UN-HABITAT

TOOLKIT ON
ENHANCING ACCESSIBILITY AND INCLUSION IN SCHOOLS

Toolkit on Enhancing Accessibility and Inclusion in Schools

This Toolkit has been developed under the collaborative initiative 'Enhancing Accessibility and Inclusion in Schools' of United Nations Human Settlements Programme (UN-Habitat) India and Indian Institute of Technology (IIT) Kharagpur which is part of the umbrella project 'Mainstreaming Leave No One Behind (LNOB) in National Urban Policies and Programmes in South Asia'. In partnership between UN-Habitat, United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), and United Nations Office of Information and Communications Technology (UNOICT), the project focuses on mainstreaming disability inclusion in four South Asian countries – Bangladesh, India, Nepal, and Sri Lanka.

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UN-Habitat India & IIT Kharagpur teams with school facilitators at the training programmes conducted in 2 schools under jurisdiction of Government of NCT of Delhi

Preface

Aligning with the national and local laws, regulations, and guidelines, UN-Habitat is implementing the project "Mainstreaming Leaving No One Behind (LNOB) in National Urban Policies and Programmes in South Asia" to facilitate evidence-based localization of disability inclusion in urban areas in four South Asian countries – Bangladesh, India, Nepal, and Sri Lanka - with focus on SDGs 6 & 11. The project draws on the collective expertise of UN-Habitat, UNESCAP, and UN-OICT to use the convening power for addressing the intersectional marginalisation and discrimination experienced by persons with disabilities; and ensuring inclusion and well-being of various social groups to facilitate the vision of the 2030 Agenda of Sustainable Development and New Urban Agenda.

Under this project, training programmes, policy briefs, accessibility audit toolkits, and knowledge products responsive to the needs of the persons with disabilities are being developed, and an active stakeholder network has been established to ensure that knowledge translates into tangible policy and local action.

UN-Habitat India has collaborated with Indian Institute of Technology Kharagpur on a city-level initiative titled "Enhancing Accessibility and Inclusion in Schools" which is an endeavour to sensitise all stakeholders that are part of the school ecosystem on barrier-free and accessible schools for all, especially for children with disabilities. IIT Kharagpur is a centre of excellence in education and research in India producing global leaders in science, technology, and management. Within this institute, the Department of Architecture and Regional Planning is well recognized for its contribution in undergraduate and postgraduate teaching, PhD guidance, research projects in varied domains related to Inclusive City, Smart City, Sustainable Development, among others.

As part of the city-level initiative, pilot training programmes were conducted on 19th & 20th December 2022 in 2 schools respectively - a) Government Boys Senior Secondary School, Defence Colony, and b) Shaheed Hemu Kalani Sarvodaya Bal Vidyalaya, Lajpat Nagar - that fall under the jurisdiction of the Government of National Capital Territory of Delhi (GNCTD). This included training sessions for the awareness and sensitization of students, parents, caregivers, special educators, school faculty and staff, and school management authorities. The content of the training modules and learning materials utilised during the sessions have undergone a peer-review process through several stakeholder consultations with sector experts, organisations of persons with disabilities (OPDs), policy institutions, and UN agencies, among others. The training modules are being designed as a self-paced online course which will be accessible on an international learning platform and which can also be incorporated into school curriculums.

This Toolkit builds on the e-training modules and has been developed as a "Hands-on Practical Guide" primarily targeted towards technical experts (including architects, engineers, planners) involved in the construction and management of accessible built infrastructure and assets in schools. Though the focus of the Toolkit is on schools, this document can be adapted for preparing similar toolkits and guiding documents for other building typologies with minor modifications.

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Acknowledgements

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List of Acronyms

CFS	Child Friendly Schools
CwD	Children with Disabilities
CwSN	Children with Special Needs
DEPwD	Department of Empowerment of Persons with Disabilities
LNOB	Leave No One Behind
NEP	National Education Policy 2020
NGO	Non-governmental Organisation
NUA	New Urban Agenda
OPDs	Organizations of Persons with Disabilities
POE	Post-Occupancy Evaluation
PwDs	Persons with Disabilities
RPwD	Rights for Persons with Disabilities Act 2016
RTE	Right of Children to Free and Compulsory Education Act or Right to Education Act 2009
SDGs	Sustainable Development Goals
SSA	Samagra Shiksha Abhiyan
TGSI	Tactile Ground Surface Indicators
UDHR	Universal Declaration of Human Rights
UDIP	Universal Design India Principles
UN	United Nations
UNCRC	United Nations Convention on the Rights of the Child
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities
UNDIS	United Nations Disability Inclusion Strategy
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UN-Habitat	United Nations Human Settlements Programme
UNOICT	United Nations Office of Information and Communications Technology
WASH	Water, Sanitation, and Hygiene

Background

With an estimate of around 25% of India's population (NIUA, 2020) needing universal accessibility to live independently and with dignity, there is a clear need to emphasise 'accessibility and inclusion' in the path for achieving sustainable development.

As the largest country in the world in terms of population, one of India's competitive assets is its human capital. In India, according to Census 2011, an estimated 1.7% of children aged 0–19 years have a disability. In this age group of 0-19 years, 20% have disability in hearing, followed by 18% with disability in seeing, and 13% in movement. Among children with disabilities aged 0-14 years, 24% have 'any other' disabilities (for instance, autism) that include conditions not specified in the list of disabilities in the latest census. Further, across age groups, more boys (1.81%) than girls (1.58%) are recorded to have a disability in India.

Within the school premises and building, children with disabilities face four types of barriers–

- **Physical Barriers**, which include steps, narrow entrances, slippery floor, long walking stretches, inaccessible WASH, lack of accessible transport to school,

- **Attitudinal / Social Barriers**, which means lack of awareness / sensitization among people who make policies and implement,

- **Communication / Sensory Barriers** are not including braille, tactile signage, maps, announcement while designing physical space and

- **Institutional Barriers**, which includes lack of clear policies and strategies, knowledge, skills among implementers at all levels.

