



Effectiveness of Indian Knowledge Tradition and Smart Technology Based Teaching Practices at the Secondary Level in the Context of National Education Policy 2020: A Comparative Study of Government Schools in Bhopal and Sehore Districts of Madhya Pradesh

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Abstract

For a comprehensive education, the National Education Policy 2020 places a strong emphasis on combining technology-enabled learning with Indian knowledge systems. This study looks at how well Indian Knowledge Tradition-based and smart technology-based instruction works in government secondary schools in the districts of Bhopal and Sehore. Using a self-made questionnaire, 200 students from ten schools participated in a descriptive survey. The results indicate that whereas smart technology-based instruction was more successful in Bhopal, Indian Knowledge Tradition-based instruction was more successful in Sehore. According to the study's findings, combining the two methods enhances students' learning outcomes.

Keywords: National Education Policy 2020, Indian Knowledge Systems, Smart Technology, Secondary Education, Government Schools

1. Introduction

Education is crucial for people's intellectual, moral, and social growth as well as for the advancement of the country. Education systems nowadays need to strike a balance between conventional knowledge and new technologies. The National Education Policy 2020 places a strong emphasis on experiential learning, holistic education, and the fusion of contemporary teaching techniques with Indian knowledge systems. Smart technology like digital classrooms and multimedia materials improve learning and student engagement at the secondary level.

The efficacy of smart technology-based teaching methods and Indian Knowledge Tradition in government secondary schools in the districts of Bhopal and Sehore is investigated in this study.

2. Indian Knowledge Tradition in Secondary Education: The term "Indian Knowledge Tradition" describes indigenous knowledge that has been established over centuries in fields including philosophy, science, ethics, medicine, and education. In order to foster national identity and moral principles, the National Education Policy 2020 places a strong emphasis on incorporating Indian Knowledge Systems into the classroom. Value education, yoga, environmental awareness, and community-based learning can all be incorporated at the secondary level to support students' development of moral principles and social responsibility.

3. Smart Technology Based Teaching Practices:

Digital resources including smart boards, multimedia presentations, digital textbooks, and online learning platforms are used in smart technology-based education. According to the National Education Policy 2020, technology is a crucial instrument for flexible and inclusive education. It enhances student involvement, intellectual comprehension, and visualization. However, its efficacy is dependent on institutional support, teacher preparedness, and digital infrastructure, all of which are often better in urban schools like those in Bhopal than in semi-rural ones.

4. Literature Review

The social, economic, and cultural advancement of society is significantly influenced by education. Education systems must constantly change as a result of globalization, technological innovation, and shifting social demands. The National Education Policy 2020, which aspires to make education more flexible, inclusive, multidisciplinary, and skill-oriented, has drawn attention to educational reforms in India. The policy encourages the blending of traditional knowledge with contemporary education, digital literacy, critical thinking, and experiential learning. Numerous facets of these educational innovations have been examined by scholars and international organizations.

Agarwal (2025) investigated how the National schooling Policy 2020 would change schooling in Indian schools. According to the report, the policy changes education from a system focused on exams to one that is more comprehensive and learner-centered. It encourages competency-based evaluation, transdisciplinary education, and hands-on learning. The study also emphasizes how crucial better infrastructure, institutional support, and teacher training are to successful implementation.

Tripathi and Singh (2024) studied the role of digital pedagogy in improving secondary education. Their study found that the use of digital tools such as online platforms, videos, and interactive resources increases students' engagement and participation in learning. It also supports personalized learning. However, the effectiveness of digital pedagogy depends on the availability of technological resources and teachers' digital skills.

According to UNESCO (2024), digital technology can support equity and inclusion in education by giving students in underprivileged and rural areas access to educational resources. By providing educational resources in many media, it also promotes inclusive education. However, the research claims that without appropriate teaching strategies, teacher preparation, and equitable access to digital infrastructure, technology cannot completely change education.

The incorporation of Indian Knowledge Systems into the curriculum was examined by Bhattacharya (2023). According to the study, in addition to contemporary scientific information, education should incorporate ancient knowledge like yoga, Ayurveda, and classical philosophy. Students' education can be enhanced by this integration, which can also help them develop a stronger sense of cultural identification and social responsibility.

In 2023, the Ministry of Education examined how the National Education Policy 2020 was being implemented in various Indian states. Initiatives pertaining to digital education, curriculum development, and teacher preparation are highlighted in the study. It also highlights the necessity of ongoing monitoring and assessment for successful implementation, as well as cooperation between institutions, educators, and legislators.

