International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Provision of Pedagogical Innovative Practices to Ensure Teachers Help Learners with Visual Disabilities Acquire Foundational Literacy Skills: Findings from A Multi-Location Study in India

Pushpanjali Gupta[1], Dr. Saraswati Ghosh[2]

[1]Research Scholar, School of Education, Sanskriti University, Mathura
[2]Professor, School of Education Sanskriti University, Mathura

Even though the blind cannot see the rose, they can pursue its fragrance.
-Mahatma Gandhi

Abstract

In an inclusive classroom, each learner is unique. Some students prefer learning through printed materials, others through auditory means. Many benefit from audio-visual content, while some are more comfortable with computer-based instruction. For learners with visual disabilities, tactile (e.g., Braille) and auditory modes of learning are preferred.

The Right of Children to Free and Compulsory Education Act, 2009 (commonly known as the Right to Education Act or RTE) has laid the foundation for barrier-free elementary education within neighborhood inclusive schools, ensuring that children with visual disabilities can access equitable learning opportunities.

Building on this, the National Education Policy (NEP) 2020 has prioritized achieving universal foundational literacy and numeracy (FLN) in primary schools by 2025. The policy underscores that education can only be meaningful if the basic learning skills—reading, writing, and arithmetic—are achieved at the foundational stage.

For learners with visual disabilities, the ability to read and write through tactile formats such as Braille or via auditory tools is a critical prerequisite for further schooling and lifelong learning. As highlighted by various government and non-government surveys, addressing this need is urgent. India faces a learning crisis, with nearly 55% of students in elementary schools lacking foundational literacy and numeracy skills. This means they are unable to read and comprehend basic texts or perform simple arithmetic operations with numerals. Learners with visual disabilities are also represented within the estimated 55% of learners who have not yet attained foundational literacy and numeracy skills.

This paper explores recent continuous professional development (CPD) initiatives for teachers working in the field of visual disabilities. It highlights innovative pedagogical approaches designed to enhance foundational literacy among children with visual impairments, with a focus on improving their reading, writing, and comprehension skills during the preparatory stage.

The study employed a multi-step qualitative research methodology at multiple locations. Participants included teachers from special and inclusive schools, as well as resource teachers (as identified under SSA, Sikkim and Meghalaya) who support general education teachers in inclusive settings.
Educators responded to research questions that revealed their existing teaching practices. Subsequently, researchers—trained in the field of visual disabilities—introduced innovative instructional methods. These were implemented by the educators over a continuous two-week period, allowing for an experiential and practice-based approach to the research.
The findings suggest that when teachers adapt instructional strategies based on an understanding of the individual needs and abilities of learners with visual disabilities at the preparatory level, it significantly enhances student participation. This in turn supports progression to higher grades and fosters long-term success.

Keywords: Assessment, disabilities, abilities, tactile, residual vision, visual acuity, visual efficiency, assistive devices, empowerment.

Introduction

Disability is a societal issue that concerns everyone, as it touches upon fundamental values of equality, inclusion, and human dignity. Over the years, India has made significant progress in ensuring the full participation and empowerment of persons with disabilities, particularly through provisions in health, education, and skill development. Among these, educational opportunities for persons with visual disabilities have a long-standing history in the country.
India has recognized the needs of people with visual impairments for more than a century. Historically, individuals who were blind were respected and often referred to as the "learned blind," reflecting the societal esteem for their intellectual contributions. The establishment of the first special school for the blind in Amritsar in 1887 marked the beginning of formal education for visually impaired students in India.
Subsequent advancements in legislation have strengthened these efforts. Following India's signing of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) in 2006 and its ratification by Parliament, the government enacted the Rights of Persons with Disabilities (RPwD) Act, 2016. This act serves as a cornerstone for the protection, empowerment, and rehabilitation of persons with disabilities, including those with visual impairments.
Today, children with visual disabilities in India benefit from a dual model of education. They have access to specialized schools that function as resource centers and are also increasingly being enrolled in neighborhood inclusive schools, where they learn alongside their sighted peers. Their training includes mobility skills using the white cane—a symbol of independence in orientation and navigation.
The role of the educator in this context is pivotal. Teachers are responsible not only for delivering the academic curriculum but also for implementing the expanded core curriculum tailored for students with visual disabilities. This includes instruction in Braille, the use of specialized arithmetic and geometric tools, daily living skills, and orientation and mobility training. Educators also facilitate the use of assistive technologies such as laptops, tablets, smart phones, and advanced Braille devices. Additionally, they play a key role in procuring accessible learning materials, including large print textbooks, tactile maps, and diagrams.