Impact of these barriers are far reaching. According to the Census 2011, only 61% of the children with disabilities aged 5-19 years are attending educational institutions, and among those, 57% are boys. Also, the rate of attending schools among children with disabilities is higher in urban areas (65%) as compared to rural areas (60%). This poor school attendance has led to a high rate of illiteracy (45%) among persons with disabilities. Moreover, only 13% of the population

of persons with disabilities have secondary-level education, but are not graduates, and just 5% are graduates and above. The obvious impact of this is seen in the employment status of the population with disabilities which reveals that only 36% of the total persons with disabilities are workers (in which 31% were agricultural labourers). Again, among the male persons with disabilities, 47% are working and among female persons with disabilities, only 23% are working. These figures show the intersectionality of the factors like disability, gender, urban-rural divide. Hence, there is a dire need for enhancing accessibility and inclusivity in schools, for holistic benefit of the society.

There is increasing awareness of the need for enhancing inclusion and accessibility in educational institutions at national as well as global level. At the global level, the Universal Declaration of Human Rights (UDHR) and other declarations have proclaimed that children are entitled to special care and assistance. In 1989, world leaders made a historic commitment to the world's children by adopting the United Nations Convention on the Rights of the Child (UNCRC) – an international agreement for rights of children. Further, an international human rights agreement known as the Convention on the Rights of Persons with Disabilities (UNCRPD) was created by the United Nations on 13th December 2006 to safeguard the rights and dignity of people with disabilities. Within this, Article 9 in general and Article 24 in particular advocated the necessity for inclusive education by stating that persons with disabilities are able to access general tertiary education, vocational training, adult education and lifelong learning without discrimination and on an equal basis with others.

The commitment of the United Nations to promoting accessibility, inclusion and advancement of persons with disabilities in society and development was further enhanced through the United Nations Disability Inclusive Strategy, 2019. Aligning with the SDGs, Leave No One Behind (LNOB) is the central, transformative promise of the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs). Among the 17 Sustainable Development Goals (SDGs), SDGs 4, 6 and 11 have specific focus on inclusive education and cities.

In India, the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995, is followed by several acts, regulations and guidelines to strengthen disability inclusion. Article 21A of the Indian Constitution and the Right of Children to Free and Compulsory Education Act, 2009 (RTE) Act outlines the fundamental right to education and the right to have free and compulsory education for children aged 6-14 years within their neighbourhoods. The Samagra Shiksha Abhiyan (SSA) promulgated by the Government of India further outlines a "zero rejection policy" and emphasises that every child with special needs should be provided with meaningful and quality education, irrespective of the kind, category, and degree of disability.

RTE 2009 further mandates schools to become child-friendly, inclusive spaces where children from diverse backgrounds can actively participate in learning through child-centred activities. Department of Empowerment of Persons with Disabilities (DEPwD) launched the Accessible India Campaign (Sugamya Bharat Abhiyan) as a nation-wide campaign for achieving universal accessibility for Persons with Disabilities (PwDs) on 3rd December 2015. Under it are three important verticals, namely– the built environment, the transportation sector and the ICT ecosystem–with the first vertical emphasising inclusive school buildings and premises. Soon after, in December 2016, the RPWD Act was passed. It advocates for and defends the rights and dignity of individuals with disabilities in all spheres of life, including the educational, social, legal, economic, cultural, and political ones. There is special thrust for inclusive education, which has been defined as a system of education where students with and without disabilities learn together. The recommendations include non-discrimination in schools, accessible infrastructure, reasonable accommodations, individualised supports, use of Braille and Indian Sign language in teaching, and monitoring among others.

Finally, the New Education Policy 2020 endorses the idea of creating an educational system that is designed for children with and without disabilities to be in the same classroom, addresses barrier-free access, and puts forth a plan for the inclusion and integration of children with disabilities in the curriculum and assessment. NEP 2020 is in complete consonance with the provisions of the RPWD Act 2016 and endorses all its recommendations with regard to inclusive and integrated school education such that students with and without disabilities learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities.

Parallel to these acts, regulations, conventions and global moments, seven (07) Principles of Universal Design were developed in 1997 by a working group of architects, product designers, engineers, and environmental design researchers, led by Architect Ronald Mace. Later, the Universal Design India Principles (UDIP), © NID, 2011 were developed as stand-alone universal design ideologies that focus on Indianness and inclusivity as they relate to age, gender, disability, caste, class, religion, poverty and urban/rural background. The UDIP neither makes any connection nor builds on the seven Principles of Universal Design. The UDIP recognizes the overarching importance of the seven global Principles and contextualise their relevance to India, namely–(i) "saman" or equitable, (ii) "sahaj" or usable, (iii) "sanskritik" or cultural, (iv) "sasta" or economic, and (v) "sundar" or aesthetic.

In the above context, this Toolkit aims to sensitise a diverse group of stakeholders about the planning, implementation, and maintenance of inclusive infrastructure and facilities in schools. Nuances of ensuring inclusion has been elaborated at every step such as–(i) Preparation of technical and conceptual drawings, (ii) Selection of Material and Detailing, (iii) Procurement and Costing, (iv) Implementation, (v) Post-Occupancy Evaluation through Simulation Exercise and Accessibility Audits.

Structure of
the Toolkit

The Toolkit is divided into three sections and one annexure:

Section 1. About the Toolkit: This introductory section explains the contribution of the Toolkit towards the UN Disability Inclusion Strategy, and lists the major stakeholders necessary and their roles for implementing the guidance in the Toolkit.

Section 2. Technical Standards and Guidelines: This section is the implementer's guide. The section articulates the steps to be followed by technical experts, including architects, civil engineers, interior designers, contractors, site engineers and supervisors, and labourers. This section elaborates on the first four out of the five stages to be followed by technical experts—(i) Drawing Preparation – technical and conceptual, (ii) Finishes, Material Selection and Detailing, (iii) Procurement—Specification and Costing, (iv) Implementation – Construction at Site and (v) Post Occupancy Evaluation—Simulation Exercise, Accessibility Audit. The strategies mentioned in this section can be used for new constructions as well as for retrofitting purposes. The focus has been specifically to go beyond what is just mentioned in the guidelines and understand the nuances of the implementation on ground.

Section 3. Post-Occupancy Evaluation: Content in this section is relevant for not only technical experts but also school administration, teachers, special educators, staff, children (with and without disabilities) and their parents and caregivers. This section covers two methods of Post-Occupancy Evaluation (POE). First, is the Accessibility Audit which is a robust technical exercise for assessing accessibility of built environment and allied infrastructure in six zones of the school, which are—(i) Entry & School Premises, (ii) Vertical & Horizontal Movement, (iii) WASH and Other Facilities, (iv) Emergency Exit, Way-Finding & Communication (v) Academic Spaces, and (vi) Extra-Curricular Activities along with Digital Infrastructure. An exhaustive checklist which has been specially developed as part of this project has been included. Second, is the Simulation Exercise, which is a role-playing exercise in which the participants simulate different types of disabilities and perform designated tasks under supervision. The objective is to directly experience, perceive, and recognize the barriers faced by persons with disabilities in reality.

