



INFRASTRUCTURAL AND TECHNOLOGICAL READINESS IN TEACHER EDUCATION INSTITUTIONS: AN ANALYSIS IN THE CONTEXT OF NEP 2020

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Abstract

In this paper a brief historical context of teacher education in India is also discussed which is characterized by a rich diverse tradition of learning and teaching which dates back centuries. As we all know that the National Education Policy (NEP) 2020 is a comprehensive framework for education reform in India. The National Education Policy (NEP) 2020 envisions transformative changes in the Indian education system, emphasizing the integration of technology and infrastructure in teacher education institutions (TEIs).

This study investigates the infrastructural and technological readiness of TEIs in Hyderabad in the context of NEP 2020. Data were collected from a sample of 18 Teacher Educational institutions across Hyderabad covering 80 teacher educators including Administrators with respect to gender from Government as well as Private Teacher Education Institutions. Results revealed that 12% reported insufficient readiness, 74% reported adequate readiness, and 14% reported comprehensive readiness. The study also found no significant difference in perceptions of readiness based on gender; however, a significant difference was observed with respect to the type of institution. These findings highlight the need for targeted interventions to bridge gaps in readiness and align Teacher Education Institutions with NEP 2020 objectives.

Keywords: *NEP 2020, teacher education institutions, infrastructural readiness, technological readiness, gender perception, institutional differences*

Introduction:

During Ancient period, education was primarily imparted in Gurukuls (traditional Indian schools) by gurus (teachers) to their shishyas (students). The education system was

rooted in oral tradition, and students learned through the memorization of sacred texts such as the Vedas, Upanishads, and other philosophical and literary works.

In Medieval period , educational institutions, including madrasas and monastic centers, became centers of learning. Persian and Arabic texts, along with traditional Indian knowledge, were taught in madrasas, while Buddhist and Hindu monasteries played a crucial role in preserving and disseminating knowledge.

The British colonial period had a significant impact on Indian education. The British introduced a Western-style education system that included teacher training institutions like Normal Schools and Teacher Training Colleges. This period saw a shift from traditional gurukul-based education to formal, centralized, and standardized teacher education.

After gaining independence in 1947, India underwent significant educational reforms. The Kothari Commission (1964-66) and the National Policy on Education (NPE) 1968 laid the foundation for modern teacher education institutions. The NPE 1986 emphasized the need for strengthening teacher education programs, and several Regional Institutes of Education (RIEs) were established to train teachers. The government introduced the Bachelor of Education (B.Ed.) program as a standard teacher education qualification.

In Contemporary Period Teacher education in India continues to evolve. The National Curriculum Framework (NCF) 2005 and the National Education Policy (NEP) 2020 have brought about changes in teacher education programs, emphasizing a more holistic and multidisciplinary approach. The NEP 2020, in particular, focuses on enhancing the quality of teacher training, continuous professional development, and the use of technology in teacher education.

Throughout India's history, teacher education has been influenced by cultural, social, and political factors. The role of teachers and the methods of instruction have evolved from the gurukul system to modern teacher education institutions. The challenges and opportunities facing teacher education in India today include addressing the demand for qualified teachers, improving the quality of teacher training, adapting to technological advancements, and aligning teacher education with the changing needs of the education system as outlined in NEP 2020.

The NEP 2020 emphasizes the transformation of teacher education to prepare educators and pre service teachers for a technology-driven and learner-centric environment. This requires strong infrastructural and technological readiness within Teacher Education Institutions to implement policy recommendations effectively. The present study evaluates the current state

of readiness in Teacher Education Institutions of Hyderabad and examines differences in perceptions based on demographic and institutional characteristics.

Review of Related Literature:

Tambat, Pravin (2024) in his write up on Transforming Teacher Education in India: A Critical Review of NEP 2020's Vision, Challenges, and Pathways concludes that Effective policy support and resource allocation can create a resilient, globally competitive education system that supports educators and prepares students for the demands of a rapidly changing world.