Through these provisions, learners with visual disabilities are able to access the pedagogical innovative methods practiced by teachers in inclusive classrooms. Collectively fostering independence, academic success, and lifelong learning among students with visual disabilities, ensuring that inclusive education is not just a policy objective but a lived reality.

Provision of Pedagogical innovative practices to teachers by State Council Educational Research Training (SCERT) & District Institute of Education & Training (DIET)

Pedagogy is often described as the act of teaching. The pedagogy adopted by teachers shapes their actions, judgments, and teaching strategies by taking into consideration theories of learning, understandings of students and their needs, and the backgrounds and interests of individual students.

DIET's role in pedagogy support is in the areas of curriculum adaptation, pre-service and in-service teacher training, academic support to schools in districts, action research and resource centers of learning-teaching materials.

Efforts done by the State of Sikkim in Pedagogy initiatives:

Sikkim Education Department has made concerted efforts to enhance foundational learning skills in young children through comprehensive teacher training programs in line with national initiatives like National Initiative for Proficiency in Reading with Understanding and Numeracy, NIPUN Bharat.

A. National Initiative for Proficiency in Reading with Understanding and Numeracy, NIPUN Bharat

NIPUN Bharat, aims to ensure that educators focus on developing phonological awareness and sound discrimination for perception and association that helps children with visual disabilities develop into better readers and writers. Further, for laying the foundation for mathematical learning or abstract thinking, focus is laid on play and activity-based approach (including toy-making, art integration, sports integration, storytelling-based learning, ICT integration, group work, role plays, project work in groups, etc.) that are meaningful for all learners including learners with visual disabilities. NIPUN Bharat envisages making the experiènce of learning at the foundational stage not just Integrated and Inclusive, but also Holistic Enjoyable, and Engaging throughout India by the end of 2026-27. According to a notification from the website of Education Department, govt. of Sikkim, NIPUN was launched in 5th July 2021 as a Pedagogical innovative practice under NEP-2020 to ensure teachers help every child up to grade III acquire foundational literacy skills.

The 4th Residential Workshop under the Special Numeracy Programme was conducted in two phases at Chemchey, Namchi, Sikkim. The first phase, held from 7th to 9th July 2025, was attended by State Resource Group (SRG) members and Nodal Teachers, while the second phase, held from 10th to 11th July 2025, was conducted for the Supporting Mentor Teachers (SMTs).

The focus of the workshop was on the assessment process and classroom activities for Class 3 in line with the objectives of the Special Numeracy Programme. Sessions included detailed work through assessment tools, demonstration of activities aligned with key learning outcomes, and collaborative planning sessions. These activities were aimed at enhancing conceptual understanding and classroom practices in mathematics.

The teachers were also taken to Namchi Boys' SSS and Namchi Girls' SSS where they had an opportunity to observe demonstration class with the students of Class 3.

This workshop also prepared the participating teachers—SRGs, Nodal Teachers, and SMTs—to conduct cluster-level training for all remaining teachers teaching mathematics in Classes 1 and 2 across Governm-

ent schools of Sikkim. These trainings took place from 14th to 22nd July 2025.

B. Vidya Pradesh

A three-month school preparedness program "Vidya Pravesh", the development of the state curriculum for Early Childhood Care and Education (ECCE), orientation training of School Heads and teachers on FLN, intervention for numeracy skills development "Special Numeracy Programme (SNP) was organized in this period.

The programme was organized by SCERT, Education Department, Government of Sikkim, in collaboration with Jodo Gyan, New Delhi, and was coordinated by Mr. Rajiv Philip, Deputy Director, SCERT.

Similar programs comprising of TLM Exhibition and seminar lectures on FLN mission were also organized by DIET (Gyalshing) and DIET (Namchi) in their respective campuses which had the presence of District Officials from the Education Department, teachers from different schools, members of the School Management Committee and parents of the students.