The National Education Policy 2020 presented a number of digital education ideas, which were discussed by the Ministry of Education in 2022. These initiatives seek to raise educational standards and provide access to digital learning materials. Particularly for pupils in remote and rural locations, online platforms and digital tools offer flexible learning alternatives.

Verma and Gupta (2021) examined teachers' readiness to implement the National Education Policy 2020. The study emphasizes that instructors are essential to educational changes and require appropriate training in student-centered learning, digital teaching techniques, and current pedagogy. It also highlights how crucial institutional support and ongoing teacher training are.

UNESCO (2021) addressed global issues including inequality, environmental sustainability, and technological transformation, UNESCO (2021) underlined the necessity of rethinking educational institutions. According to the paper, education should encourage students' social responsibility, teamwork, and critical thinking. It also highlights how crucial it is to have an educational system that encourages lifelong learning and equips students to take an active role in society.

Gender disparities in secondary school learning outcomes were examined by Mehta and Kulkarni (2021). According to their findings, there are still differences between boys' and girls' academic achievement and learning opportunities in some situations. According to the authors, educational policy should provide equitable access to high-quality education, offer encouraging learning settings, and promote girls' involvement in extracurricular and academic activities in order to eliminate these gender-based disparities.

The importance of fusing traditional knowledge with contemporary education is emphasized in the NCERT (2021) study on Indian Knowledge Systems. The paper states that education should foster students' appreciation of their cultural heritage while also fostering modern skills and scientific thinking. Education can become more meaningful and applicable to students' lives by incorporating traditional knowledge.

Kundu (2020) investigated the issue of India's digital divide. According to the study, pupils in rural and urban areas may have very different learning possibilities due to differential access to digital infrastructure. Students in remote locations are frequently unable to completely benefit from digital learning efforts due to limited internet connectivity, a lack of digital devices, and a lack of technological resources. According to the author, resolving these issues is crucial to attaining fair access to education.

Singh (2020) underlined the significance of fusing ancient Indian knowledge with contemporary teaching methods. The author contends that by helping children develop both intellectual and moral ideals, this kind of

integration can support holistic learning. Additionally, this method can assist students in making the connection between their academic understanding and real-world experiences.

In order to educate students for the needs of the digital age, educational systems must implement cutting-edge teaching strategies and technical tools, according to OECD (2020). The development of abilities like creativity, critical thinking, and problem-solving is emphasized in the study.

Rao and Reddy (2019) investigated differences in schooling between rural and urban areas in India. According to their research, rural schools frequently struggle with issues like poor infrastructure, a teacher shortage, and restricted access to educational materials. These elements may have a detrimental impact on student learning outcomes and educational quality.

Information and communication technology (ICT) integration in secondary school instruction was studied by Kumar and Joshi (2019). According to their findings, ICT can greatly increase the efficacy of instruction by making lessons more dynamic and interesting. Teachers can use technology to deliver material in multimedia ways, which makes it easier for pupils to comprehend difficult subjects.

Mukherjee (2019) emphasized the significance of value education in teenagers' moral growth. The study concludes that schools have a significant influence on students' social attitudes and ethical principles. Students who receive a value-based education are better able to show empathy, accountability, and respect for others.

Innovation in education is crucial for preparing students for future challenges, according to the OECD (2019). Instead of concentrating solely on memorization, the research recommends that educational systems promote critical thinking and innovation.

Chatterjee (2018) discovered that by making classes more interactive and visually appealing, smart classroom devices can boost student engagement and enhance learning experiences.

Das and Sen (2018) emphasized the value of indigenous knowledge and experiential learning in the classroom. According to their research, integrating classroom instruction with real-world experiences improves students' comprehension of topics and their ability to apply information in real-world scenarios.

Moral and social values are crucial for students' character development and responsible citizenship, according to Sharma (2018), who highlighted the importance of value-based education in the Indian educational system.

Digital learning resources greatly boost students' enthusiasm and interest in learning, according to Nair and Thomas's (2017) research. According to their research, learning settings with technology support can improve accessibility and engagement.

In order to provide a more culturally grounded and comprehensive learning experience, Yadav (2017) emphasizes that Indian knowledge traditions are a crucial basis of education and should be incorporated into contemporary teaching practices.

Summary:

According to the literature review, inclusive teaching methods, digital technology, Indian knowledge traditions, and value-based education should all be incorporated into modern education. International organizations and

researchers stress that in addition to academic learning, education should support students' overall development.