Nagpal, P (2023) throws light on Implementing the National Education Policy 2020: Challenges and Solutions in School Education in India and expressed his views that despite the policy's promising goals, the implementation of NEP 2020 in school is facing various challenges, such as shortage of trained teachers, inadequate infrastructure, lack of funds, and resistance to change.

Malakar, S (2022) focused on National Education Policy 2020: Reform's in Schools and Higher Education: An Analytical Study and concluded by saying that NEP 2020 made a full attempt to design a policy that considers diverse viewpoints, global best practices in education, field experiences and stakeholder's feedback. The mission is aspirational but the implementation roadmap will decide if this will truly foster an all- inclusive education that makes learners industry and future ready.

Sharma and Deepanshi (2021) in their write up on National Education Policy-2020: A Key towards success of Higher Education concluded that NEP 2020 has a positive impact on Higher Education. NEP 2020 will help in online education. This policy has come with some initiatives comprising pilot studies and installation of virtual labs. It makes the education system holistic, multidisciplinary and flexible. The study exposes that the new education policy focuses on skills and blended learning. Also it recognizes the need to fulfil the gap between educations through technology. It can also be observed that the new education policy has few drawbacks, which must be taken into consideration in order to have smooth working under NEP 2020.

Srinivas and Naresh (2021) reflected on National Education Policy-2020: An Uncertain Future for Indian Higher Education and opined that Policy's effectiveness depends on its implementation. Such implementation will require multiple initiatives and actions, which will have to be taken by multiple bodies in a synchronized and National Education Policy 2020 in a systematic manner.

Raj, Pravin T, & Kathiresan, S (2021) highlighted on Technological Interventions Needed in New Education Policy for Evolution and Transformation and expressed their views that in

forthcoming years more digital interventions become part of our day to day life ,extensive use of it in teaching, training and learning process will offer solutions to many of our problems, felt and unfelt needs of our student and youth population .So to achieve our Sustainable Development Goals (SDGs) with New Education Policy (NEP) as a part, suitable modifications must be made in the policy to include new and advanced technological interventions in the future.

Singh,Ajay kumar (2020) highlighted on Gaps in the Quality of Teacher Training Institutions and NEP-2020: Some Reflections and the author suggested regarding the improvement of teacher training in terms of teacher quality, infrastructure, transparency and better access and management using of ICT and mandatory accreditation will help to fill the existing gaps and in achieving the desired objectives set in the policy.

Babu,Bachha (2020) shared his thoughts on NEP-2020: Transformational Change for Multidisciplinary and Holistic Education System by investing in Teacher Education and continuing professional development of teachers; revamping colleges and universities to foster excellence; cultivating research; extensive use of technology and online education. Prioritization will be important in ensuring optimal sequencing of policy points, and that the most critical and urgent actions are taken up first, thereby enabling a strong base. Comprehensiveness in implementation will be key; as this policy is interconnected and holistic, only a full-fledged implementation, and not a piecemeal one, will ensure that the desired objectives are achieved.

Panigrahi,Manas Ranjan (2020) throws light on National Education Policy 2020: A Reflection towards Technology Enabled Learning concluded by saying overall, NEP 2020 is giving opportunity to reflect on building on the old world and bridge this with the newly emerging world geared toward more equity, community and collaboration, and a world that is technologically prepared for networking, openness and open practices.

Kumar,Nagendra (2020) in his conceptual paper highlighted the Role of Teacher Education Institution in strengthening the School Education in the Light of New Education Policy-2020 and concluded that we need to find the fault in our training system; therefore TEIs should re-think their role in making country's future and play their role according to the need because foundation education is the result of TEIs Training. Here government is required to not issue the license to Private TEIs and fulfil the all needed physical infrastructure and Human Resources in existing TEIs for the betterment of whole educational scenario. With the help of education we can achieve India's old pride and can establish India again as vishwa-guru.