Pakyong District in Sikkim Launched FLN Pedagogy Programme for Primary Teachers

The District Education Office, Gangtok, inaugurated An Introduction to Foundational Literacy and Numeracy (FLN) Pedagogy Programme on 20th July 2024 at Modern Government Senior Secondary School Auditorium. The programme, designed for 30 primary teachers from 15 standalone government schools, aims to enhance teaching practices in English and Mathematics for Classes IV and V.

This initiative was a part of the District Academic Improvement Programme, aimed at boosting student achievement through teacher capacity building. It includes three months (July–September) of bi-monthly training sessions, followed by two months (October–November) of on-site mentoring by resource persons.

The said programme is one of the components of District Academic Improvement Programme, an initiative of Gangtok District for better academic achievement of all students. It is a five months long programme, three months (July – September) of training on FLN Pedagogy followed by two months (October – November) of on-site monitoring & support by the Resource Persons in order to ensure its proper implementation. There will be two days training per month for three consecutive months, a total of six days continuous professional development.

Efforts done by the State of Meghalaya in pedagogy initiatives:

The State of Meghalaya has developed the Key Competencies & Learning Outcomes document for teachers and stakeholders to align teaching learning with the three Development Goals at the foundational stage such as children maintaining good health and well-being, positive self-concept, decision making, problem solving, gross motor skills, fine motor skills, hand-eye coordination, and teamwork.

As a crucial step towards strengthening efforts for Foundational Literacy and Numeracy (FLN), a large-scale Foundational Learning Study (FLS) has been undertaken by National Council of Educational Research and Training (NCERT). The findings revealed that 60% of students in Garo medium schools did not meet the Global Proficiency levels in foundational literacy skills. Further, 64% students in Khasi medium schools did not meet the Global Proficiency levels in foundational literacy skills and only 50% of students in English medium schools met Global Proficiency literacy skill levels. In the area of foundational numeracy, 48% of learners in Grade three were found to be below the Global Proficiency foundational numeracy levels.

C. National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA)

The Department of School Education and Literacy had launched a National Mission to improve learning

outcomes at the elementary level through an Integrated Teacher Training Programme called NISHTHA under the Centrally Sponsored Scheme of Samagra Shiksha in 2019-20.

NISHTHA is a capacity building programme for "**Improving Quality of School Education through Integrated Teacher Training**". It aims to build competencies among all the teachers and school principals at the elementary stage. NISHTHA is the world's largest teachers' training programme of its kind. The basic objective of this massive training programme is to motivate and equip teachers to encourage and foster critical thinking in students. The initiative is first of its kind wherein standardized training modules are developed at national level for all States and UTs.

Key aspects of NISHTHA in Sikkim:

NISHTHA in Sikkim refers to the implementation of the NISHTHA program in the state. NISHTHA is a capacity-building program launched by the Ministry of Education's Department of School Education and Literacy in 2019-20. Its main goal is to improve the quality of school education through integrated teacher training. It is a key initiative focused on the professional development of teachers and one of the major initiatives to build capacity of teachers and Heads of Institutions and hence improve the quality of education in the state.

- Launch: NISHTHA was launched in Sikkim across all four districts on November 2019.
- Collaboration: The program was organized by the State Project Office of Samagra Shiksha and SCERT-Sikkim.
- Resource Persons: School Principals, senior teachers, and faculty from SCERT and DIET serve as resource persons.
- Target: The program aimed to cover approximately 8000 teachers in the state.
- Objectives: The primary objective is to equip teachers with the necessary knowledge and skills for new teaching methods to improve learning outcomes at the elementary level. This includes focusing on areas such as competency-based learning, ICT integration, and inclusive education.
- Expected Outcomes: The program is expected to improve student learning, create an inclusive classroom environment, and enhance teachers' abilities to support students' needs.

Key aspects of NISHTHA in Meghalaya:

The Education Department, Government of Meghalaya, launched the National Initiative for School Heads and Teachers for Holistic Advancement (NISHTHA), an integrated training programme for Secondary and Higher Secondary School teachers of Meghalaya, at Directorate of Educational Research & Training, Shillong in the year 2021.

