JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

A Study on the Impact of NEP 2020 and Pandemic on First Year Bachelor of Science Students and Teachers

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Abstract : This research analyzes the perceptions and experiences of First Year Bachelor of Science (F. Y. B. Sc.) students and their teachers regarding the National Education Policy (NEP) 2020 and the pandemic's impact on education. The study surveyed students and teachers to understand changes in interest, attendance, participation, career focus, and the challenges faced in adapting to new learning and teaching methods.

IndexTerms **- NEP 2020, F. Y. B. Sc. students, online learning, pandemic education, student engagement, teaching challenges, career focus, and academic interest.**

I. INTRODUCTION

The implementation of the National Education Policy (NEP) 2020 (Maharaj et al. 2021) marks a significant milestone in the evolution of India's education system (Chawla 2023). Designed to modernize and enhance the quality of education (Saif et al. 2022) NEP 2020 emphasizes a holistic, student-centered approach that encourages critical thinking (Sachdeva et al, 2023), interdisciplinary learning, and practical skills development (Costa et al. 2019). Simultaneously, the COVID-19 pandemic brought about an unprecedented and abrupt shift to online learning (Suliman et al. 2019), compelling both students and educators (Grant et al. 2017) to adapt to entirely new methods of teaching and learning (Niemi 2021). Together, these two phenomena have reshaped the academic landscape in profound ways (Moody et al. 2006).

This study delves into the experiences of First Year Bachelor of Science (F. Y. B. Sc.) students and their teachers during this transitional period, exploring their attitudes toward academic subjects (Paul 2014), changes in teaching practices, and shifts in career aspirations (Etmanski 2019). The dual challenges of adapting to the NEP 2020 framework (Maseeh 2023) and navigating the disruptions caused by the pandemic have had varied impacts on engagement interest levels, and performance (Krammer 2022). By examining these dimensions, this research seeks to provide valuable insights into how these systemic changes have influenced educational outcomes (Zhang et al. 2024).

Previous studies have emphasized the evolving dynamics of academic engagement (Symonds et al. 2024), highlighting both opportunities and challenges brought by NEP 2020 (Venkateshwarlu 2021). Researchers have also documented the rapid rise in digital education tools during the pandemic (Cone et al.2022), which have become central to contemporary teaching and learning practices (Zambrano 2020). This paper builds on these findings, offering a focused analysis of the experiences of F. Y. B. Sc. students and their mathematics teachers, providing a comprehensive view of the impact of these changes at the undergraduate level.

II. METHODOLOGY

This study used a mixed-methods approach to gather quantitative and qualitative data (Bergin 2018). Surveys were conducted among F.Y.B.Sc. students and Mathematics teachers, ensuring a balanced perspective from both stakeholders in the academic ecosystem (Dubina 2017). Structured questionnaires were used to capture detailed insights (Bird 2009) and included a combination of Likert-scale questions, multiple-choice options, and open-ended prompts (Wang et al. 2024). These tools allowed the researchers to measure opinions, perceptions, and challenges faced by the respondents comprehensively (Nardi 2018). Data analysis was performed using descriptive statistical methods (Yao et al. 2022) to summarize the quantitative responses and thematic coding to extract meaningful patterns (Castleberry et al. 2018) and themes from qualitative feedback (Carless 2006).

The survey data revealed several key trends and insights into the experiences of students and teachers:

2.1 Student Survey

The demographic composition of the surveyed students showed a nearly equal representation of genders, with 48.1% male and 51.9% female participants. Most respondents were in the age group of 18 or 19 years, highlighting a predominantly

young cohort. Regarding class attendance, only 44.4% of students reported attending their classes consistently, while a significant portion, 29.6%, attended only sometimes. This indicates potential barriers to regular participation that need addressing.

When assessing academic interest following the implementation of NEP 2020, 48.1% of students expressed being very interested in their subjects, suggesting that the policy positively influenced some learners. However, 11.1% of respondents reported a lack of interest, indicating that the changes introduced by NEP 2020 may not have been universally beneficial. In terms of preferred subjects, mathematics emerged as the most enjoyed discipline (33.3%), followed by physics (22.2%), while programming captured the interest of 7.4% of students. Notably, programming was preferred over traditional subjects like mathematics by an overwhelming 77.8% of the students, highlighting a clear shift toward practical and skill-oriented learning.

