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Inclusive Education for Visually Impaired Children: Drivers, Challenges, and Implications in India

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Abstract
Inclusive education supports children with visual disabilities through equitable learning opportunities and involvement in social settings. This study helps to understand the facilitators and inhibitors in the context of inclusive education in India for children with visual impairment (CVI's). It was conducted in selected districts of West Bengal, Bihar and Rajasthan with a focus on perception of teachers, availability of resources, integration of ICT as well as participation of the students. The study highlighted that the positive attitude of teachers, accessibility of learning material, support from government and involvement of parents have a significant effect on inclusion of CVI's. On the other hand, large class size, limited specialized training as well as ICT understanding and low community engagement acted as inhibiting factors. Schools will be able to address these factors through proper integration of inclusive education, improve the academic outcome and social engagement through integration of ICT, community involvement, timely accessibility of resources and professional skill development.

Keywords: Children with Visual Impairment; ICT Integration: Inclusive Education

1. Introduction

Children with visual impairment (CVI) face serious difficulties in seeing. This condition shapes their learning, playing, and participating in school activities. Their needs are not the same as those of sighted children. They often require special teaching methods, adapted learning materials, and changes in the classroom environment.

Visual impairment does not look the same for every child. Some have low vision, some are partially blind, and others are totally blind. Each condition influences learning differently. Children with low vision may use glasses or magnifying devices, yet they still struggle with normal print, dim light, or face recognition. They benefit from large- print books, bright lighting, and digital tools that adjust text size. Children with partial blindness have very limited sight. Some see only in the center, some only at the edges, and some see blurred shapes without detail. They need strong visual aids, tactile resources, and high-contrast designs

to support learning. Children who are totally blind dependent on senses such as touch and hearing. Braille, audio lessons, and tactile diagrams help them understand concepts. Recognizing these different levels of vision loss is important. Teachers can then plan the right kind of support for each child. No two CVIs have the same needs.

Globally, two-thirds of CVI live in developing countries. Poverty, poor nutrition, and lack of health care increase the risk of vision loss. India has one of the largest populations of visually impaired children in the world. Orbis[ii] Annual Report reported about 1.26 million blind children and 19 million with some degree of visual impairment. In India, many of these children live in rural areas or urban slums. They often miss early eye check- ups and treatment. Many do not receive assistive devices. This makes education harder. Some never enroll in school, while others drop out early.

Economic inequality adds to the challenge. Families with low incomes cannot always afford spectacles, surgeries, or digital learning tools, which limit children's access to quality education. Inclusive education may offer a way forward. Every child, regardless of vision or income, should be able to learn in a supportive environment. Schools should adopt appropriate teaching methods and learning spaces for CVIs.

This article explores the drivers and obstacles of inclusive education for CVI in India. It reviews existing systems and policies, discusses teacher attitudes, and presents experiences from three states. The discussion ends with ideas for reducing barriers and building an education system where CVIs can learn together with non CVIs.

Education for CVI in India before 2018

Existing evidence suggests that, before 2018, education for CVI in India operated mainly through special schools and integrated education in mainstream schools. Both systems sought to extend educational access, yet their outcomes in terms of genuine inclusion were uneven.
Special schools represented the earliest and most established model. These institutions were created exclusively for children with visual impairment and employed teachers trained in Braille scripts, mobility skills, and the use of assistive devices. Students studied in environments specifically designed to meet their needs. Prominent examples include the National Institute for the Visually Handicapped (NIVH) and schools managed by the National Association for the Blind (NAB). Findings indicate that these schools provided focused support, adapted materials, and personalized attention. However, they also separated students from their sighted peers. This separation often led to isolation and limited opportunities for interaction with the wider community. Estimates suggest that India has at least 50 such schools, though the actual number may be higher (Rao & Vijayalakshmi, 2002; Singh, 2013; Thomas & Bhatia, 2015; Pandey, 2018).

Alongside this model, integrated education was introduced to promote access within regular schools.
The Integrated Education for Disabled Children (IEDC)[iii] scheme, initiated in 1974 and expanded in 1992, aimed to provide equal learning opportunities in mainstream classrooms. Policy frameworks highlighted the importance of support measures such as special educators, adapted materials, and curriculum adjustments. Though implementation of these was always challenging. Some of the research

conducted revealed that there was shortage of resources like Braille books, magnifiers and screen readers. Apart from this lack of training to teachers on inclusive pedagogy as well as the physical environment was not congenial enough for the CVI's as there are no ramp or tactile paths. (Accessible India Campaign, 2015; Pandey, 2018; Jyothirgamaya Foundation, 2020; Mitra Jyothi, 2020).

An attempt to strengthen the system was made during this period. Rehabilitation Council of India Act (1992) was established with the objective of training of teachers and service delivery. Apart from this National policy of Education (1986) also recognized and understood the need for education for the disabled children.