In the year 2020, the state of Meghalaya also started the training of the elementary school teachers during the month of February but out of 28,000 teachers only 3772 teachers could be trained. The outbreak of COVID-19 pandemic has caused an unprecedented disruption to the training of the school teachers.

In order to continue this learning and to reach every single teacher and pupil teachers irrespective of the board, affiliation etc., the Ministry of Education, Govt. of India had planned to organise a series of online courses on DIKSHA. The state of Meghalaya started training of elementary school teachers on the 16th October 2020.

A 5-day Nishtha programme on Equitable and Inclusive Education was organized by at NERIE-NCERT. An exhibition of Learning Resources for Inclusive Education was incorporated in which altogether 87 participants from the eight North East states had participated.

Understanding Visual Disabilities and Knowing the Person with the Condition: Important for effective dissemination of pedagogical practices

A. Assessment and Certification: Its Significance

Visual disabilities encompass a broad spectrum, primarily categorized into two distinct types: **blindness** and **low vision**. While both fall under the legal definition of visual impairment, they differ significantly in nature and degree, necessitating distinct educational and rehabilitative approaches.

Definitions as per the Rights of Persons with Disabilities (RPwD) Act, 2016:

- **Blindness** is defined as a condition in which a person, even after the best possible correction, exhibits any of the following:
  1. Total absence of sight; or
  2. Visual acuity less than 3/60 (or less than 10/200) in the better eye using a Snellen's chart; or
  3. A field of vision restricted to an angle of less than 10 degrees in the better eye.
- **Low Vision** refers to a condition in which a person, despite the best possible correction, has:
  1. Visual acuity less than 6/18 (or 20/60) but equal to or better than 3/60 (or 10/200) in the better eye; or
  2. A limitation in the field of vision ranging between 40 degrees and 10 degrees in the better eye.

(Refer to Table 1 for classification criteria.)

Nature and Issuance of Disability Certificates:

Assessment and certification play a crucial role in identifying the extent and permanence of the visual disability. This process is typically carried out by a certified medical authority, which evaluates whether the condition is **temporary** or **permanent**.

Permanent Disability Certificate: Issued only when the visual impairment is irreversible and stable. This certificate enables individuals to access various entitlements such as educational accommodations, employment reservations, and financial benefits. In cases where the disability is permanent but may change in severity over time, periodic reassessment is mandated.

Temporary Disability Certificate: Granted in cases where visual impairment is expected to be short-term or reversible, such as in conditions like **cataract** or **Central Serous Chorio-Retinopathy (CSCR)**. These cases require regular monitoring and follow-up evaluations.

It is important to note that **only persons with certified permanent visual disabilities** are eligible for statutory benefits under various government schemes related to education, employment, and social security.

Visual Table of Visual Impairment Gradation

(A simplified and standard format adapted from official disability assessment guidelines issued by the Ministry of Social Justice and Empowerment, Government of India)

Table 1: Visual Disability Gradation After Best Correction

Visual Acuity (Better Eye)	Visual Acuity (Worse Eye)	Field of Vision	Degree of Disability (%)	Category
6/6 to 6/18	6/6 to 6/18	Normal	0%	Not considered disabled
<6/18 to 6/60	Up to 6/60	Normal/Restricted	40%–74%	Low Vision

Visual Acuity (Better Eye)	Visual Acuity (Worse Eye)	Field of Vision	Degree of Disability (%)	Category
<6/60 to 3/60	<6/60 to 3/60	Field < 40°	75%–100%	Severe Visual Impairment
3/60 to No Light Perception	3/60 to No Light Perception	Field < 10°	100%	Blindness

Note: Certification is granted only if disability is **≥ 40%**, as per the RPwD Act 2016.

Note:

Table No. 1 (Visual Impairment Gradation Table), Matrix Table No. 2, and Matrix Table No. 3 have been reproduced from the official document:

"Guidelines for Evaluation and Assessment of Visual Disability and Certification", Ministry of Social Justice and Empowerment, Government of India. Published in the **Gazette of India**, 2018.

These tables are extracted from the assessment_guidelines.pdf as notified under the Rights of Persons with Disabilities (RPwD) Act, 2016.B. What the National Education Policy (NEP) 2020 Says

The **National Education Policy (NEP) 2020** represents a transformative vision for the future of education in India. It provides a comprehensive framework covering all aspects of learning—from **early childhood care and education (ECCE)** to **school education**, **higher education**, and **vocational training**—across both **rural and urban contexts**. One of its central goals is to **revamp India's education system by 2030**, making it more inclusive, equitable, and student-centered.

