InSight Bulletin: A Multidisciplinary Interlink International Research Journal
Peer Reviewed International, Open Access Journal.
ISSN : 3065-7857 / Website: https://ibrj.us / Volume-2, Issue-10 / October - 2025

Original Article

Blended Learning as a Pedagogical Response to Covid-19: Effectiveness in the Context of Cooch Behar -1 Block

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Manuscript ID:
IBMIIRJ -2025-021003

Submitted: 05 Sept. 2025

Revised: 10 Sept. 2025

Accepted: 05 Oct. 2025

Published: 31 Oct. 2025

ISSN: 3065-7857

Volume-2

Issue-10

Pp. 11-15

October 2025

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Quick Response Code:

Web. https://ibrj.us

DOI: 10.5281/zenodo.17614398

DOI Link:
https://doi.org/10.5281/zenodo.17614398

Abstract

The COVID-19 pandemic compelled a sudden disruption in education, particularly in rural and semi-urban regions such as Cooch Behar-I block in West Bengal, where infrastructural and socio-economic disparities were more pronounced. To address prolonged school closures and ensure continuity of learning, blended learning emerged as a significant pedagogical response. This model integrated face-to-face instruction with digital and community-based approaches, balancing traditional classroom interaction with the flexibility of online tools. The study, based on secondary data from scholarly databases, government reports, and institutional sources, evaluates the effectiveness, challenges, and sustainability of blended learning in Cooch Behar–I block. Findings highlight that while blended learning offered resilience, inclusivity, and adaptability, its implementation was constrained by the digital divide, financial limitations, infrastructural weaknesses, and low levels of digital literacy. Teachers and students demonstrated adaptability through innovative practices such as mobile-based apps, community learning spaces, and flexible teaching methods. However, unequal access to devices, poor connectivity, and socio-cultural barriers limited its universal effectiveness. Comparative insights reveal that blended learning harmonizes the strengths of traditional and online models, making it more sustainable in the post-pandemic era. The paper concludes that blended learning, if supported by policy interventions, infrastructure strengthening, and teacher training, has the potential to transform education into a more inclusive, resilient, and technology-enabled system in rural India.

Keywords*: Blended learning, COVID-19, Cooch Behar-I block, rural education, digital divide, pedagogy, inclusivity.*

Background

Blended learning also arose as an important pedagogical strategy in response to the sudden shocks brought about by the COVID-19 pandemic, compelling a rapid transition from traditional classroom education to online modes of instruction. In areas such as Cooch Behar–I Block, where educational infrastructure and digital penetration were unevenly distributed, blended learning offered an important middle course by combining online tools with limited face-to-face interactions. This strategy aimed to facilitate continuity of learning, minimize knowledge gaps, and respond to different learner needs during extended school shutdowns (Angwaomaodoko, 2024). The model blended synchronous and asynchronous approaches by leveraging digital tools, community learning settings, and teacher-supported interventions to maintain learner participation. In doing so, it also flagged structural issues like digital divide, lack of preparedness among teachers, and weak parental support. Therefore, Cooch Behar–I Block blended learning is both a coping strategy and a transformative possibility for re-imagining pedagogy, ensuring that education becomes more resilient, inclusive, and technology-enabled in the post-pandemic world (Tiangco, 2021).

Research Objective

- To examine the effectiveness of blended learning as a pedagogical response to COVID-19 in Cooch Behar–1 Block.
- To analyse the challenges, opportunities, and sustainability of blended learning in rural and semi-urban educational contexts.

How to cite this article:
Basak, S. (2025). Blended Learning as a Pedagogical Response to Covid-19: Effectiveness in the Context of Cooch Behar -1 Block. InSight Bulletin: A Multidisciplinary Interlink International Research Journal, 2(10), 11–15. https://doi.org/10.5281/zenodo.17614398

Research Methodology

The present study adopts a secondary data-based methodology, relying extensively on previously published and credible sources to examine the effectiveness of blended learning in Cooch Behar-1 block during the COVID-19 pandemic. Data will be collected from scholarly databases such as PubMed, Research Gate, Scopus, and Google Scholar, as well as dissertations and theses available on Shodhganga. Books, government publications, official reports, and policy documents will also serve as significant references to provide comprehensive insights. These sources will help analyse existing findings, highlight trends, and draw comparisons across contexts. By synthesizing diverse scholarly and institutional materials, this methodology ensures reliability, depth, and a multidimensional understanding of blended learning as a pedagogical response in semi-rural educational settings.