However significant importance to the disabled children was given in the Persons with Disabilities Act (1995). It aimed to provide equal rights and free education for children with disability was established. It also emphasized in integrating these children with the mainstream schools.
Right to Education Act (2009) emphasised establishing education as a fundamental right for all children. It included the children with disabilities and lead to conceptualization of inclusive classrooms.

Despite all the legislative efforts, implementation at the ground level is still challenging. Especially in the rural communities' children suffer more due to lack of diagnostic facilities, transportation and assistive technology. Social stigma related to disability even worsened the enrollment ratio of these children in schools. Complete inclusion is extremely important for the inclusive education model to be successful. And efforts need to be made to overcome the social stigmas, the infrastructural and resource challenges.

Inclusive Education of CVI in India

Inclusive education for CVI aimed to integrate the CVI's with the sighted children in regular schools. It is not merely sharing of the classroom, but it requires equal accessibility for teaching and learning. Not only the national but international framework also suggests the principle of quality education for every child. Conceptualisation of inclusive education was done globally in the *'Salamanca Statement'* (UNESCO, 1994) [iv]. It laid emphasis on placing the disabled children in regular schools wherever feasible.

Inclusive education was recognized as a fundamental right in the 'United Nations Convention on the Persons with Disabilities' (UNCRPD, 2006)[v] . Sustainable Goal 4(SDG 4) of the 2030 Agenda also emphasised inclusive and equitable quality education for all. These global commitments have an important role to play in the national context. In India 'Sarva Shiksha Abhiyan (SSA)'[vi] plays a crucial role in education for all children. And the Rights of Persons with disabilities act (2016) further strengthens the integration of the disabled children with disabilities into mainstream schools. It envisages 21 categories of disabilities, including partial and complete visual impairment. Stepping up in this line, the National Education Policy 2020 emphasises making learning and teaching accessible, establishing resource centres and proper usage of assistive tools. Framing of policies and laws can help to an extent; however, implementation and change within classrooms and schools is challenging. On one hand, the supportive infrastructure and environment as well as strategies adopted by teachers to meet diverse needs are essential.

Learning resources should be available in formats such as Braille, large print, and digital texts. Social participation is equally important. Children with visual impairment should be included in sports, cultural events, and group projects. A well-designed inclusive system benefits everyone: sighted children develop empathy and teamwork, while children with visual impairment gain confidence, skills, and independence.

India has taken important steps toward inclusive education, yet progress depends on how effectively policies are translated into practice. Evidence suggests that teacher attitudes, professional training, resource availability, and community support remain decisive factors. The alignment of India's reforms with global commitments such as the Salamanca Statement, UNCRPD, and SDG 4 highlights both progress made and the challenges ahead. Achieving true inclusion will require sustained effort at the policy level, practical innovation in schools, and collective action by educators, families, and communities.

Advancing Inclusive Education for CVI in India: Key Components and National Initiatives

Key Components of Inclusive Education

Inclusive education for visually impaired children requires a series of connected steps. These steps must begin early and continue throughout the child's schooling. Each step addresses a challenge and strengthens the support system.

Early Identification and Assessment: Early identification is the foundation of inclusion. When vision problems are detected in the first years of life, children can access help without delay. In many cases, however, screening happens late, which slows learning and increases disadvantages. Collaboration between schools and health centers is essential to ensure early eye check-ups. Assessment also guides teachers in understanding the level of vision loss and in choosing appropriate teaching methods and tools. Without accurate assessment, support may be misdirected and less effective.

Accessibility in Schools: Physical accessibility is critical for safe and inclusive learning. Ramps, tactile paths, and accessible toilets help children move independently within the school. Classrooms should be well lit and free from obstacles. Simple adjustments, such as seating a child with low vision closer to the board or providing appropriate desk space for Braille materials, enable effective learning. Without these changes, children may feel insecure or excluded.

Assistive Devices and Technology: Assistive devices remain one of the strongest enablers of inclusion. Braille books, screen readers, magnifiers, and audio lessons provide children with independent access to information. Digital devices with accessibility features can further expand opportunities. Yet access to such devices is uneven. Many government schools lack them, and teachers may not know how to use them effectively even when devices are provided. Maintenance and repair are additional challenges, particularly in rural areas.

Teacher Training and Sensitization: Teachers play a central role in advancing inclusion. Trained teachers can adapt lessons, use assistive technologies, and design activities that work for both sighted and visually impaired students. Lack of training is a major challenge. Many teachers remain unsure how to teach a CVI, which can lead to low expectations. Sensitization is equally important as it will help to

create a supportive culture and create awareness. Teachers and peers need to appreciate the daily challenges faced by CVI's.