A cornerstone of the NEP-2020 is its emphasis on **child-centered pedagogy**. The policy recognizes that effective teaching can occur only when teachers **understand the child and their unique development needs**. As Rabindranath Tagore aptly noted,

"Children are living beings—more living than grown-up people. Therefore, it is absolutely necessary for their mental health and development that they should not have mere schools for their lessons, but a world whose guiding spirit is personal love."

Emphasis on Language and Inclusion

NEP-2020 emphasizes **mother tongue or home language** as the **medium of instruction** at least until **Class 5**, with a strong recommendation to continue using it up to **Class 8 and beyond**. This is especially important in early learning, as language is the foundation for understanding and engagement.

In the context of **Early Childhood Care and Education (ECCE)**, the policy asserts:

"When the child is comfortable and proficient with the mother tongue/home language first, it supports developing proficiency in the second language later."

It also encourages teachers and caregivers to maintain a **positive attitude towards children's home languages**, especially when introducing a second language such as English or a regional language.

NEP's Structural Reforms: The "5+3+3+4" Model

The policy introduces a new curricular structure that better aligns with the developmental needs of children:

1. **Foundational Stage (Ages 3–8)**
   - 3 years of pre-school/Anganwadi + Grades 1–2
   - Focus on **play-based and activity-based learning**

2. **Preparatory Stage (Ages 8–11, Grades 3–5)**
   - Introduction of **reading, writing, speaking**, physical education, **languages, arts, mathematics, and science**
   - Emphasis on discovery and experiential learning
3. **Middle Stage (Ages 11–13, Grades 6–8)**
   - Transition to more **abstract concepts** in academic subjects
   - Focus on **critical thinking and analytical skills**
4. **Secondary Stage (Ages 14–18, Grades 9–12)**
   - Greater **flexibility in subject choices**, integration of vocational education, and emphasis on **multidisciplinary learning**

Relevance for Children with Visual Disabilities

NEP-2020 calls for inclusive practices that address the needs of **children with disabilities**, including those with visual impairments. Vision plays a central role in how a child **perceives**, **interacts with**, and **understands the world**. Impaired vision can significantly influence a child's **cognitive**, **emotional**, **neurological**, and **physical development**, as it may restrict access to environmental stimuli and experiences that are crucial for learning.

Thus, NEP-2020's emphasis on **flexibility, multilingualism, inclusivity**, and **teacher preparedness** aligns well with the needs of learners with visual impairments. The policy underscores the importance of **training teachers** to adapt their methods and use **assistive technologies and tactile modes of learning** to ensure **equitable foundational literacy** for all.

PRASHAST: A Disability Screening Checklist for Schools

Teachers hold a crucial position in supporting the holistic development of children. Their continuous interaction with students—in academic, social, and extracurricular settings—places them in a unique position to **identify early signs of developmental delays or disabilities**, including visual impairments.

Recognizing this, the **Central Institute of Educational Technology (CIET)** under the **National Council of Educational Research and Training (NCERT)** developed the **PRASHAST: Disability Screening Checklist for Schools**. It is designed as a **user-friendly tool for regular school teachers** to assist in the **early identification of children with disabilities**, including visual disabilities such as **blindness and low vision**.

Teachers, by virtue of observing students across multiple contexts—such as classrooms, playgrounds, and activities like music, art, and craft—are well-equipped to notice atypical development patterns. They also serve as effective intermediaries between the school and parents, gathering essential background information that can support the referral and diagnosis process.

PRASHAST empowers teachers by providing **structured screening checklists** that help in identifying children who may require further clinical or functional assessment. Once flagged, these students can be referred to **block- or district-level assessment camps** for formal disability certification under the Rights of Persons with Disabilities (RPwD) Act, 2016.