Annexure: This section titled "Global and National Steps towards Inclusion" elaborates on extracts from relevant acts, guidelines, conventions, policies, principles, missions and campaigns which are related to inclusive education. The aim of this section is to encourage the readers of this Toolkit to explore further on the subject and deep dive into the available resources.

To summarise, the information in the Toolkit can be used at different points in the journey of making schools accessible and inclusive, such as:

1. Planning and designing new schools – buildings and campuses / premises

2. Assessing the level of accessibility and inclusion in existing schools – indicator wise / zone wise / holistic

3. Remodelling, renovating, extending, and/or repairing existing built environment / campus / facilities in schools (part or full)

4. In–person training of technical experts and conducting workshops for sensitization and awareness of all stakeholders

5. Developing a curriculum for trainings on accessibility for all stakeholders

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About the Toolkit

This Toolkit contributes to the implementation of the United Nations Disability Inclusion Strategy and helps to achieve and exceed most of the strategy's indicators: lack of physical accessibility, specifically recognized as one of the barriers to inclusion in Indicator 6 on accessibility, 6.1 on accessibility of conferences and events, Indicator 7 on reasonable accommodation and Indicator 5 on consultation with persons with disabilities. The Toolkit helps to report on United Nations Country Team scorecards and to build the capacity of implementing partners on accessibility.

Who is this Toolkit for?

While this Toolkit is primarily for persons involved in design and construction activities activities, it provides holistic guidelines for the school administrators aspiring to enhance accessibility and inclusion in their schools. The initial sections on general vision on inclusive education is quite informative for the entire ecosystem of stakeholders, such as children (with or without disabilities), parents and caregivers of children with or without disabilities, school faculty and administrative staff, and special educators. Moreover, the section on Post-Occupancy Evaluation (POE) can be used by owners / managers of any building for evaluation of accessibility and inclusion within their premises.

The Toolkit is also useful for OPDs, non-governmental organisations, local government authorities, United Nations agencies, decisionmakers, urban practitioners, and other stakeholders.

What are the roles of different Stakeholders?

i.   **Technical experts** (Civil Engineers, Architects, Interior Designers, Urban Planners, Infrastructure Planners, Contractors, Developers): Auditing, designing, phasing, budgeting, procuring, and implementing.

ii.   **Teachers and school staff:** Sensitive teaching and better communication with children with disabilities.

iii. **School administration and management authorities:** Decision-making to adopt and implement inclusion strategies based on Ministry of Education's policies, regulations and instructions.

iv.   **Students without disabilities and parents:** Sensitive communication with friends with disability in classes – no bullying, showing empathy, showing respect, no false show of concern, lend a helping hand when required.

v.   **Students with disabilities and their parents and caregivers:** Communicate with other children in classes freely – feel included and empowered – believe in themselves to co-learn and co-create solutions for disability inclusion.

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Technical Standards and Guidelines

Components of inclusion in Schools

The focus of this Toolkit is to facilitate in building accessible physical infrastructure which is a critical enabler to enhance physical, social, as well as digital inclusion in schools. Consequently, the Toolkit emphasises on the Components of Child Friendly Schools (CFS) for inclusion as articulated by UNICEF (March, 2009), in addition to architectural guidelines and spatial standards for creating an accessible built environment. The following diagram illustrates the components of inclusion in schools:

Source: Authors

Areas in a school

Schools usually consist of a variety of spaces, such as for education, sports, recreational, and extracurricular activities. These spaces can be categorised into a few broad areas as mentioned below and illustrated in the diagram:

- Site Entry and Reception: Includes main entry to school.

- Circulation Area: Includes the circulation spaces (such as ramp, staircase, lift, and corridors).

- Activity Area: Includes various activity areas (such as playground, auditorium, computer rooms, and art and music rooms).

- Administrative Area: Includes the office and staff areas (such as teachers', staff, and principal rooms).

- Pantry & Store: Includes the pantry, cleaning supplies, and storage spaces.

- Toilets: Includes the WASH facility areas in school (such as common and personal toilets, and drinking facilities).

- Academic Area: Includes mainly the teaching spaces (such as classrooms, library, and laboratories).
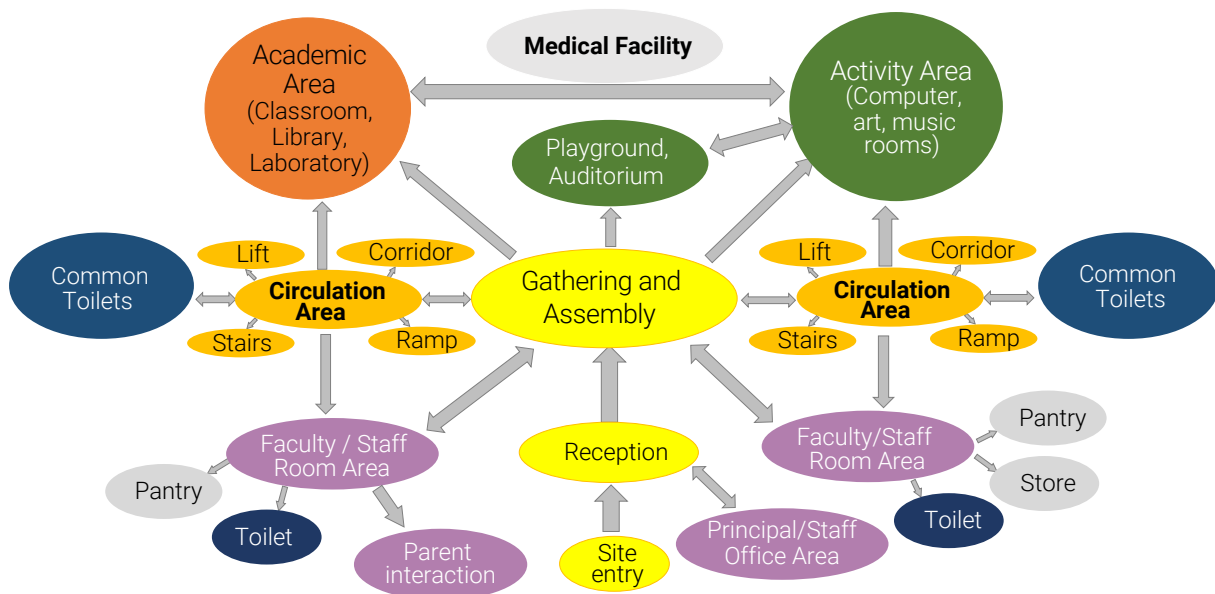
Examples of areas in a school. Source: Authors

- Medical Area: Includes the medical facilities available in school (such as clinics and therapeutic care center).