Specialized Support Services: Specialized resource persons, counsellors and trainers provide necessary skills to the CVI's . In absence of such services the CVI's suffer and struggle with basic reading and writing skills finally resulting in low morale and confidence.

Individualized Education Programmes (IEP's) : These programmes helps to synchronize the child's strengths and skills to their learning goals. They facilitate by offering targeted assistance. Uniform attention will be provided to all the students.

Equal Opportunities and Parental Engagement: Inclusion involves providing equal opportunities for all students not only in the field of academics but other activities at school. This will help the CVI's to improve their social skills and improve their morale. Parents' engagement in schools encourages inclusion. If they are not involved the process of integration of the CVI's with the mainstream would be difficult.

Resource centers: These centers facilitate by providing expertise knowledge as well as material resources. Schools get support from these resource centers by providing audio and braille material as well as facilitating teachers training. They also provide repair support for assistive devices. The places where these centers are not available lacks the relevant technical skills and specialized guidance.

Curriculum and Examination Adaptation: It will ensure accessibility for learning and improvement in participation like usage of embossed maps, digital tools for math's, tactile diagram in science. During examination providing extra time and provision for scribe is quite useful for the CVI's. If the curriculum or exams are not aligned with the needs of the CVI's they are demotivated and even lead to dropout.

Collaboration and Monitoring: Collaboration among communities, Government, Parents as well as NGO's enhances inclusion of CVI's. Effective monitoring results in implementation of polices at the grassroots level. It facilitates in aligning the efforts for effective policy implementation.

NCERT[viii] Initiatives for Inclusive and Accessible Education

National Council of Educational Research and Training (NCERT) plays a pivotal role in strengthening inclusive education in India. It is responsible for policy development, resource allocation and designing training programs for CVI's. The policy and guideline framed emphasized on teaching methodology, learning material and suitability of classrooms for the CVI's. One of the major initiatives taken is ensuring that inclusion becomes a part of mainstream planning through aligning it with the National Curriculum Framework. However, when policies are not implemented or monitored, they remain symbolic and have little effect.

Development of Learning Materials: Material resources like Braille text books, large-print books and audio books, for the low or no vision children is being produced by NCERT and state education department is responsible for distributing it to schools. Timely delivery of these resources will ensure accessibility for

these children. Proper efforts need to be taken for effectiveness of these resources for them.

Capacity Building of Teachers: Capacity Building programs focusing on inclusive practices, usage of assistive devices, class management for a mixed ability group would be helpful in improving the learning outcomes of the CVI's.

Awareness and Sensitization Campaigns: NCERT leads the campaigns to reduce social relegation and fostering a spirit of empathy among teachers, parents as well as students. Without such awareness, even well-prepared resources may fail, as social exclusion continues to affect children's experiences in schools. **Research and Innovation:** NCERT also conducts research to evaluate inclusive education models and test new approaches. It has piloted innovations such as tactile science kits and interactive digital tools. These help visually impaired children engage more fully with the curriculum. However, scaling such innovations remains a challenge, as many reach only a limited number of schools.

Collaboration with States and NGOs: NCERT collaborates with state governments and NGOs to strengthen implementation. NGOs contribute expertise in assistive devices and teacher training, while state agencies adapt national guidelines to local contexts. Such collaboration is an important enabler, though coordination challenges can slow progress when priorities or timelines differ.

Review of Teacher Perceptions and Academic Access for CVI

'Inclusive education' is a right for all students, including those with disabilities (United Nations, 2006). It provides multiple benefits such as improved curriculum access and greater opportunities for social interaction (Baker et al., 1995). However, simply placing children with and without disabilities in the same classroom does not guarantee genuine inclusion. Studies show that many students with CVI experience loneliness and isolation in school settings (Jessup et al., 2017). Some also face teasing or bullying from peers, which negatively affects their academic progress and emotional well-being (Brydges & Mkandawire, 2017; Chang & Schaller, 2002).

Challenges in Academic Participation: CVI students often encounter exclusion from Physical Education classes and group activities (Haegele & Zhu, 2017; Haegele & Porretta, 2015). CVI is considered a "low-incidence, high-needs" disability. Although less common, it requires specialised interventions (Ministry of Education NZ, 2020). Students may need braille, assistive technology, and specialised teaching methods to access learning (Holbrook et al., 2017). In earlier years, many attended special schools that provided trained staff and adapted environments (Spungin & Huebner, 2007). Today, most CVI students are enrolled in regular schools. Yet, these schools often lack trained teachers and continue to rely heavily on visual teaching methods (Opie et al., 2017).

Teacher Attitudes and Perceptions: Teachers play a central role in making inclusion effective. Their attitudes can either enable or hinder inclusive practices (Finkelstein et al., 2019; Monsen et al., 2014). Miyauchi and Peter (2020), in a review of 64 studies, highlighted two key areas: teachers' perceptions of inclusion and the academic challenges faced by CVI students. Their findings revealed mixed responses. While some teachers held positive views, others expressed concerns depending on the level of visual

impairment (Wall, 2002). These attitudes shaped both classroom practices and the opportunities given to students (Miyauchi & Peter, 2020).