Disability-Specific Screening Tools from PRASHAST

Table A: Specific Checklist – Blindness

(Courtesy: PRASHAST, CIET-NCERT)

This checklist includes observable indicators such as:

- Consistent difficulty in recognizing people or objects unless they are very close

- Frequent bumping into objects or people
- Tilting of the head or unusual eye positioning
- Absence of eye contact or visible signs of discomfort in bright light
- Use of touch instead of vision to explore materials

Table B: Specific Checklist – Low Vision

(Courtesy: PRASHAST, CIET-NCERT)

Indicators in this checklist may include:

- Difficulty in copying from the blackboard
- Holding books too close or too far from the eyes
- Inconsistent performance in reading or writing tasks
- Squinting or closing one eye while trying to focus
- Complaints of eye strain or headaches after visual tasks

These checklists are not diagnostic tools but **preliminary screening aids** to support early identification and timely referral. By incorporating PRASHAST into everyday school practice, teachers contribute significantly to the national goal of inclusive education and equitable learning opportunities for all.

Knowing the Person with the Condition: Visual Impairment

Understanding visual impairment requires going beyond clinical definitions to appreciate how the condition affects a child's overall development and interaction with the world. **Blindness**, in particular, restricts visual experiences and independent mobility. As a result, children who are blind or have low vision must be provided with guided, structured experiences to compensate for the limited visual input and to help them connect meaningfully with the visual world around them.

Teachers, being the primary facilitators of learning, were equipped with key inputs to support these learners, beginning with proper assessment and followed by tailored pedagogical strategies.

C. Clinical and Functional Evaluation

1. Clinical Evaluation

Early identification of visual impairment is essential. If not diagnosed in the early years, a child may miss vital visual experiences that contribute significantly to cognitive and perceptual development. Clinical evaluation includes assessments of:

- **Visual acuity**
- **Field of vision**
- **Light perception**

2. Functional Vision Assessment

Functional vision refers to a child's ability to **use their remaining vision to perform everyday tasks**. This cannot be determined through clinical methods alone. Educators must observe and assess how children interact with their environment and learning materials. Based on visual capabilities, learners may be categorized as:

- **No light perception**
- **Visual acuity less than 3/60**
- **Visual acuity between 3/60 and 6/24 (residual vision)**

Additionally, **visual efficiency**—the capacity to use vision effectively—differs from one child to another. It includes:

- Distance and near vision abilities
- Control of eye movement

- Speed of visual processing
- Brain's ability to integrate visual information
- Adaptability and attention to visual tasks

Pedagogical Innovations to Enhance Visual Efficiency and Foundational Literacy

To ensure children with visual disabilities acquire foundational literacy skills, educators need to engage in **visual stimulation activities** and **adapted teaching strategies** that enhance visual efficiency.

Suggested Activities:

1. **Attention and Distance Vision**
   - Use shiny or colorful toys to attract visual attention.
   - Gradually increase the distance of the visual stimuli to improve distance vision.
2. **Tracking and Scanning Skills**
   - Roll a brightly colored ball to promote tracking using both central and peripheral vision.
   - Use toy models and pictures to build scanning ability across visual fields.
3. **Visual Discrimination**
   - Train children to recognize facial expressions, gestures, or movements using 3D models and 2D pictures.
   - Provide matching activities (e.g., matching toy animals with images) to enhance figure-ground discrimination.
4. **Visual Memory**
   - Show pictures of familiar locations (e.g., banks, post offices) briefly and ask the child to describe what they recall.
   - This strengthens memory retention and verbal articulation of visual cues.
5. **Visual Closure**
   - Present partially covered images or objects and ask children to identify them.
   - This builds the ability to perceive complete images from incomplete cues.
6. **Visual Constancy and Hand-Eye Coordination**
   - Activities such as coloring, pasting, or throwing soft objects help children recognize objects from various angles and improve coordination.

Dr. Jill Keeffe's Vision Screening Procedure

Dr. Keeffe's method provides a holistic framework for assessing **both clinical and functional visual skills**, which includes:

- **Distance and near visual acuity**
- **Visual field range**
- **Contrast sensitivity**
- **Color discrimination**
- **Visual language comprehension**

The educator observes how the child uses vision in various tasks, including reading, object recognition, movement, and daily living skills. Based on this, a **training program** should be created, incorporating **sequential visual stimulation activities** to enhance visual efficiency and learning potential.