5 stages for a technical expert

This section takes a deep dive into the technical domain and elaborates the steps to be taken by technical expert, such as architects, civil engineers, contractors, site workers, across the following five stages towards creating a safe and accessible environment -

1. Drawing Preparation – technical and conceptual
2. Finishes, Material Selection and Detailing
3. Procurement–Specification and Costing
4. Implementation – Construction at Site
5. Post-Occupancy Evaluation–Simulation Exercise, Accessibility Audit

Stage 1: Drawing Preparation

Tip 1: Follow the standards

All available international and national standards on accessibility must be referred to. Correct interpretation of drawings is essential for achieving the intended benefit. This section mentions the relevant standards which might be referred to along with some 'Do's' and 'Don'ts'.

Harmonized Guidelines & Standards for Universal Accessibility in India 2021

The Harmonized Guidelines and Standards for Universal Accessibility in India, 2021 establishes the framework for educating and directing the various stakeholders that are in charge of planning, designing, and implementing accessibility in built settings. By transitioning from a barrier-free strategy to a universal design ethos, it offers a holistic approach to understanding accessibility in an Indian context. The guidelines are supplemented with particular sections on Building Operations and Maintenance as well as accessibility through information design and navigation systems, applications in different building typologies, and other factors.

The following table highlights the relevant sections of the Harmonized Guidelines which can be referred for designing or retrofitting various zones of a school.

School Zone	Area / Features	Relevant Sections from HG 2021
ENTRY & SCHOOL PREMISES	1. Site Entrance 2. Parking 3. External Access Routes & Pathways 4. Kerb Ramps 5. Main Building Entrance 6. Reception & Information Counters	1. Site Entrance 2. Parking 3. Access Routes 4. Kerb Ramp 5. Main Entrance 6. Reception & Information Counters
VERTICAL & HORIZONTAL MOVEMENT	1. Doors 2. Corridors 3. Lifts 4. Staircases 5. Ramps 6. Handrails	1. Corridors 2. Doors 3. Lifts 4. Staircases 5. Ramps 6. Handrails
WASH & OTHER FACILITIES	1. Toilets 2. Drinking Water 3. Canteen 4. Resting Facilities	1. Sanitary Provisions 2. Drinking Water 3. Canteen 4. Resting Facilities

💡 Tip 2: Prepare drawings that communicate effectively

Architectural working drawings communicate the design intention to the engineers, contractors and workers working on site. Providing accessible features without understanding the purpose or intended benefit from that feature is as good as not providing the same. Drawings are mostly prepared to comply with the dimensional or spatial norms as provided in the applicable guidelines. However, there are unattended issues related to—(i) usability, (ii) comfort, (iii) convenience, (iv) safety, and (v) ease of operation. To avoid any unsafe situation for users, detailed architectural working drawings (plans, elevations and sections) must be provided for critical areas such as toilets, lifts, classrooms, activity zones, play areas etc.

Hence, apart from general working drawings, there should be additional drawings specially prepared showing the accessible features in a way which can be easily understood by the persons working at site.