Exclusion from Core Subjects: Academic exclusion is most visible in subjects, namely Mathematics, Science, and Physical Education (Lieberman et al., 2006; George & Duquette, 2006). The gap becomes more pronounced in secondary education, reducing academic pathways and future career options (de Verdier & Ek, 2014). Many students avoid these subjects not because of lack of ability but because learning materials are inaccessible.

Limited Focus on Extended Core Curriculum (CC): Another critical challenge is the limited focus on the ECC. The ECC emphasises essential aptitudes such as independence, social interaction, and self-advocacy (Hatlen, 1993; Sapp & Hatlen, 2010). These competencies are central to life beyond school. CVI students face barriers in higher education, employment, and community participation without them.

Research Findings from India: Studies in India provide additional insight into the experiences of CVI students. Evidence shows marked differences in student adjustment across two school settings, special schools and integrated schools. In the home environment, students in integrated schools reported better adjustment, possibly due to greater family involvement and exposure to inclusive social contexts.
In school environments, integrated settings supported stronger academic and social adjustment (Milinga & Possi, 2015; Pandey, 2018). Students engaged more actively in lessons, developed stronger peer relationships, and participated in group activities (Pandey, 2018).

In the personal domain, CVI students in integrated schools also demonstrated higher self- esteem, better communication skills, and more frequent interaction with sighted peers (Rao & Vijayalakshmi, 2002; Kumar & Anwar, 2004; Apte & Samat, 2005; Milinga & Possi, 2015; Pandey, 2018). The findings indicate that inclusive education can foster the academic, emotional, and social development of CVI. However, this potential is realized only when schools provide trained teachers, appropriate resources, and supportive attitudes. Without these elements, inclusion risks becoming symbolic rather than transformative.

Study of Inclusive Education for CVI in Three Indian States

Study Area and Sample: The study was carried out in five districts across three Indian states—West Bengal, Bihar, and Rajasthan—during January 2025. In these districts, inclusive education for children with visual impairment (CVI) had been supported by Sightsavers India in collaboration with the State Education Departments. This pilot intervention, implemented between 2018 and 2023, sought to strengthen inclusive education practices within government schools.

A cluster sampling method was adopted. Blocks were treated as clusters and selected randomly from each district. The objective was to include a minimum of 50 CVI from every district. However, instead of limiting the study to a fixed sample size, all identified CVI in the selected blocks were invited to participate in interviews. The IRB (institutional review board) of IIHMR University approved the research design and tools and issued the ethical clearance. The details of samples are given in Table 1 and Table 2.

Teachers engaged in teaching CVI in the sampled clusters were also included. For their selection, a random

sampling method with replacement was applied. In total, the study covered 48 blocks across the five districts. From 284 listed CVI in the sampled blocks, 260 (91.5%) agreed to participate in interviews, while 24 (8.5%) could not be reached. Notably, in Bhagalpur district of Bihar, every listed CVI participated, resulting in a full response rate for that district. This comprehensive sampling approach ensured representation across states and schools, providing a reliable basis for analysing the impact of inclusive education interventions on CVI.

Table 1 about Here

Table 2 about Here

2. Results and Discussions

Collaborative Intervention for Inclusive Education

From 2018 to 2023, Sightsavers India, with the support of the HCL Foundation and in collaboration with the Education Departments of the states of Bihar, Rajasthan, and West Bengal, implemented a multi-pronged initiative to promote inclusive education for CVI. The program aimed to address systemic and local challenges, integrate CVI into mainstream schools, and improve learning outcomes through targeted interventions. The approach combined the development of accessible learning resources, the provision of assistive technologies, capacity building for educators, and the strengthening of institutional infrastructure. Key components included:

Identification, Assessment, and Parental Engagement: Sightsavers worked closely with schools and communities to identify out-of-school children with disabilities. Detailed assessments determined individual learning needs and helped prepare personalized learning plans. Counselling sessions for parents encouraged school re-enrolment and strengthened parental involvement.

Teacher Capacity Building and Training: Capacity-building programs were delivered for both special educators and general teachers in government schools. Training was conducted offline in 2019–20 and online in 2020–21 due to the pandemic. It covered inclusive pedagogy and ICT integration. Pre- and post-assessments tracked changes in teachers' knowledge, attitudes, and practices.

Utilizing ICT to Enhance Learning Outcomes for CVI: Laptops, smartphones, and accessible software were provided to support learning in English and regional languages. Students learned to use these devices for converting textbooks into e-pub formats and accessing e-learning platforms. Regular sessions ensured effective use of ICT and improved academic performance.

