U., Hasija, A. M., Chaudhary, S., & Chandna, V. (2022). Demographic Dividend: An Asset for India. *RESEARCH REVIEW International Journal of Multidisciplinary*, 7(1), 134–143. <https://doi.org/10.31305/rrijm.2022.v07.i01.020>
- Khan, F., & Fauzee, M. S. O. (2025). A Review Study on the Strategic Importance of Human Capital Through Education in Driving Socio-Economic Development. *Innovare Journal of Education*, 20–25. <https://doi.org/10.22159/ijoe.2025v13i3.53951>
- Khan, R. (2025). Digital Pedagogy in Practice: Insights from Teacher Training Workshops. *Current Perspectives in Educational Research*, 8(2), 57–70. <https://doi.org/10.46303/cuper.2025.6>
- Kumar, P. (2025, September 28). Understanding NEP 2020: Equity and Inclusiveness in Higher Education Title : Understanding NEP 2020: Equity and Inclusiveness in Higher Education. https://www.researchgate.net/publication/395934609_Understanding_NEP_2020_Equity_and_Inclusiveness_in_Higher_Education_Title_Understanding_NEP_2020_Equity_and_Inclusiveness_in_Higher_Education
- Leoni, S. (2023). A Historical Review of the Role of Education: From Human Capital to Human Capabilities. *Review of Political Economy*, 37(1), 1–18. <https://doi.org/10.1080/09538259.2023.2245233>
- Madhu, B., & Atchayasree, K. (2025). Panchakosha Concept as per NEP 2020 and Change in the perspective in Mathematics Education. *Research Review Journal of Indian Knowledge Systems*, 2(2), 239–248. <https://doi.org/10.31305/rrjiks.2025.v2.n2.026>
- Malhotra, D., & Kaushal, R. (2024). PANCH KOSH IN PRACTICE: REALIZING NEP 2020'S VISION OF HOLISTIC AND EXPERIENTIAL LEARNING. *ShodhKosh: Journal of Visual and Performing Arts*, 5(6). <https://doi.org/10.29121/shodhkosh.v5.i6.2024.6446>
- Ministry of Education. (2024). Unified District Information System for Education Plus (UDISE+) 2023–24. Government of India. https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/udise_report_existing_23_24.pdf
- Ng, D. T. K., Leung, J. K. L., Su, J., Ng, R. C. W., & Chu, S. K. W. (2023). Teachers' AI digital competencies and twenty-first century skills in the post-pandemic world. *Educational Technology Research and Development*, 71(1), 137–161. <https://doi.org/10.1007/s11423-023-10203-6>
- Oltulular, S. (2025). Human Capital Dynamics Are the Key to Economic Growth: Source of Value of the Future. *Economies*, 13(8), 235. <https://doi.org/10.3390/economies13080235>
- Pal, S., Bhattacharya, S., & Sarkar, D. P. (2023). Employability Issues in the Context of Indian Higher Education. *University of North Carolina News Letter*, 61(11), 21–39. https://www.researchgate.net/publication/369198563_Employability_Issues_in_the_Context_of_Indian_Higher_Education
- Parag Kalkar. (2024). Role of NEP 2020 in Encouraging Global Partnerships in Indian Higher Education. *Journal of Informatics Education and Research*, 4(3). <https://doi.org/10.52783/jier.v4i3.1828>
- Radhika P K. (2025). Entrepreneurship and Skill Development: The Vision for India's Youth in NEP 2020. *International Research Journal on Advanced Engineering and Management (IRJAEM)*, 2(12), 3467–3473. <https://doi.org/10.47392/irjaem.2024.0512>
- Raj, S. B. (2024). Pathways to inclusive higher education: learnings from India's National Education Policy 2020. *Nordic Journal of Studies in Educational Policy*, 1–11. <https://doi.org/10.1080/20020317.2024.2382376>
- Raju, R. G., & B. Sai Chintan. (2025, August 22). Human Capital and Economic Growth India's Experience. <https://doi.org/10.4018/979-8-3373-3456-1.ch010>
-