Dustbin · 700 · L shaped grab rail · 100 · 300 · 450-480 · 300-350 · Flip up grab bar · 900 x 1200 Clear space · 2200X 2000 Washroom · Double swing door · Emergency button · 900 min. clear · Emergency Alarm light · Electrical controls
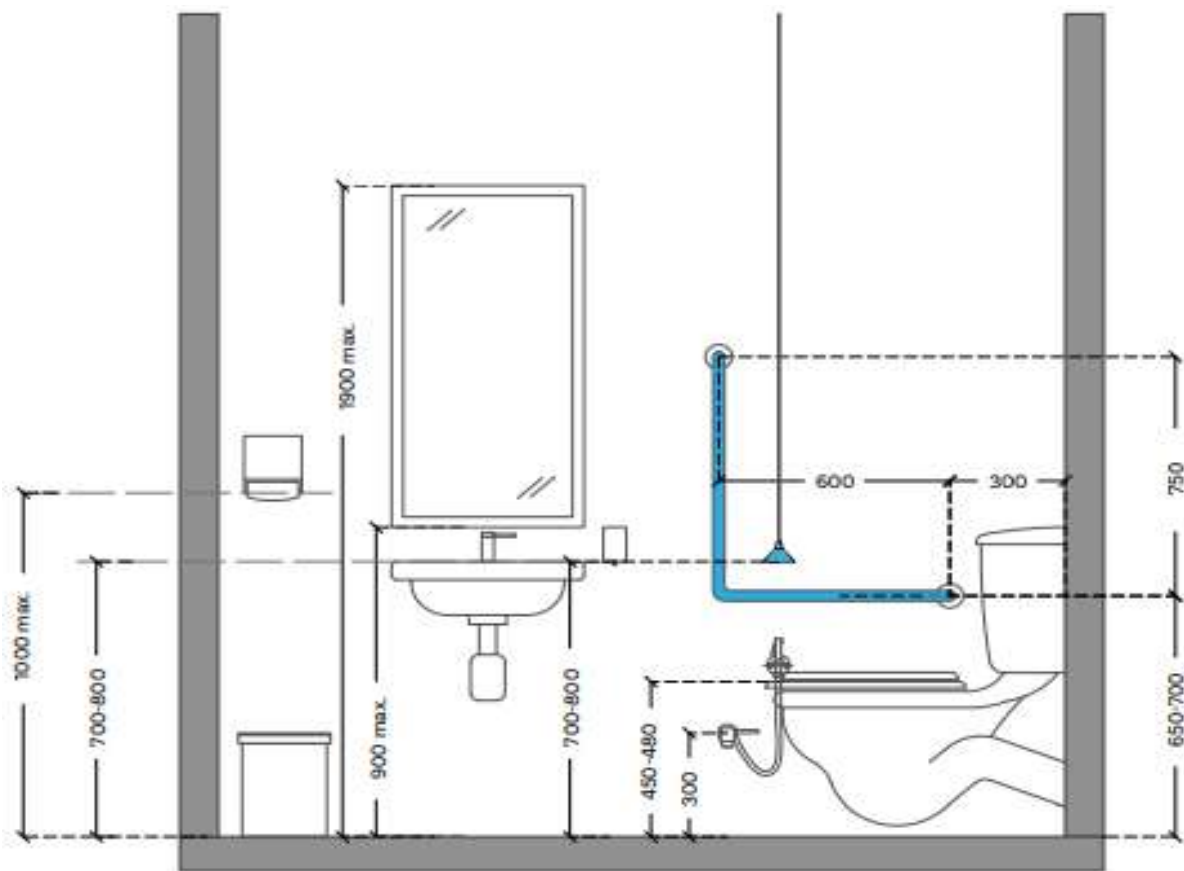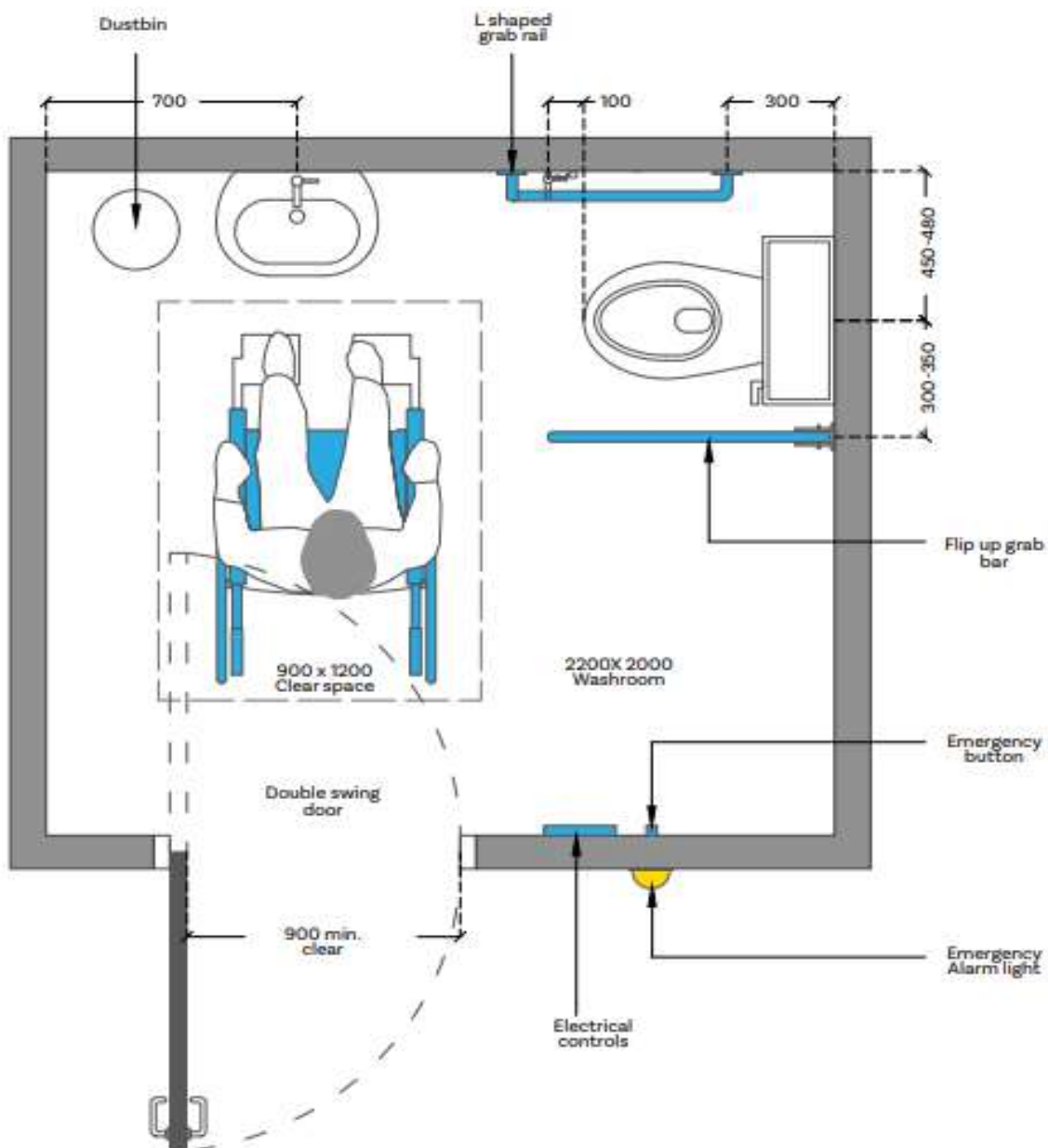
🔆 Tip 3: Prepare Interior Drawings for special areas

Preparation of detailed interior layout is essential before starting the construction processes at site. This can avoid inconvenience and discomfort at later stages while laying furniture, fixing blackboards or electrical fixtures. Designing spaces which will be usable and enjoyable in addition to being safe and accessible is essential for the benefit of the end users. The interior layout must consider the components of Child Friendly School for a better quality of indoor spaces and for holistic growth and development of children. Additionally, adequate lighting design, proper choice of interior finish, appropriate colour of the walls, good positioning of windows, flexible furniture layout to allow independent navigation under supervision are some of the aspects which add on to the safety, accessibility and inclusivity of internal spaces. Following are some examples of child friendly school design which are not part of conventional accessibility standards but are very important for designing an efficient and inclusive learning environment:

Classroom layout:

A larger classroom improves programmatic flexibility, provides space so children can engage in concurrent quiet and active play, and decreases aggressive behaviour.

- each child needs space to move and explore
- materials to learn from and room to play on their own or in small groups
- flexible classroom seating arrangements
- separated from noise-generating activities
- no physical/visual obstruction
- width of entry and circulation path of at least 900 mm wide to allow a wheelchair user to move around should be provided

Seating zone for students with disabilities should have:

- appropriate viewing to blackboard
- adjacent to an accessible route which can serve emergency egress.