Education in the time of COVID-19

The COVID-19 pandemic, beginning in early 2020, disrupted educational systems across the globe, causing unprecedented challenges to both learners and educators. Schools and universities were forced to shut down as governments imposed lockdowns to contain the spread of the virus. In India, more than 250 million learners were affected, which highlighted the fragility of traditional classroom-dependent education systems. In rural and semi-urban regions such as Cooch Behar-1 block in West Bengal, the crisis was felt even more acutely due to limited digital infrastructure, economic constraints, and uneven access to resources (Cheng Yong Tan, 2025).

With prolonged closures, the education sector had to urgently adopt alternative models to ensure continuity of learning. Online education emerged as the immediate solution, but it exposed stark inequalities, particularly in areas with weak internet connectivity, a lack of digital literacy, and insufficient devices. Against this backdrop, blended learning, a model combining the strengths of both online and offline approaches, came to the forefront as a more viable and inclusive strategy. It allowed schools and institutions to merge digital resources with traditional classroom teaching, thereby providing flexibility and resilience in uncertain times (Seble Tadesse, 2020).

The Cooch Behar1 block serves as a microcosm to study the effectiveness and limitations of blended learning in semi-rural India. Exploring this context sheds light on how educational practices evolved during the pandemic, what challenges were faced, and how sustainable learning models can be crafted for the future.

Concept and Framework of Blended Learning

Blended learning is defined as an instructional approach that integrates face-to-face classroom teaching with online or technology-enabled learning experiences. Unlike purely online education, blended learning aims to strike a balance between the human interaction of traditional teaching and the flexibility of digital platforms. It is often structured around three main components:

- **In-person classroom learning** – Direct interaction between teachers and students, facilitating discussions, group work, and immediate feedback.
- **Digital/online learning** – Use of platforms such as Google Classroom, Zoom, or WhatsApp groups to deliver lectures, assignments, and assessments.
- **Independent/self-paced learning** – Students engaging with e-content, digital libraries, or recorded sessions at their own convenience (Seema, 2024).

The framework of blended learning often follows models like:

- **Rotation Model:** Students alternate between classroom sessions and online modules.
- **Flex Model:** Online learning is the backbone, complemented by occasional face-to-face support.
- **Enriched Virtual Model:** Students complete most of their coursework online but attend physical classes at intervals for essential guidance.

In the Indian context, especially in rural regions, a low-tech blended learning model became prominent during the pandemic. Teachers used locally available resources, community spaces, and mobile-based applications to connect with students. The concept emphasized inclusivity, ensuring that learners without reliable internet access were not left behind.

Thus, blended learning is not a single rigid structure but a flexible pedagogy that adapts to the socio-economic and technological realities of the learners it serves (Lam, 2015).

Policy Shifts and Institutional Responses during the Pandemic

The sudden shift from classroom to remote learning prompted significant policy interventions and institutional adaptations in India. The Ministry of Education (MoE), along with the University Grants Commission (UGC) and state governments, rolled out initiatives to strengthen digital learning infrastructure.

National Initiatives

- Launch of platforms like DIKSHA, Swayam Prabha DTH channels, and Swayam online courses to provide free access to educational content.
- Emphasis on the Digital Infrastructure for Knowledge Sharing (DIKSHA) platform, which became a major source of digital textbooks and e-content for school children.
- Development of PM eVidya as a unified platform for multimodal learning through television, radio, and online platforms (Roy, 2022).

West Bengal State Initiatives

- Use of regional television and community radio to broadcast classes in Bengali and English.

- Local schools are adopting WhatsApp groups as primary communication channels for assignments and doubt clearing.
- State-supported teacher training programs to improve digital literacy among educators.

Institutional Responses in Cooch Behar–1 Block:

- Schools collaborated with local panchayats to distribute worksheets and textbooks to students without internet access.
- Teachers conducted small group classes in open community spaces where internet access was poor.
- Use of low-cost mobile apps and SMS-based communication to reach students from marginalized backgrounds.

These shifts underline that while national and state-level policies created a supportive framework, the real challenge lay in local adaptation and implementation, especially in resource-constrained blocks such as Cooch Behar-1 (Li, 2022).