Assistive Technology Integration: Tools such as screen readers, magnifiers, speech recognition software, and geometry kits enabled CVI students to access textbooks, digital content, and learning aids

independently.

Strengthening Block Level Resource Centres (BRCs): BRCs under the Samagra Shiksha Abhiyan were modernised to serve as support hubs. They were equipped with Braille displays, DAISY players, computers with INDO-NVDA software, and Smart Boards. Awareness campaigns increased utilisation by CVI and other children with special needs.

'To support the government, Sightsavers India provided training not only to special educators but also to general teachers, as they play a crucial role in identifying children with special needs. If a general teacher fails to recognise a learning disability, the child may be misjudged as incapable rather than receiving the specialised education they require.'

Education Officer, Inclusive Education, Rajasthan

'BRCs were established under the District Primary Education Program (DPEP) to address local training needs for teachers, provide academic support, and foster stronger school–community linkages. These centres also serve as crucial hubs for academic planning and quality management in schools.'

– Education Officer, West Bengal

Tele-Education Model During COVID-19: To counter school closures, Sightsavers introduced a Tele-Education Model. Lessons were delivered via mobile phones, covering school subjects, Braille literacy, arithmetic, and ICT skills. One-on-one sessions supported students needing extra attention. This model was highly effective and later adopted by state education departments for other disability categories.

Case 1: Success story of DAISY Player in Jhalawar

In Block Sunel, Jhalawar, 17 CVI students received support through Sightsavers India and HCL Tech funding. Low vision students received mobile phones, while others received laptops and DAISY players. Under Samagra Shiksha Abhiyan (SSA), all CVI students received transport, escort, reader allowances, and stipends. One Grade 12 student from a financially disadvantaged background became proficient in using laptops and mobile devices, completing tasks such as recording videos and sending emails. Many CVI students scored between 65% and 85% in board exams, while several pursued Special Training Certificate (STC) and Bachelor of Education (B.Ed.) programs.

Source: BRC, Sunel, Jhalawar

Case 2: Best Practices during COVID-19 from West Bengal

During the pandemic, Sightsavers India launched the Tele-Education Model in collaboration with the West Bengal Samagra[ix] Shiksha Mission. Mobile-based lessons ensured CVI students continued learning. Parents and students received counselling to create a supportive home environment. Teachers trained in inclusive pedagogy conducted structured tele-classes, dividing students into groups. Storytelling sessions were added to engage students, enhancing imagination and maintaining connection to studies.

Source: Team Sightsavers, West Bengal

Case 3: Sugamya Library (Sugamya Pustakalaya)

Sugamya Library, created by the DAISY Forum of India with HCL funding, provided state-wise accessible textbooks. CVI students from all districts in West Bengal registered, totaling 1,066 users. The library

continues to serve as a vibrant learning resource.
Source: Team Sightsavers, West Bengal

Case 4: No-Cost Facilities to Adolescent Girls
BRCs offered training on reproductive health, sexuality, and self-defense for adolescent CVI girls, greatly benefiting participants. These training's were provided without any costs.
Source: Team Sightsavers, West Bengal & Rajasthan

Case 5: Plus Curriculum
BRCs provided training on Daily Living Skills (DLS) to enhance livelihood skills and motivation among CVI students.
Source: Team Sightsavers, West Bengal, Rajasthan, and Bihar

3. Results and Discussions

Drivers and Challenges of Inclusive Education for CVI: Perspectives of Students and Teachers
Inclusive education for CVI is influenced by multiple interrelated factors. The perspectives of both students and teachers reveal the drivers that facilitate learning and the challenges that constrain full participation in schools.
Drivers of Inclusive Education

Student Attendance and School Accessibility: Attendance rates among CVI students were generally strong, with 77% attending more than 20 days per month. In West Bengal, attendance reached an exceptional 97%. Proximity of schools to students' homes also facilitated participation; for 51% of CVI, the school was located within their own village or city ward, with an average travel time of 18 minutes. These factors enhanced students' consistent engagement with academic activities (Tables 3 & 4).

Balanced Gender Representation: Inclusive education initiatives achieved near gender parity, with 52% boys and 48% girls enrolled in local schools. This balance supports equitable learning opportunities for all students (Tables 3 & 4).

Educational Attainment and Learning Outcomes: The intervention contributed to notable educational progress. Most CVI students (63.8%) reached secondary level education, 18.8% completed senior secondary, and 15.3% progressed to undergraduate or higher studies. Only 2% remained at the primary level. Additionally, by 2023, 91% of CVI students had developed reading skills, 48% could speak English sentences, and significant proportions could use mathematical tools such as the Taylor Frame or abacus. These outcomes demonstrate the effectiveness of targeted interventions (Tables 3 & 4).