Challenges with online learning were evident, as 55.6% of students reported issues such as poor internet connectivity and a lack of adequate devices. Despite these challenges, 40.7% of students occasionally reached out to teachers for additional help outside the classroom, though there remains room for fostering more regular teacher-student interactions to enhance academic support.

2.2 Teacher Survey

The teacher survey provided insights into educators' perspectives on student participation and teaching adjustments. Most teachers (80%) observed moderate class participation post-NEP 2020, while 13.3% noted very high engagement levels. This indicates a varied response to the policy's implementation among the student body. Regarding changes to teaching methods, 26.7% of teachers reported making significant adjustments, while 53.3% made slight modifications to adapt to the new educational landscape. These findings reflect efforts by educators to align their approaches with NEP 2020's objectives.

Teachers also faced notable challenges in implementing NEP 2020 guidelines and maintaining student engagement during online learning. A majority (73.3%) reported difficulties in adapting to the new norms, while 80% agreed that online learning posed obstacles to keeping students engaged. Furthermore, teachers observed a strong preference among students for practical subjects like programming, with 66.7% reporting this trend. Traditional subjects like mathematics appeared to receive less focus, as students gravitated toward skill-based disciplines.

Overall, teachers expressed concerns about declining career focus among students, with 66.7% believing that the pandemic and NEP 2020 contributed to this issue. Suggestions for improvement included increasing teacher-student interactions (53.3%) and providing additional support for challenging subjects like mathematics (26.7%). These recommendations underscore the need for a balanced approach to curriculum design that bridges practical skills and theoretical knowledge.

III. Results and Discussion

The teacher survey provided insights into educators' perspectives on student participation and teaching adjustments. Most teachers (80%) observed moderate class participation post-NEP 2020, while 13.3% noted very high engagement levels. This indicates a varied response to the policy's implementation among the student body. Regarding changes to teaching methods, 26.7% of teachers reported making significant adjustments, while 53.3% made slight modifications to adapt to the new educational landscape. These findings reflect efforts by educators to align their approaches with NEP 2020's objectives.

One of the major concerns is the difficulty students face in traditional subjects, especially those like mathematics, which continue to pose significant challenges. While the NEP emphasizes practical and vocational skills, the foundational subjects still require more attention in terms of making them more engaging and easier to comprehend. This gap becomes more apparent in online learning environments, where many students struggle due to inadequate infrastructure and access to the necessary resources. The shift to online learning, although beneficial in some ways, has exposed limitations, especially for students in rural or underserved areas who lack reliable internet access or appropriate devices.

Additionally, teachers have made commendable efforts to adapt their teaching methods to suit the new educational landscape. Many have embraced new technologies and blended learning models. However, there remains a clear need for more professional development and resources to help educators effectively teach subjects that are traditionally seen as difficult, such as mathematics and science. Teachers require better training, updated teaching materials, and access to advanced tools and technology to provide the best possible support to students.

IV. Conclusion

The findings suggest that the National Education Policy (NEP) 2020 has indeed introduced several positive changes that have made a significant impact on the educational landscape in India. One of the key successes is the increased career clarity for students. The policy has provided clearer pathways for students to explore various career options early on, thus helping them make more informed decisions regarding their futures. Additionally, there has been a marked increase in students' interest in practical and vocational subjects, which are directly applicable to real-world scenarios and industries. This shift has encouraged students to think beyond traditional academic subjects and pursue skills that are more aligned with the demands of the modern job market. The policy's emphasis on multidisciplinary learning has also played a crucial role in breaking down the rigid barriers between academic streams, allowing students to explore a broader range of subjects, fostering creativity and innovation, and providing greater flexibility to choose courses based on personal interests and strengths. These changes have made education more inclusive and accessible, catering to the diverse needs of students from various socio-economic backgrounds.

However, despite these notable advancements, several significant challenges continue to persist within the educational system. One of the primary concerns is the difficulty that students face in traditional subjects, particularly those like mathematics, which continue to be a major stumbling block for many. While the NEP emphasizes the importance of practical and vocational skills, the foundational subjects like mathematics, science, and languages require more innovative approaches to teaching and learning. Many students still struggle to grasp key concepts in these subjects, and there is a need for methods that can make these traditionally challenging subjects more engaging, intuitive, and easier to comprehend. Without this, the gap between students' academic performance and the aspirations set by the NEP may widen, leading to issues of educational inequality.