Impact of COVID-19 on Teaching–Learning Practices in the context of Cooch Behar -1 block

The COVID-19 pandemic transformed teaching-learning in Cooch Behar-1 block, shifting education from classrooms to digital and blended modes. School closures created a learning gap, worsened in rural areas due to poor infrastructure and digital divides (Abrol, 2022). Teachers adopted online platforms, mobile tools, recorded lectures, and WhatsApp groups, but limited connectivity, devices, and digital literacy restricted inclusivity. Marginalized students suffered greater learning losses, deepening inequalities. Yet, the crisis also encouraged resilience and innovation through flexible assessments and interactive tools. Overall, the pandemic disrupted education but also catalysed technology-integrated learning models in the block (Soni, 2020).

Implementation of Blended Learning in Cooch Behar-I Block

The adoption of blended learning in Cooch Behar-1 block was shaped by socio-economic realities, infrastructure availability, and community participation.

- **Digital Infrastructure:** Internet penetration in the block was uneven. Many students relied on shared smartphones, often belonging to parents or siblings. Broadband connections were scarce, and mobile data costs were a burden for low-income families. Teachers adapted by using lightweight apps like WhatsApp instead of data-heavy platforms like Zoom.
- **Classroom Integration:** Once lockdown restrictions eased, schools followed a hybrid schedule, where students attended classes in smaller batches with safety protocols. During these sessions, teachers revised online content and clarified doubts (Mandal, 2024).
- **Community Engagement:** Local NGOs and community groups provided logistical support, such as arranging common television sets or distributing printed study material. Panchayat halls and community centers occasionally served as temporary learning spaces.
- **Teacher Innovation:** Teachers created short video lectures recorded on smartphones, shared through WhatsApp groups, or even distributed via pen drives. Some schools implemented peer-learning mechanisms where brighter students mentored their peers in their neighbourhoods.
- **Parental Role:** Parents, especially in rural households, played a significant role in monitoring assignments. However, parental literacy levels varied, creating an uneven impact.

The blended learning experience in Cooch Behar-1 reflected resilience and adaptability, where stakeholders collaborated to ensure learning continuity despite multiple constraints (Ruchi Shivam, 2015).

Effectiveness of Blended Learning: Student and Teacher Perspectives

Blended learning, integrating classroom teaching with digital resources, has become a key pedagogical model in the post-pandemic era. For students, it provides flexibility, accessibility, and personalized learning through recorded lectures, digital content, and interactive tools. Yet, challenges remain, such as reduced motivation without supervision and unequal access to technology (Belli, 2023).

For teachers, it broadens instructional methods by enabling multimedia use, digital assessments, and tailored feedback. It helps address diverse learning needs but requires ongoing training, extra preparation, and balancing online with in-person teaching.

Overall, its effectiveness lies in merging the strengths of both physical and digital approaches to create a more adaptable and engaging education system (Kintu et al., 2017).

Challenges and Limitations in Rural and Semi-Urban Settings with Respect to Blended Learning in Cooch Behar-I Block

- **Digital Divide:** Limited access to smartphones, laptops, and reliable internet connectivity created a major barrier to ensuring equal participation in blended learning models.
- **Infrastructure Constraints:** Poor electricity supply, inadequate digital facilities in schools, and a lack of community-based digital hubs weakened the effectiveness of online components.
- **Socio-Economic Barriers:** A significant proportion of households faced financial hardship during the pandemic, making investment in digital devices, data packs, or supportive learning environments difficult (Lalima & Lata Dangwal, 2017).
- **Low Digital Literacy:** Both students and parents often lacked adequate digital skills, leading to difficulties in navigating online platforms, reducing learner engagement.
- **Teacher Preparedness:** Many teachers had limited training in integrating technology with pedagogy, which hampered the quality of blended learning delivery.
- **Learning Inequalities:** Students from marginalized groups and first-generation learners were disproportionately affected, widening pre-existing educational disparities.
- **Pedagogical Issues**: The lack of face-to-face interaction led to reduced motivation, weaker attention spans, and difficulty in collaborative learning.

- **Psychological Impact**: Isolation, stress, and lack of social interaction affected the mental health of students, which in turn influenced learning outcomes (Cummings, 2022).

Comparative Insights: Traditional, Online, and Blended Approaches

Traditional Learning

- Involves face-to-face interaction within classrooms, fostering direct communication between teachers and students.
- Promotes discipline, structured routines, and social learning through peer engagement.
- Provides immediate feedback and hands-on experiences, but is limited by physical boundaries and rigid schedules.