Rationale of the Study:

The National Education Policy 2020 marks a paradigm shift in India's education sector, emphasizing the importance of technology integration and infrastructural improvement in teacher education institutions. As teacher educators play a pivotal role in shaping future generations, Pre-service training environments must be equipped to meet contemporary educational demands. However, the readiness of TEIs to implement these policy directives remains an important concern to be addressed. The rationale for this study lies in addressing this gap by evaluating the current infrastructural and technological preparedness of TEIs. Understanding these readiness levels is essential for identifying systemic weaknesses and formulating plan of action to enhance the quality of teacher education. This study also aims to contribute to the discourse on equitable resource distribution and effective policy implementation by examining readiness disparities across different institution types and stakeholder perceptions.

Objectives of the study:

1. To assess the levels of infrastructural and technological readiness among teacher education institutions as perceived by teacher educators in relation to NEP 2020
2. To examine the differences in teacher educators' perceptions of infrastructural and technological readiness in teacher education institutions based on their gender.
3. To examine the differences in teacher educators' perceptions of infrastructural and technological readiness in teacher education institutions based on the type of institution (Government vs. Private).

Hypotheses of the study:

- ❖ There is no significant difference in teacher educators' perceptions of infrastructural and technological readiness in teacher education institutions based on their gender.
- ❖ There is no significant difference in teacher educators' perceptions of infrastructural and technological readiness in teacher education institutions based on the type of institution (Government vs. Private).

Research Method:

The study is descriptive in nature and aims at assessing teacher educators' perceptions on the infrastructural and technological readiness of TEIs in Hyderabad in the context of NEP 2020. The study employed a quantitative research design using a structured survey to gather data. The survey was carried out on a selected sample of the teacher educators on the basis of demographic variables such as type of institution and gender. The obtained data was then

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analysed using appropriate statistical techniques such as mean, standard deviation, and t-test. The results were interpreted to test the hypotheses of the study.

Sampling:

The target population of the study consisted of teacher educators from Government as well as Private Teacher Education Institutions of Hyderabad. Stratified random sampling technique was used to select the sample to ensure representation of teacher educators from government and private TEIs. 6 government and 12 private TEIs were randomly chosen. A total of 80 teacher educators (32 teacher educators were from government institutions, and 48 were from private institutions) were selected from the chosen institutions. The sample was categorized in two strata based on two demographic factors: gender (Male and Female) and type of institution (Government and Private).

Research Tool:

The researchers prepared a structured research tool to measure perceptions on infrastructural and technological readiness of Teacher Education Institutions (TEIs) in the context of NEP 2020. The tool focused on evaluating various aspects of infrastructural and technological readiness and survey included items aligned with the objectives of the study.

The tool was validated for content by taking subject experts views and reliability was taken care before administration. Experts in teacher education, ICT and research methodology reviewed the items for clarity and relevance with the objectives of the study. Minor modifications were made based on their suggestions. The tool's reliability was assessed using Cronbach's Alpha, which yielded a value of 0.91, indicating high internal consistency and reliability.

Statistical Techniques:

To analyze the data, the following statistical techniques were employed:

1. **Descriptive statistics** (mean and standard deviation) to assess the levels of infrastructural and technological readiness as perceived by teacher educators.
2. **Independent samples t-test** to examine differences in perceptions based on gender and type of institution (Government vs. Private).

Results:

Objective-wise analysis and interpretation of the results is as follows:

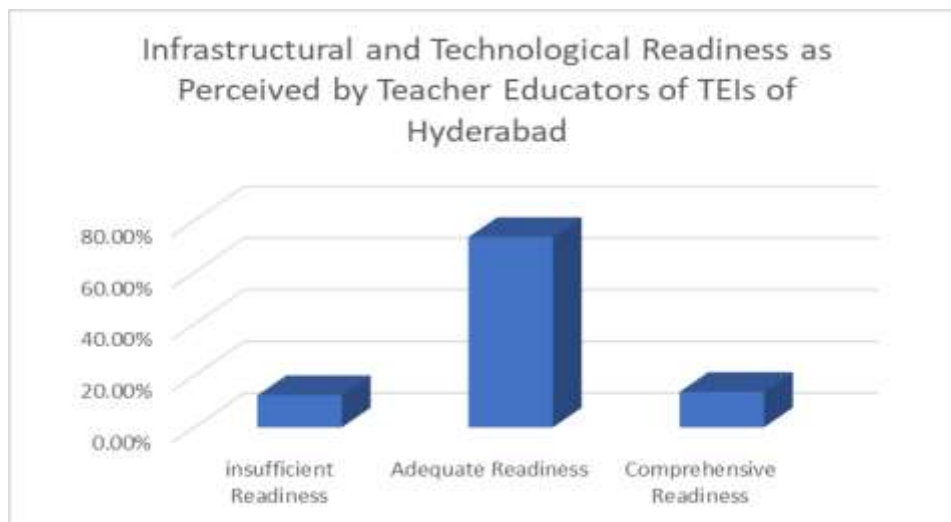
Objective 1: *To assess the levels of infrastructural and technological readiness among teacher education institutions as perceived by teacher educators in relation to NEP 2020*

Table 1. Levels of Infrastructural and Technological Readiness Perceived by Teacher Educators of TEIs in Hyderabad

Level	frequency	Percentage
Insufficient	10	12.5
Adequate	59	73.8
Comprehensive	11	13.8
Total	80	100.0

As shown in Table 1, 73.8% (approximately 74%) of teacher educators perceived that the infrastructural and technological readiness of teacher education institutions as adequate. This suggests that there is still room for improvement to achieve comprehensive readiness. 12.5% (approximately 12%) of teacher educators believe that the readiness is insufficient, indicating that some institutions may lack essential infrastructural and technological resources. 13.8% (approximately 14%) of teacher educators rated that the readiness as comprehensive, highlighting a small proportion of institutions that have excelled in integrating infrastructural and technological advancements.

Figure 1 shows Bar graph on Infrastructural and technological Readiness as perceived by Teacher Educators of TEIs of Hyderabad



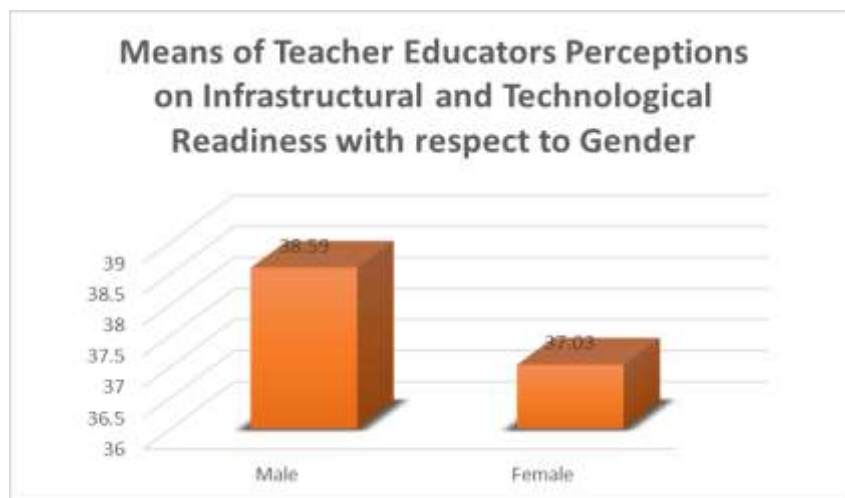
Objective 2: To examine the differences in teacher educators' perceptions of infrastructural and technological readiness in teacher education institutions based on their gender

Hypothesis: There is no significant difference in teacher educators' perceptions of infrastructural and technological readiness in teacher education institutions based on their gender.