Plan 1: Existing classroom
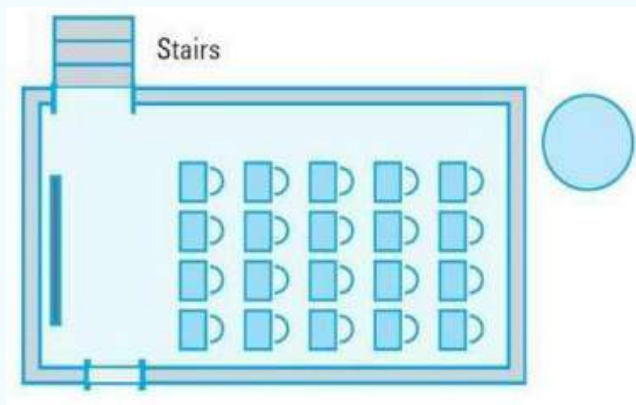
Basic Improvements

- Easy exit provided by the second
- Better cross ventilation by adding windows and wall openings
- Deck for outdoor activities
- Garden
- Separate toilets for boys and girls
- Multi-activity classroom
- Veranda for shaded area

Plan 2: Improved classroom
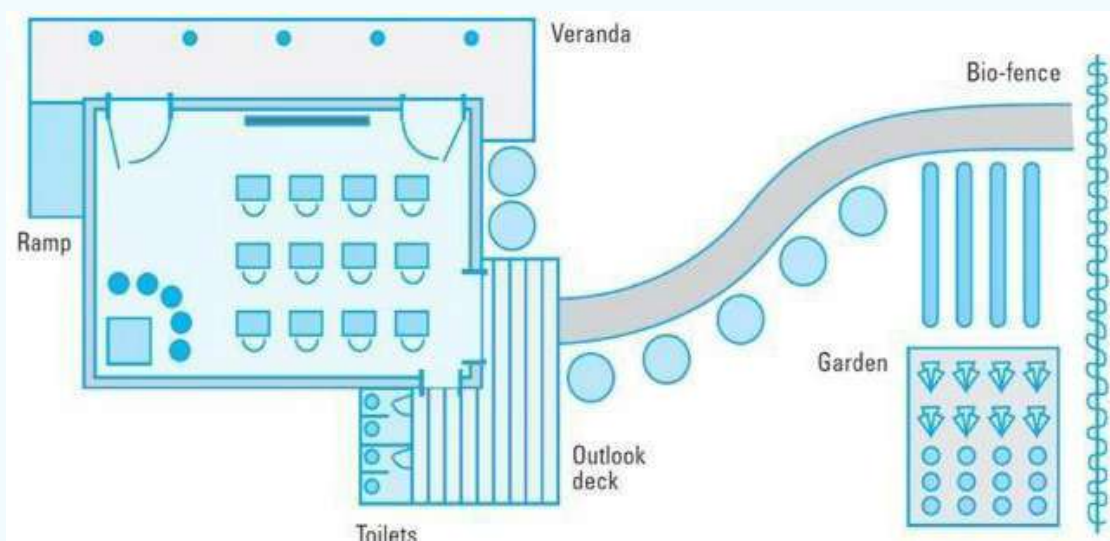
Zones of Classrooms:

Classrooms need tobe spatially differentiated to at least four distinctactivity zones:

- Gross motor skill zone
- Dramatic-play zone
- Arts and crafts zone, and
- Quiet zone.

Activity areas can be separated by

- physical objects like movable partitions
- open shelves, cabinets
- plants
- visual signs such as different flooring materials, wall textures or colours
- by changes in lights or ceiling or floor height.

Such separate, well-defined boundaries support social interaction and encourage exploratory behaviour

Stage 2: Finishes, Material Selection, and Detailing

A well designed space and layout often become unusable due to faulty detailing. For example, a person sitting on a wheelchair may have difficulty in operating a door in-spite of having adequate opening size due to inappropriate fixing of handles or bad choice of fittings. Door handles need to be lever-typed (D-shaped) and have a push–pull mechanism that requires no

grasping. A doorknob is not recommended since this requires precision. But these details are often missed out while selecting and ordering fixtures in mass. Similarly, the lift might not be usable if the door is of collapsible type or not led to by tactile tiles. A decent sized universal toilet, with improper placement of fixtures or wrong choice of fittings may remain as unusable by a child with disability as other toilets. Detailing is particularly important for critical areas and situations like an emergency exit. The following illustrations show some good and bad practices.

Accessible Lift Door

Inaccessible Lift (No Grab bars)
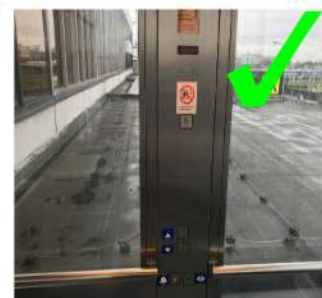
Inaccessible Lift (with Grab bars)