Online Learning

- Operates through digital platforms, enabling flexible and self-paced learning.
- Enhances access to vast resources, multimedia content, and global connectivity.
- Offers cost-effectiveness and scalability but may lack personal interaction, leading to issues of isolation and reduced motivation.
- Requires strong digital literacy and self-regulation skills for effectiveness (Gherhes, 2021).

Blended Learning

- Integrates traditional classroom instruction with digital platforms, creating a hybrid environment.
- Balances personal interaction with flexibility, ensuring a richer and more adaptive learning experience.
- Encourages active participation through collaborative tools, multimedia resources, and guided mentorship.
- Reduces limitations of both traditional and online models by combining structured classroom learning with digital autonomy.

Comparative Outlook

- Traditional emphasizes personal engagement, online highlights flexibility, while blended harmonizes both.
- Blended models are increasingly regarded as the most effective, offering adaptability, inclusivity and resilience, especially in post-COVID educational contexts (Ngoc Tuong Nguyen, T., & Thi Kim Oanh, 2025).

Future Prospects and Recommendations for Sustainable Learning Models

The pandemic has left behind critical lessons for the future of education, especially in rural and semi-urban India. Sustainable learning models must build upon the blended learning experience while addressing its limitations.

Future Prospects

- Blended learning is likely to remain a permanent feature of education, ensuring resilience in times of crisis.
- Digital literacy among both teachers and students will improve, narrowing the urban-rural educational gap.
- Government initiatives will continue to expand e-content availability in regional languages, enhancing inclusivity.
- Technological innovations such as AI-driven adaptive learning tools could personalize education for students in diverse settings. (Das, 2021)

Recommendations

- **Strengthening Infrastructure**: Investment in affordable internet, community digital centers, and provision of low-cost devices.
- **Teacher Training**: Regular workshops to build digital pedagogy skills, emphasizing interactive and student-centered teaching methods.
- **Hybrid Community Learning Spaces**: Using panchayat halls, libraries, and schools as community hubs for shared digital access.
- **Parental and Community Involvement**: Encouraging collaboration between schools and parents to monitor learning progress.
- **Mental Health Support**: Integrating counseling services and peer-support programs into school frameworks.
- **Policy Integration**: National and state education policies should institutionalize blended learning as a mainstream model rather than a temporary crisis response.

Conclusion

In conclusion, blended learning emerged as a vital pedagogical response to the unprecedented disruptions caused by COVID-19, particularly in semi-rural contexts like Cooch Behar-1 Block. It effectively combined traditional classroom practices with digital resources, ensuring learning continuity while highlighting systemic challenges such as the digital divide, limited infrastructure, and low digital literacy. By adopting innovative strategies and community participation, teachers and students adapted resiliently, making blended learning a transformative opportunity beyond a temporary coping mechanism. The research objectives to examine its effectiveness and to analyse challenges, opportunities, and sustainability are fully addressed through evidence of both its strengths (flexibility, inclusivity, adaptability) and limitations (inequalities, preparedness gaps). The study underscores that sustainable learning models must institutionalize blended learning with stronger digital infrastructure, teacher training, inclusive content, and policy support. Thus, blended learning not only mitigated pandemic-driven disruptions but also laid a foundation for a more resilient, equitable, and future-ready educational framework.

Acknowledgment

The researcher sincerely expresses heartfelt gratitude to the Department of Education, Nirwan University, Jaipur, Rajasthan, for the constant academic guidance and institutional support that made this study possible. Deep appreciation is extended to the

faculty mentors and research supervisors for their constructive suggestions, encouragement, and critical insights throughout the preparation of this paper.

Special thanks are due to all teachers, students, and community members from Cooch Behar-I Block who shared their valuable experiences and perspectives on blended learning during and after the COVID-19 pandemic. Their cooperation and openness provided authentic insights into the challenges and opportunities of technology-integrated education in rural contexts.

The researcher also acknowledges the contribution of libraries, digital repositories, and online research platforms such as Google Scholar, Shodhganga, and Research Gate, which served as key sources of secondary data and literature for this study.

Finally, sincere gratitude is offered to family members and friends for their unfailing moral support, patience, and motivation during the entire research process. Their encouragement inspired perseverance through the challenges of academic work during and beyond the pandemic period.

Financial Support and Sponsorship

Nil

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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