Assistive Devices: Traditional and Modern Tools for Empowerment

To maximize independence and literacy acquisition, children with visual disabilities benefit from a combination of traditional and modern tools:

Traditional Devices

- **Braille slate and stylus**
- **Taylor frame and abacus**
- **Tactile diagram board and geometry sets**

Recreational Aids

- **Chess board with tactile pieces**
- **Peg board and audible ball**
- **Tactile playing cards**

Mobility Aids

- **White cane** (symbol of independence)
- **Smart cane** with obstacle detection sensors
- **Signature guides** for document signing

Modern Devices

- **Braille typewriters and Refreshable Braille Displays**
- **Optical Character Readers (OCR)**

Assistive Software

- **JAWS (Job Access With Speech)**
- **NVDA (Non-Visual Desktop Access)**
- **SAFA (Screen Access for All)** – designed for Indian languages

A deep understanding of visual impairment combined with thoughtful assessment and innovative teaching strategies enables educators to unlock the potential of children with visual disabilities. Through **visual stimulation**, **assistive devices**, and **inclusive pedagogical practices**, these learners can be empowered to achieve foundational literacy and thrive both academically and socially.

Low-Vision Technology and Braille as Tools for Literacy

1. Low-Vision Technology

While technology may not fully eliminate the challenges associated with visual disabilities, it has significantly **reduced barriers** to access and learning for individuals with low vision. In alignment with the **Rights of Persons with Disabilities (RPwD) Act, 2016**, the government encourages research and development in assistive technologies to support functional independence and education.

Low-vision technology can be broadly classified into:

A. Optical Aids

These devices help enhance visual input through magnification and improved focus:

- **Hand-held or stand magnifiers**
- **High-powered spectacle aids (telescopic or microscopic lenses)**

B. Non-Optical Aids

These support reading posture, visibility, and access to printed information:

- **Adjustable reading stands**
- **Large-print books and materials**
- **High-contrast materials for better legibility**

C. Assistive Talking Devices

Designed to convert visual data into auditory feedback:

- **Talking thermometers and weighing scales**
- **Talking watches, calculators, and clocks**
- **LCD screen readers and tactile buttons**

These technologies support **inclusive learning** by enabling children with low vision to access content independently or with minimal support.

2. Learning Braille as an Innovative Literacy Technique

Braille remains a **foundational literacy tool** for learners with total blindness or very low vision. It provides tactile access to written language and helps children gain **reading fluency, writing skills, and conceptual understanding**.

Braille and Indian Languages

Braille is **phonetic in nature**, which aligns well with the structure of **Indian languages**, making it easy to adapt for regional scripts. Both reading and writing in Braille require **specific motor and sensory skills**, and the learning process is methodical and progressive.

A. Learning to Read Braille

- **Reading precedes writing** in Braille literacy.
- Learners must develop **tactile sensitivity**, especially on the **pads of the index fingers**.
- Accurate **finger placement** and movement from **left to right** are essential.
- As the **right hand** reaches the end of the line, the **left hand retraces** and locates the start of the next line.
- Regular practice builds **fluency, speed, and comprehension**, all of which are vital for literacy and concept development.

Young learners benefit from:

- Being **read aloud to**, before formal Braille instruction begins
- Ample **exposure to tactile books** and **Braille storybooks**
- **Tactile games and activities** to build familiarity with dot patterns and textures

B. Writing in Braille

- Braille writing involves **punching dots** from **right to left** using a **slate and stylus**
- Once completed, the paper is **reversed** and read **from left to right**

To write effectively, the learner must develop:

- **Fine motor coordination** and **muscle control**
- **Finger flexibility and strength**
- Familiarity with **Braille codes**, including contractions and punctuation

3. Collaborative Teaching Approach

The success of Braille literacy in inclusive settings depends heavily on **collaborative teaching models**. The **special educator for the visually impaired** plays a critical role in:

- Designing individualized tactile learning strategies
- Supporting the **general education teacher** in content delivery
- Monitoring progress and reinforcing both **reading and writing** skills in Braille

Such team-based approaches ensure that **learners with visual disabilities are not left behind** and receive consistent, coordinated support.

Conclusion

Both **low-vision aids** and **Braille literacy tools** are integral to empowering students with visual disabilities. They not only foster independence but also promote active participation in academic and social settings. With proper training, patience, and interdisciplinary collaboration, these tools can open up a world of literacy and lifelong learning for children with visual impairments.