The shift toward online learning, accelerated by the COVID-19 pandemic, has exposed significant limitations in the educational infrastructure. Although online learning has its advantages, such as flexibility and accessibility, many students have faced difficulties with it due to inadequate internet access, lack of appropriate devices, and poor digital literacy. These challenges are

especially pronounced in rural and underserved areas, where students may not have access to the technology needed for seamless online learning. As a result, many students are left behind, unable to fully benefit from the opportunities provided by digital learning platforms. The disparity in online learning access highlights the need for urgent infrastructural improvements to ensure that all students, regardless of their geographic location or socio-economic status, have equal access to high-quality education.

Teachers have played a critical role in adapting to these changes, and many have embraced new technologies and blended learning models in their classrooms. The shift to digital tools and online platforms has encouraged educators to experiment with new teaching methods and resources to keep students engaged. However, despite these commendable efforts, teachers still face considerable challenges. One of the key issues is the lack of sufficient professional development opportunities to help educators fully grasp the potential of modern teaching tools. Many teachers, especially in rural areas, are still not well-versed in the latest technologies, which makes it harder for them to effectively deliver lessons that integrate digital tools. Moreover, the need for up-to-date teaching materials and resources, particularly for subjects like mathematics and science, has never been more urgent. To ensure that teachers can deliver high-quality education and support students in challenging subjects, there must be greater investment in teacher training programs, access to advanced teaching tools, and the creation of specialized materials designed to make complex subjects more approachable.

In conclusion, while the NEP 2020 has set a strong foundation for educational reforms in India, several challenges need to be addressed in order to fully realize its potential. These include improving access to technology, enhancing teacher training, and making traditional subjects like mathematics more engaging and easier to understand. With continued effort and investment in these areas, the vision of NEP 2020 can be achieved, ensuring that all students receive an education that equips them with the skills, knowledge, and confidence to succeed in the 21st century.

V. RECOMMENDATIONS AND SUGGESTIONS

Based on the findings of this survey, the following recommendations are proposed to address the challenges faced by students and teachers and to enhance the overall effectiveness of the NEP 2020 implementation:

5.1 Enhancing Student Engagement

Increase teacher-student interaction through mentorship programs, one-on-one sessions, or open office hours to help students navigate difficult subjects like mathematics and science. Use interactive teaching techniques, such as gamification, peer group discussions, and real-life applications of concepts, to spark interest in academics.

5.2 Support for Difficult Subjects

Provide additional tutorials or remedial classes for challenging subjects, ensuring that students do not lose interest in critical disciplines such as mathematics and science. Develop a blended approach by integrating practical aspects, like programming and experiments, into traditional subject teaching.

5.3 Addressing Online Learning Challenges

Improve infrastructure for online education by ensuring equitable access to devices and reliable internet connectivity, especially for economically disadvantaged students. Provide teacher training to effectively use digital tools and platforms to engage students during online sessions.

5.4 Balancing Practical and Theoretical Subjects

Revise the curriculum to create a balanced approach, integrating traditional subjects with practical and emerging areas like programming, data science, and artificial intelligence. Ensure students understand the importance of foundational subjects while leveraging practical skills for career development.

5.5 Improving Career Orientation

Conduct career counselling sessions to help students develop clearer career goals and maintain focus despite the disruptions caused by the pandemic. Collaborate with industries to provide internships and hands-on experience to connect academic learning with real-world applications.

5.6 Refinement of NEP 2020 Implementation

Seek regular feedback from both students and teachers to assess the effectiveness of NEP 2020 and make improvements accordingly. Offer workshops for teachers to better understand NEP 2020 guidelines and adapt teaching strategies that align with the policy's objectives.

5.7 Fostering a Positive Learning Environment

Organize student support groups and peer mentoring initiatives to create a collaborative and stress-free learning environment. Promote mental health awareness and provide resources to address issues like stress and academic anxiety.

5.8 Investing in Professional Development for Teachers

Offer professional development opportunities to help teachers adopt innovative teaching methodologies and address challenges in a post-pandemic education landscape. Create forums for teachers to share best practices and strategies for engaging students effectively. These recommendations aim to address the diverse challenges highlighted in the survey, fostering an inclusive and engaging academic environment for both students and educators.

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