Accessible call buttons in the lift
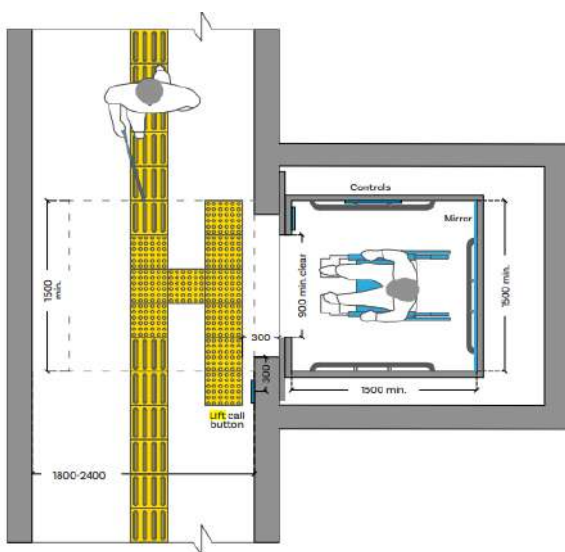
Accessible lift car layout and controls
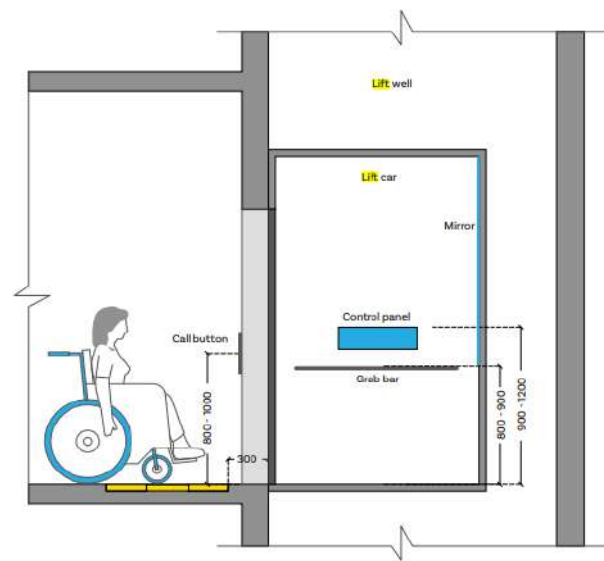
Typical section of an accessible lift car
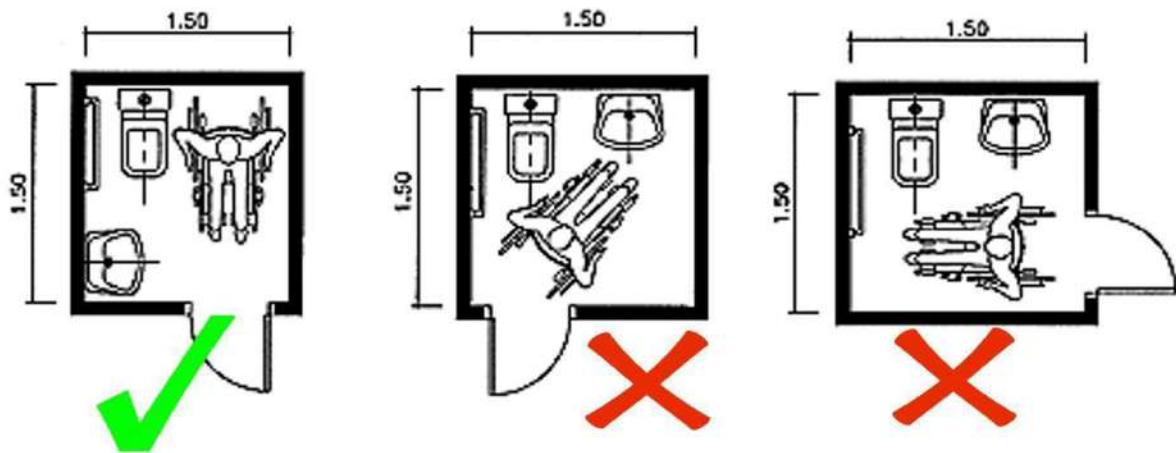
Illustrations showing the transfer of a person from wheelchair to WC
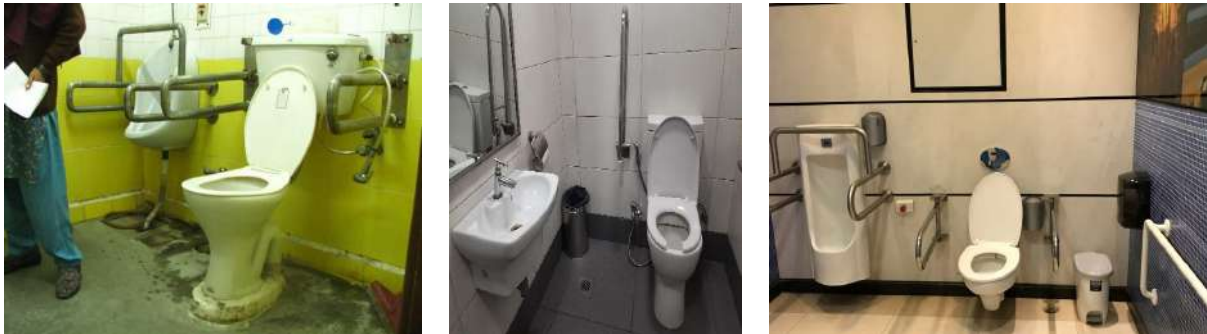
Toilet fixtures which could make the preferred transfer difficult in spite of the toilet having a size as per the specified universal design guidelines.
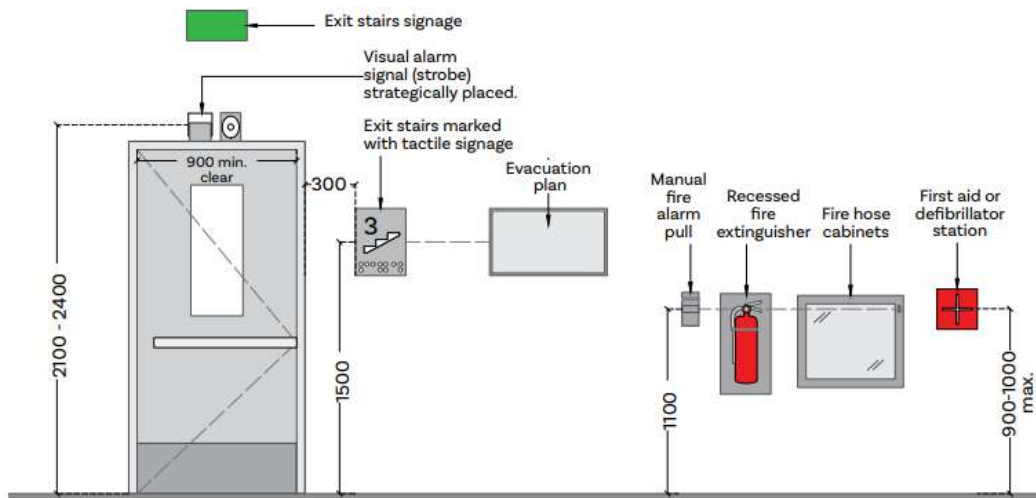
Fire Safety and Evacuation Features: Elevation View

Signage: Signs are not only important to people who are unfamiliar to a particular environment but also for people with cognitive disability in a known place. They give information about the location of a facility, a route, or a hazard. The location of signs should ideally be part of the process of planning the building and not an afterthought. A good and successful sign system must minimise anxiety and confusion. Information may take the form of visual information (e.g. signs, notice boards), audible information (e.g. public address and security systems, induction loops, telephones, and infrared devices), or tactile information (e.g. signs with embossed lettering or Braille). Signs should be provided at all decision points within the campus including approaches to building / facility / service, entrance / exit, main lobby or reception, public facilities such as libraries, toilets etc., departments and offices, fire exits and parking and garages.