Table 2. Gender-Based Differences in Teacher educators' Perceptions of Infrastructural and Technological Readiness

Variable	Gender	N	M	SD	t-value	p-value
Infrastructural and technological Readiness	Male	51	38.59	5.39	1.075	.286
	Female	29	37.03	7.46		

Table 2 shows that male teacher educators perceived infrastructural and technological readiness of their institutions to be slightly higher compared to female teacher educators. But the difference was not statistically significant, as the p-value (.286) was found to be greater than the significance level of .05 hence, the null hypothesis was accepted and it was concluded that there is no significant difference in the perceptions of infrastructural and technological readiness between male and female teacher educators.

Figure 2 shows Bar graph of Means of Teacher Educators Perceptions on Infrastructural and technological Readiness with respect to Gender

Objective 3: *To examine the differences in teacher educators' perceptions of infrastructural and technological readiness in teacher education institutions based on the type of institution (Government vs. Private)*

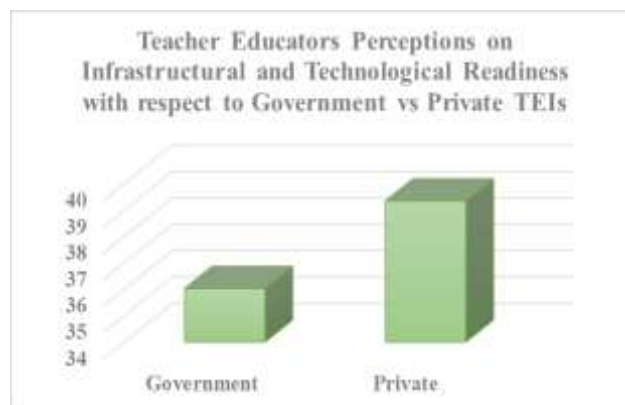
Hypothesis: There is no significant difference in teacher educators' perceptions of infrastructural and technological readiness in teacher education institutions based on the type of institution (Government vs. Private).

Table 3. Institution-Type-Based Differences in Teachers' Perceptions of Infrastructural and Technological Readiness

Variable	Type of Institution	N	M	SD	<i>t</i>	<i>p</i>
Infrastructural and technological Readiness	Government Teacher Educators	32	36.03	6.05	2.411	.018*
	Private Teacher Educators	48	39.35	6.03		

As shown in Table 3, teacher educators from private institutions perceived significantly higher infrastructural and technological readiness of their institutions than teacher educators from government institutions. Since the p-value (.018) was found to be less than the significance level (0.05), the null hypothesis was rejected. It was concluded that there is a significant difference in teachers' perception of infrastructural and technological readiness based on the type of institution. The higher mean for teacher educators from private institutions indicates that they perceived that their institution is better equipped with infrastructural and technological resources compared to government institutions.

Figure 2 shows Bar graph of Means of Teacher Educators Perceptions on Infrastructural and technological Readiness with respect to Government vs Private TEIs.



Discussion:

As the Review of Related Literature indicates that no research has been undertaken so far on Infrastructural and Technological readiness as perceived by teacher educators of TEIs. The findings of this study highlight the uneven distribution of readiness levels across TEIs, with a substantial majority reported adequate readiness but few achieving comprehensive readiness. The no significant gender-based differences suggests uniformity in perceptions

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among teacher educators. However, disparities based on institution type point to systemic issues, such as funding and governance, that need to be addressed.

Recommendations:

- ❖ Enhance funding for Government TEIs to bridge the infrastructure and technology gap.
- ❖ Develop clear guidelines and frameworks to standardize readiness benchmarks across institutions.
- ❖ Organize training programs for faculty to leverage technological tools effectively.
- ❖ Foster partnerships between TEIs and tech firms to facilitate resource sharing and innovation.

Conclusion:

No significant difference was found based on gender of teachers, suggesting that perceptions of infrastructural and technological readiness are consistent across genders. The significant difference in perceptions based on institution type highlights the need for policy measures to improve infrastructural and technological readiness in government teacher education institutions. Efforts to improve readiness should therefore focus on institutional factors rather than gender-specific interventions. Addressing this gap can ensure consistent implementation of NEP 2020 across all institutions.

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