The findings from the study indicate that **early developmental support** during the pre-school years significantly enhances the **successful inclusion of children with visual disabilities** in both educational settings and broader society. This positive trend is largely attributed to the **implementation of the Right to Education Act, 2009**, which has emphasized barrier-free, equitable access to quality education for all children, including those with disabilities.

One of the most impactful factors has been the presence of **trained teachers**, supported by responsive school administrations. These educators have recognized the importance of building appropriate **concepts, attitudes, and foundational life skills** in children aged 0–5 years—often referred to as the 'little scientists' due to their natural curiosity and learning potential.

A common concern raised by primary-level teachers was that **many children with visual disabilities entered school without having acquired basic self-care skills**, such as dressing, bathing, eating, or brushing their teeth. These essential life skills are critical not only for personal independence but also for enabling smooth **transitions into structured school environments**.

To address this gap, it is recommended that **parent orientation and awareness programs** be conducted regularly. These programs should aim to guide caregivers in supporting their child's development without neglect or overprotection. By fostering independence and practical life skills at home, parents can significantly contribute to their child's readiness for school and long-term inclusion.

In conclusion, a **collaborative approach involving educators, parents, and policy implementers** is vital for nurturing the full potential of learners with visual disabilities and ensuring their meaningful participation in the educational system and society at large.

References

1. Central Institute of Educational Technology – NCERT. (n.d.). Educational rights of children with special needs: Frequently asked questions. https://ncert.nic.in/pdf/CWSN-FAQs.pdf
2. Ministry of Education, Government of India. (2021, March). Guidelines for the development of e-content for children with disabilities: Developed by sub-committee of experts. https://ncert.nic.in/pdf/CWSN_E-Content_guidelines_2021_new.pdf
3. Ministry of Education, Government of India. (2021). NIPUN Bharat: National initiative for proficiency in reading with understanding and numeracy. Department of School Education and Literacy. https://ncert.nic.in/pdf/announcement/NIPUNBharat_web.pdf
4. National Council of Educational Research and Training. (n.d.). PRASHAST: A disability screening checklist for schools. https://ncert.nic.in/pdf/DSCS_booklet.pdf
5. Ministry of Education, Government of India. (2020). National education policy 2020. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
6. Department of Empowerment of Persons with Disabilities (DEPwD), Ministry of Social Justice and Empowerment, Government of India. (n.d.). Guidelines for evaluation and assessment of visual disability and certification. https://divyangjan.depwd.gov.in/upload/uploadfiles/assessment_guidelines.pdf

7. National Association for the Blind. (n.d.). Education. https://nabindia.org.in/education/
8. **Right of Children to Free and Compulsory Education Act, 2009 (RTE Act)** Ministry of Law and Justice. (2009). The Right of Children to Free and Compulsory Education Act, 2009. The Gazette of India. Retrieved from: https://legislative.gov.in/sites/default/files/A2009-35.pdf
9. **Rights of Persons with Disabilities Act, 2016 (RPwD Act)** Ministry of Law and Justice. (2016). The Rights of Persons with Disabilities Act, 2016. The Gazette of India. Retrieved from: https://legislative.gov.in/sites/default/files/A2016-49_1.pdf
10. **United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)** United Nations. (2006). Convention on the Rights of Persons with Disabilities and Optional Protocol. Retrieved from: https://www.un.org/disabilities/documents/convention/convoptprot-e.pdf
11. Keeffe, J. E., & Leasher, J. L. (2008). Vision Impairment: Global Issues and Strategies. In R. D. Luce & A. D. Michelson (Eds.), Vision for the Future: Global Initiatives and Strategies. World Health Organization.
12. Hatlen, P. (1996). The core curriculum for blind and visually impaired students, including those with additional disabilities. RE:view, 28(1), 25–32.
13. Lowenfeld, B. (1973). The visually handicapped child in school. American Foundation for the Blind.
14. Ministry of Social Justice and Empowerment. (2018). Guidelines for evaluation and assessment of visual disability and certification: Gazette notification. Government of India. https://divyangjan.depwd.gov.in/upload/uploadfiles/assessment_guidelines.pdf