These components are intended to be integrated into the Indian educational system through the National Education Policy 2020. However, appropriate teacher preparation, sufficient technology, and equal educational opportunities for all students are necessary for its successful implementation.

5. Research Gap

Numerous researches have addressed the significance of the new education policy, digital learning, Indian knowledge traditions, and value-based education, according to the literature review. The majority of research, however, has looked at these factors independently. In the context of secondary school, very few researches have sought to examine these elements collectively. Furthermore, little research has been done on the integration of digital technology and Indian knowledge systems in government and rural schools. To investigate these topics more thoroughly, more research is therefore required.

6. Objectives of the Study

- To examine the effectiveness of Indian Knowledge Tradition-based teaching practices at the secondary level.
- To study the effectiveness of smart technology-based teaching practices in government secondary schools.
- To compare students' responses from Bhopal and Sehore districts.
- To analyze gender-wise (Boys and Girls) differences in students' responses.

7. Hypotheses of the Study

1. H_{01} : There is no significant relationship between the implementation of National Education Policy 2020 and students' learning outcomes in secondary schools.
 H_{11} : A significant relationship exists between NEP 2020 implementation and students' learning outcomes.
2. H_{02} : There is no significant relationship between the use of digital technology and students' learning interest in secondary education.
 H_{12} : A significant relationship exists between the use of digital technology and students' learning interest.
3. H_{03} : There is no significant relationship between the inclusion of Indian Knowledge Systems in the curriculum and students' cultural awareness.
 H_{13} : A significant relationship exists between the inclusion of Indian Knowledge Systems and students' cultural awareness.
4. H_{04} : There is no significant relationship between teachers' preparedness and the effective implementation of the new education policy.
 H_{14} : A significant relationship exists between teachers' preparedness and the effective implementation of the new education policy.

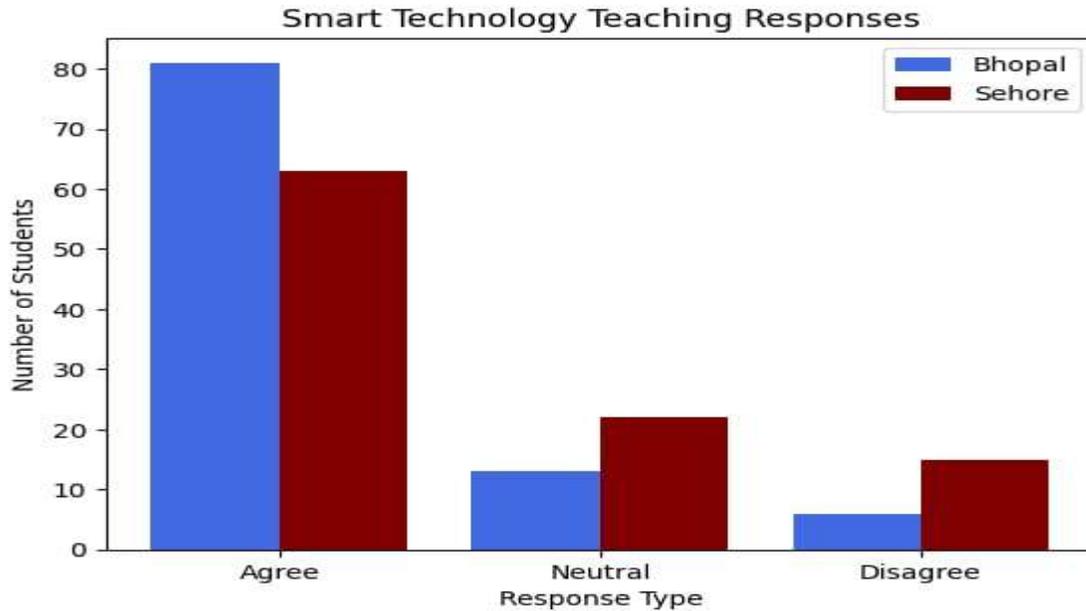
8. Research Methodology

1. The study adopted a descriptive survey method.
2. Sample: 200 secondary school students selected from ten government schools (five from Bhopal district and five from Sehore district)
3. Gender Distribution: 100 boys and 100 girls.

4. Tool: Self-constructed questionnaire based on Indian Knowledge Tradition and smart technology-based teaching practices.
5. Statistical Techniques: Percentage and comparative analysis.