Use of Multiple Learning Modalities and ICT: CVI students benefited from a combination of Braille (50%), large print (29%), and bold print (15%). The integration of ICT tools—mobile devices (50%), YouTube (56%), audiobooks (37%), DAISY players (29%), Sugamya Pustakalaya (35%), talking keyboards (19%), and smart vision glasses (16%)—further enhanced learning. ICT usage, alongside government schemes, expanded access to educational content and increased engagement (Tables 3 & 4).

Teacher Support and Positive Attitudes: Teachers played a central role in enabling inclusive education. Among the 85 teachers surveyed, 61% displayed a positive attitude toward CVI inclusion in general classrooms, and 71% believed that CVI students could perform on par with their peers. Nearly half of the teachers recognized the benefits of government support, including teaching aids, assistive devices, and training programs, which facilitated effective learning environments (Tables 3 & 4).

Table 3 about Here

Table 4 about Here

4. Challenges of Inclusive Education

Limited Specialized Training and Support: Despite positive attitudes, only 46% of teachers had formal training in inclusive education, and special educators were available in just 32% of schools. Large class sizes, often exceeding 40 students, restricted individual attention, limiting opportunities for personalised instruction (Tables 5 & 6).

Resource Limitations and Delays: Inconsistent delivery of essential resources remained a key challenge. Only 61% of students received assistive devices on time, while 42% experienced delays in receiving Braille materials. Nearly 40% of teachers faced difficulties due to insufficient ICT tools or teaching aids, affecting CVI students' learning continuity (Tables 5 & 6).

Uneven ICT Impact and Usage: Although ICT has the potential to enhance learning, 62% of teachers felt its impact on CVI students was moderate or low. Around 44% reported difficulties using ICT effectively, and 51% noted challenges in reading and writing certain subjects due to limited access or insufficient guidance (Tables 5 & 6).

Systemic and Contextual Challenges: High student–teacher ratios, limited parental engagement, and low community involvement hindered the implementation of inclusive practices. Only 24% of communities participated actively in CVI education decision- making. The COVID-19 pandemic exacerbated these systemic challenges, with 19% of students attending fewer than 15 school days per month in 2021 (Tables 5 & 6).

Awareness Gaps: Teachers' knowledge of specialized methodologies for CVI remained limited. Only 35% were fully aware of inclusive strategies, and 34% knew of dedicated curricula. About 37% understood CVI-specific challenges in literature, while 42% were partially or entirely unaware of ICT use for CVI students. These gaps restricted effective adaptation of teaching methods and limited academic outcomes (Tables 5 & 6).

Student-Level Challenges: From the students' perspective, CVI learners continued to face social and academic obstacles. Many were excluded from Physical Education classes and group activities, and low-incidence, high-needs characteristics of CVI demanded individualized support. Limited access to Braille, assistive devices, and trained teachers often constrained participation, particularly in subjects such as Mathematics and Science. Insufficient attention to the Expanded Core Curriculum further restricted the development of essential life skills like independence, social interaction, and self- advocacy (Haegele & Zhu, 2017; Holbrook et al., 2017; Hatlen, 1993).

Table 5 about Here

Table 6 about Here

Strengthening Inclusive Education for CVI in India

Inclusive education for children with visual impairment (CVI) can be significantly strengthened by addressing barriers that hinder effective learning while building existing enablers within schools. One of the most important enablers is the positive mindset of teachers toward the abilities of CVI. Many educators believe that these students can thrive in regular school settings and perform on par with their peers. Such encouraging attitudes provide a strong foundation for implementing targeted capacity-building programs. Despite this, opportunities for specialized training remain limited, and special educators are not present in all schools. Integration of inclusive education module with the teacher-training programme as well as improving the number of qualified special educators will help in reducing the gap.

Though the teachers have years of experience in teaching still they experience difficulty in handling large class size limiting individual attention to CVI's. Advocacy for policy measures regarding pupil-teacher ratio, engagement of trained teaching assistants and co-teaching modules can strengthen the inclusive education for the CVI's.

Institutional framework and Government measures like assistive devices. teaching aids, financial support and training programs largely facilitate the inclusive education for CVI's. Though steps need to be taken to reduce the time delays in delivery of assistive materials like braille textbooks and devices. Timely access to these can be done by streamlining the procurement process and developing local resource hubs.

Infrastructure and facilities like teaching materials, learning provided to the students in school are adequate. ICT integration in education for CVI's improves the morale and confidence of the students. It also results in better exam preparation. However effective integration of ICT in teaching is always a concern due to lack of specialized teaching methods and teacher proficiency. This gap can be reduced by hands on experience through workshops and trainings on ICT that will lead to incorporation of these adaptive technologies.

Lack of Community engagement for inclusive education is also one of the inhibiting factors as it reduces

the avenues for collaborative support. It can be improved further by developing a strong parent-teacher relationship and involving communities through awareness campaigns can further strengthen the inclusive environment.