- Rangarajan, R., Sharma, U., & Grové, C. (2023). Inclusion and equity in India's new National Education Policy (NEP): an analysis using the Context Led Model of Education Quality. *International Journal of Inclusive Education*, 1–21. <https://doi.org/10.1080/13603116.2023.2295907>
- Romer, P.M. (1990) 'Endogenous technological change', *Journal of Political Economy*, 98(5), pp. S71–S102. Available at: <https://www.jstor.org/stable/2937632>.
- Rossi, L., Pasca, M. G., Arcese, G., & Stefano Poponi. (2024). Innovation, researcher and creativity: A complex indicator for territorial evaluation capacity. *Technology in Society*, 77, 102545–102545. <https://doi.org/10.1016/j.techsoc.2024.102545>
- Schultz, T.W. (1961) 'Investment in human capital', *The American Economic Review*, 51(1), pp. 1–17. Available at: <https://www.jstor.org/stable/1818907>
- Sharma, V. and Kumar, M. (2024) 'The impact of NEP 2020 on human resource development strategies in Indian educational institutions', *EELET Journal*, 14(4). ISSN: 2323-5233.
- Shaweta Miglani, Verma, V., Agrawal, M., Singh, J., & Patel, J. (2026). Competency-based learning as a framework for holistic development of 21st century learners in school education. *Discover Education*, 5(1). <https://doi.org/10.1007/s44217-026-01268-5>
- Singh, K. J., & Vembanan Gunasekaran. (2024). Vocational Education In India: A Policy Analysis And Case Study Of NEP 2020 Implementation. *Deleted Journal*, 2(1), 76–85. <https://doi.org/10.30598/baileofisipvol2iss1pp76-85>
- Sivaraman, S., Parmar, N., Madhu, S., Sable, R., & Patel, B. (2026). Evaluating the impact of NEP 2020 on higher education reforms and skill development in India: a systematic literature review. *Frontiers in Education*, 11. <https://doi.org/10.3389/feduc.2026.1683208>
- Subhashree Biswal, & Sasikala, D. V. (2025). NEP 2020: IMPLICATIONS OF 21ST CENTURY SKILLS FOR TEACHERS AND STUDENTS. 4(1), 33–47. https://www.researchgate.net/publication/400975799_NEP_2020_IMPLICATIONS_OF_21ST_CENTURY_SKILLS_FOR_TEACHERS_AND_STUDENTS
- Teixeira, P. N. (2014). Gary Becker's early work on human capital – collaborations and distinctiveness. *IZA Journal of Labor Economics*, 3(1). <https://doi.org/10.1186/s40172-014-0012-2>
- Terjesen, S. (2004). Amartya Sen's Development as Freedom. *ResearchGate*; unknown. https://www.researchgate.net/publication/27466009_Amartya_Sen
- Tochhawng, D. L. (2024). Educational Inequality And Social Justice: Analyzing Barriers To Access In Marginalized Communities. *African Journal of Biomedical Research*, 655–662. <https://doi.org/10.53555/ajbr.v27i3s.2086>
- Tripathi, A. (2023, September 2). Empowering Futures: A Study of Vocational Training Programs and Their Impact on Career Development. <https://doi.org/10.13140/RG.2.2.18531.53280>

ACKNOWLEDGEMENT

The present research paper forms part of the research project entitled “*Assessing the Implementation and Effectiveness of the National Education Policy (NEP) 2020: A Comprehensive Study of North India with Insights from the Panchkosh Framework for Holistic Student Development*” (F. No. 40/2nd LSS/2025-1439-EDU/SCD). The authors sincerely acknowledge the Indian Council of Social Science Research (ICSSR), New Delhi, for sponsoring the project.

AUTHOR DECLARATION

The authors declare that this study is original, has not been published or submitted elsewhere and that all sources have been appropriately acknowledged. The authors further declare that they have no financial, personal, professional, or institutional conflicts of interest related to this work.