9. Data Analysis and Interpretation

Figure 1: Students' Responses towards Indian Knowledge Tradition Based Teaching (Bhopal vs Sehore)



Interpretation: Figure 1 shows that a higher number of students from Sehore district agreed that Indian Knowledge Tradition-based teaching practices positively influenced their learning compared to students from Bhopal district. This indicates that value-based and culturally rooted teaching practices are more effectively implemented in semi-rural government schools.

Figure 2: Students' Responses towards Smart Technology Based Teaching (Bhopal vs Sehore)

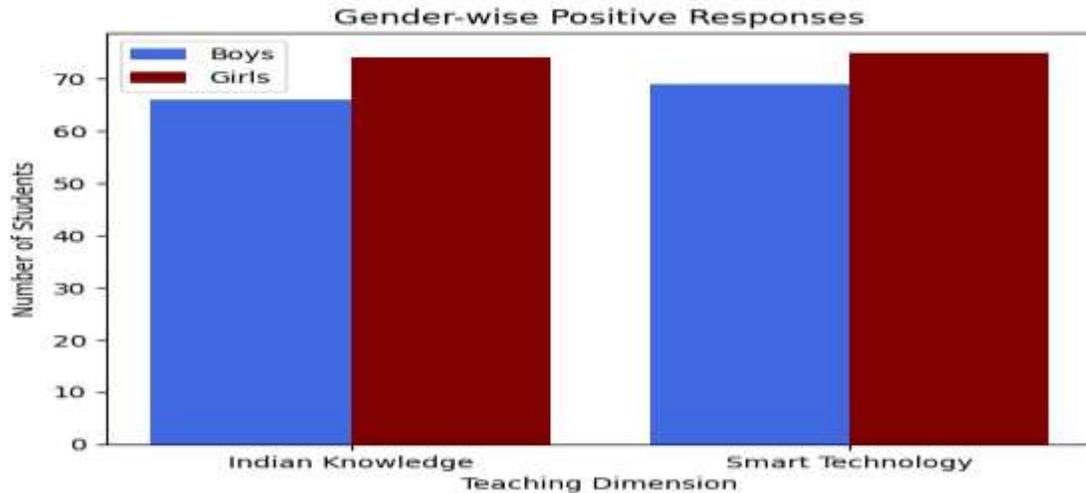
Interpretation: Figure 2 reveals that students from Bhopal district expressed higher agreement regarding the effectiveness of smart technology-based teaching practices. This suggests better availability and utilization of digital infrastructure in urban government schools, leading to enhanced student engagement.

Figure 3: Learning Level Distribution of Students (High, Moderate, Low, Bhopal vs Sehore)



Interpretation: Figure 3 indicates that a larger proportion of students from Bhopal district fall under the high learning level category, whereas a greater number of students from Sehore district are concentrated in the moderate learning level. This reflects district wise differences in teaching practices and learning resources.

Figure 4: Gender-wise Positive Responses towards Teaching Practices (Boys vs Girls)



Interpretation: Figure 4 clearly demonstrates that female students showed more positive responses than male students towards both Indian Knowledge Tradition and smart technology-based teaching practices. This suggests that girls are comparatively more receptive to value-oriented as well as technology-supported learning approaches.

10. Major Findings

1. Indian Knowledge Tradition-based teaching practices were more effective in Sehore district government schools.
2. Smart technology-based teaching practices were more effective in Bhopal district government schools.
3. Integration of traditional knowledge and technology resulted in improved learning outcomes.
4. Female students demonstrated more positive perceptions towards both teaching approaches.
5. The null hypothesis was rejected and the alternative hypothesis was accepted.

11. Discussion

The findings of the study strongly support the vision of NEP-2020, which advocates the integration of Indian Knowledge Systems with modern technology. The district wise variation highlights the importance of contextual factors such as infrastructure availability and cultural practices. While technology enhances engagement and conceptual clarity, Indian Knowledge Tradition strengthens values and cultural identity. Therefore, an integrated pedagogical approach is essential for holistic secondary education.

12. Conclusion

The present study concludes that both Indian Knowledge Tradition and smart technology based teaching practices play a significant role in enhancing students' learning outcomes at the secondary level. The comparative analysis of government schools in Bhopal and Sehore districts reveals that a balanced integration of these approaches is crucial for achieving the objectives of the National Education Policy 2020. Policymakers and educators should

focus on strengthening digital infrastructure while preserving and promoting indigenous knowledge systems in school education.

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