COVID-19 pandemic further affected the susceptibility of CVI's by reduced attendance in school. To ensure a continuous learning environment, preparedness plans should include online accessibility, flexible teaching strategies and educational support.

A lot can be done for the CVI's by addressing the challenges like size of classroom, training inadequacy, effective integration of ICT and involvement of community. Also focusing on strengths like supportive attitude of teachers and government support will further strengthen the accessibility and quality of education for the CVI's.

5. Conclusion

Inclusive education for CVI is not only feasible but can prove transformative if the framework designed is supportive. Teachers' perception and inclination to integrating CVI into the mainstream classroom facilitate this transformation. The education environment when further supported by Government not only financially but also with other resources smoothens this transition. Learning accessibility through integration of ICT, Braille materials, and assistive devices foster a feeling of self-reliance among the CVI's.

Nevertheless, there are a lot of challenges that hampers the integration of inclusive education for the CVI's like lack of specialized training, untimely delivery of teaching material, non-uniformed ICT implementation. Apart from this lack of community involvement further affects the integration of the CVI's with the mainstream students. These issues can be addressed by adopting a multidimensional approach that includes development of resource hubs, training teachers and further improving parent-school relationship. Inclusive education for CVI will not only support them in academic achievement but also result in social integration, improving the self-esteem of CVI's. By leveraging existing strengths and systematically mitigating barriers, educational institutions can advance equity, quality, and accessibility, ensuring that CVI participants fully participate in school and society.

Ethical Approval

Ethics approval was granted by the Institutional Review Board (IRB) of IIHMR University, Jaipur with a File Number - EC/NEW/INST/2022/3157 and Reference Number IIHMR-U/IRB/2023-24/019 dated 31.12.2024. Informed consent was obtained from each participant before conducting the interviews and assessment survey.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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Table 1: State and district-wise details of the sample selected for the study

State	West Bengal	Bihar		Rajasthan		Total
District	Howrah	Jehanabad	Bhagalpur	Udaipur	Jhalawar	
Block Covered	4	9	13	15	7	**48**
Learning Assessment (Children)	54	50	54	51	51	**260**
KAP* Assessment (Teachers)	15	17	17	17	19	**85**
School Principals	2	2	2	2	2	**10**
Sightsavers India Team	2	-	2	2	1	**7**
Government Official	1	1	1	1	1	**5**

*KAP – Knowledge attitude and perception

Table 2: Sample of CVI

State	West Bengal	Bihar		Rajasthan		Total
District	Howrah	Jehanabad	Bhagalpur	Jhalawar	Udaipur	
Listed CVI/ sampled cluster	62 (100)	56 (100)	54 (100)	55 (100)	57 (100)	284 (100)
CVI Respondents	54 (90)	50 (89.2)	54 (100)	51 (92.7)	51 (89.4)	260 (91.5)
CVI - Refusal/ Unavailable	8 (10)	6(10.8)	0	4 (7.8)	6(10.6)	24 (8.5)

Unless mentioned otherwise, figures within the parenthesis are in percentage of the column total.

Table 3: Drivers of Inclusive Education for CVI: Perspectives of CVI

Driving Factors	Description
Proximity and accessibility	51% had schools in their own village/ward; 39% lived within 2 km; 56% reached school in under 30 minutes (average travel time: 18 minutes).
High school attendance	85% attended school regularly; highest in West Bengal (98%), followed by Rajasthan (87%) and Bihar (76%).
Improved educational attainment	63.8% studied up to secondary level; 18.8% up to senior secondary; 15.3% reached undergraduate/postgraduate level; only 2% remained at primary level.
Multiple learning modalities	Braille (50%), normal print (29%), bold letters (15%) used for reading and writing.

Integration of ICT tools	Mobile devices (50%), YouTube (56%), audiobooks (37%), DAISY players (29%), Sugamya Pustakalaya (35%), talking keyboards (19%), smart vision glasses (16%).
Government and project support	98% received Government benefits (financial aid 86%, devices 48%, Braille books 46%, learning materials 39%); enrolment increased from 56% in 2020 to 99.9% in 2023.
Positive learning outcomes	91% could read; 48% could speak English sentences; 54% used Taylor Frame; 33% used abacus; 64% attended online classes during COVID-19.

Note. Data reflect perspectives of children with visual impairment (CVI) across selected districts of West Bengal, Bihar, and Rajasthan. ICT = Information and Communication Technology. Percentages are rounded to one decimal place where applicable. CVI = Children with Visual Impairment.

Table 4: Drivers of Inclusive Education for CVI: Perspectives of Teachers

Driving Factors	Description
Positive attitudes of teachers	61% teachers fully agreed that CVI can be educated in any school; 51% rejected the notion of limiting CVI to special schools; 71% believed CVI performed on par with peers.
Experienced workforce	56% of teachers had 10–20 years' experience; 67% had prior experience of teaching CVI (41% for 1–5 years, 16% for 5–10 years, 10% over 10 years).
Government and resource support	45% acknowledged government assistance; support included teaching aids (54%), teacher training (48%), assistive devices (41%), and financial aid (36%).
Adequate facilities	59% reported no shortage of devices, 58% had sufficient teaching materials, and 62% had adequate infrastructure.
ICT benefits	72% of children had ICT access; 61% said it improved confidence; 58% noted better exam/note-taking support; 64–71% reported time savings and improved teaching efficiency.
Training availability	61% of teachers received adequate ICT training with few usage difficulties.

Table 5: Challenges of Inclusive Education for Children with Visual Impairment (CVI): Perspectives of CVI

Challenges	Description
Geographical constraints	49% attended schools outside their community; 53% of Bihar students attended residential schools due to lack of facilities in local schools.
Limited access to assistive technologies	Only 13% owned laptops; fewer than 10% had screen magnifiers or NVDA readers; 29% relied on Block Resource Centres.
Inconsistent resource provision	Delays in supply of devices and Braille books; 12% reported limited ICT benefits due to lack of personal ownership.
COVID-19 digital divide	36% could not attend online classes, primarily due to lack of devices.
Language barriers	15% could not read the local language if different from the state language.

Skill gaps	20% could not read English; only 16% could recognise single-digit numbers; 20% could perform subtraction or division.

Note. Data reflect perspectives of children with visual impairment (CVI) across selected districts of West Bengal, Bihar, and Rajasthan. ICT = Information and Communication Technology; NVDA = Non Visual Desktop Access. Percentages are rounded to one decimal place where applicable. CVI = Children with Visual Impairment.

Table 6: Challenges of Inclusive Education for Children with Visual Impairment (CVI) in India: Perspectives of Teachers

Challenges	Description
Limited specialised training	Only 46% of teachers had formal inclusive education training, and special educators were available in just 32% of schools.
Large class size	Often exceeding 40 students, reducing individual attention.
Delayed resources	Only 61% of students received assistive devices on time; 42% reported delays in Braille material delivery.
ICT impact gaps	62% teachers rated ICT impact as moderate or low; 44% faced difficulties using ICT tools.
Awareness gaps	Only 35% teachers were fully aware of specialized teaching methods; 34% knew of a special curriculum; 42% were unaware or only partially aware of ICT use by CVI students.
Low community involvement:	Only 24% of communities were engaged in decision-making for CVI education.
COVID-19 disruption	During COVID 19, on average, most CVI attended schools fewer than 15 days per month.

Notes:

i **ICT** - Information and communication technology

ii **Orbis** a non-profit organization focused on eliminating avoidable blindness and a financial services provider in India. ORBIS International is a global NGO that brings people together to fight blindness by training, treating, and inspiring local teams to save sight in their communities.

iii **Integrated Education for Disabled Children (IEDC)**: This scheme or approach aims to include children with disabilities in mainstream educational settings. The goal is to provide equal educational opportunities for all children, regardless of their disabilities, by integrating them into regular schools.

iv **The Salamanca Statement (1994)** – Adopted at a UNESCO World Conference, this statement calls for inclusive education, ensuring that children with special educational needs are educated within the mainstream school system. It upholds education as a basic right and urges schools to adapt to the diverse needs of learners.

v **United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)** – An international human rights treaty adopted on 13 December 2006 at the UN Headquarters in New York and opened for signature on 30 March 2007. It seeks to promote, protect, and guarantee the full and equal enjoyment of all human rights and fundamental freedoms by persons with disabilities.

vi **Sarva Shiksha Abhiyan (SSA)** – Launched in 2001 as a flagship program of the Government of India, SSA aimed to achieve Universal Elementary Education (UEE). Guided by the 86th Constitutional Amendment, it provided free and compulsory education to all children between the ages of 6 and 14 years.

vii **The Rights of Persons with Disabilities Act, 2016 (RPwD Act)** – A landmark Indian legislation enacted to safeguard and advance the rights and dignity of persons with disabilities. It replaced the earlier Persons with Disabilities Act, 1995, with broader and more comprehensive provisions.

viii **NCERT -** National Council of Educational Research and Training (NCERT). Retrieved from *https://ncert.nic.in/accessibility.php* dt. 31.07.2025.

ix The **Samagra Shiksha Scheme** is a comprehensive initiative for school education, encompassing all stages from pre-school to class XII. It envisions education as a continuous process and is aligned with the Sustainable Development Goal 4 (SDG-4) on quality education. The scheme supports the effective implementation of the Right of Children to Free and Compulsory Education Act, 2009 and has been further harmonized with the recommendations of the National Education Policy (NEP) 2020.