Examples of universal and accessible signage

Features of Accessible Signage		
BACKGROUND	**SIGN BOARD**	**LEGEND**
Red brick or dark stone	White	Black dark green or dark blue
Light brick or light stone	Black/dark	White or Yellow
Whitewashed walls	Black/dark	White/Yellow
Green vegetation	White	Black, dark green or dark blue
Back-lit sign	Black	White or yellow

VIEWING DISTANCE	SIZE OF SIGNAGE
Up to 7 meters	60 mm x 60mm
7 meters = 8 meters	100 mm x 100 mm
Exceeding 8 meters	200 mm x 200 mm to 450 mm x 450 mm

VIEWING DISTANCE	HEIGHT OF LETTERS
2-3 meters	15 mm
6 meters	20 mm
8 meters	25 mm
12 meters	40 mm
15 meters	50 mm
25 meters	80 mm
35 meters	100 mm
40 meters	130 mm
50 meters	150 mm

Source: (MoHUA, NIUA & IIT Roorkee, 2021)
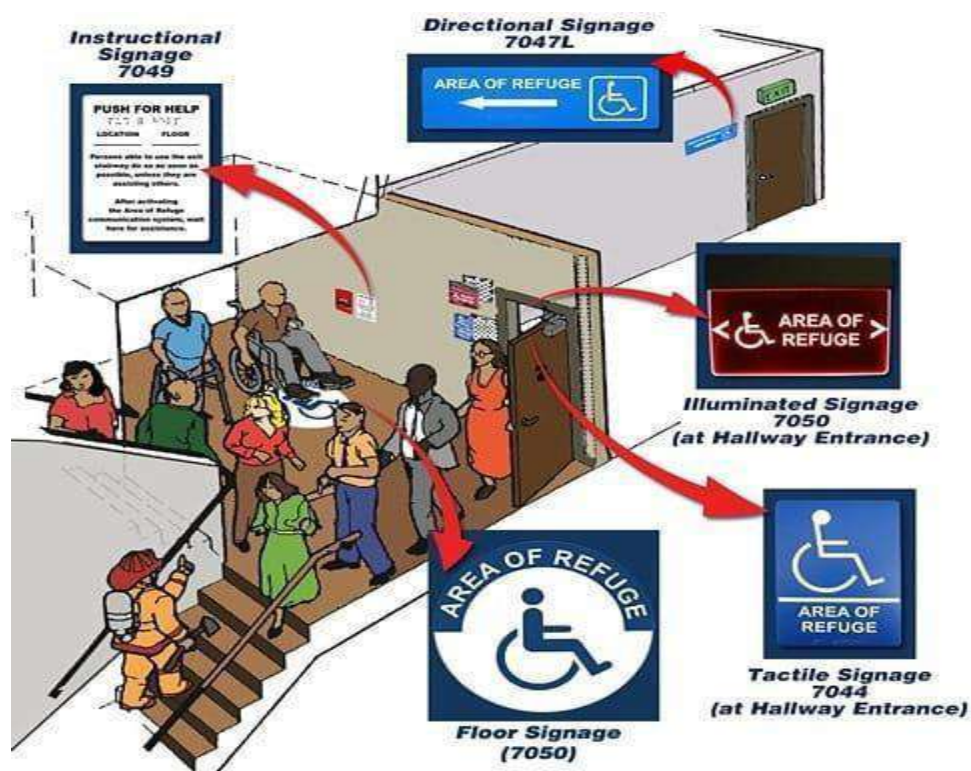
For children with visual impairment, sensory experiences such as touching/feeling different surfaces and picking up environmental cues is imperative for independent navigation. Hence, it becomes mandatory to use materials with proper textures and finishes for effective communication and experience of children with disabilities. Recreational zones such as Sensory Gardens, Indoor and Outdoor Activity Areas must be designed with the appropriate choice of materials. Additionally, choice of materials for ground surface for rendering an anti-skid surface is important in public places (particularly for ramps). Materials such as vitrified tiles, granite, marble which might be aesthetically very pleasing are not recommended in public areas, such as lobbies, corridors, ramps, and stairs, from the point of view of safety of children.

Accessible Sensory Garden

Accessible playground

Few accessible features are as follows:

i.   Obstruction free pathway of 900 mm wide to allow a wheelchair user to move around should be provided
ii.   Heat resistant material with smooth and firm surfaces of rubber or compacted sand
iii. Free from any sharp objects and projections
iv.   Materials contain plastics or metals that produce electrostatic discharges that may de-program hearing aids should be avoided
v.   Call bells in emergencies
vi.   Surveillance through CCTV

Accessible playground

Accessible Indoor Play

Multipurpose Hall

Accessible play room interiors

Accessible outdoor play equipment with safe surface material
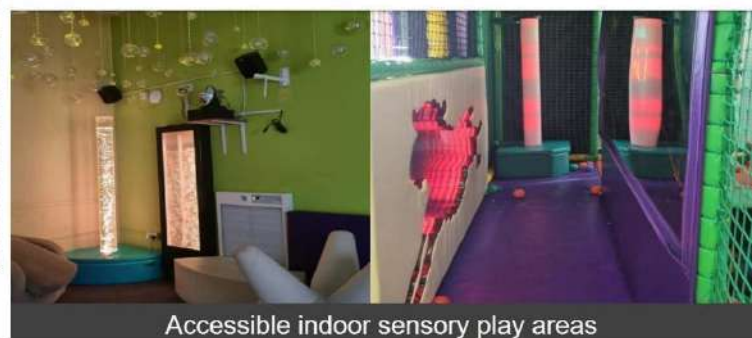
Accessible indoor sensory play areas

Stage 3: Procurement– specification and costing

A major challenge in implementation of accessible built environments is procurement of appropriate materials and fixtures which comply with the accessibility standards. The Delhi Schedule of Rates is a reliable source which progressively includes many materials related to universal design. Also, many products such as grab bars and different types of tactile tiles are available in the open market. The procurement criteria should reward compliance with accessibility and universal design features

in purchase of goods, facilities, materials, and products. Incorrect use of materials, for instance using granite, can be a safety hazard. Flooring materials, such as stones, matte-finish vitrified tiles, among others, have properties such as anti-skid, low reflection, and better water absorption which align better with the safety parameters and standards. For instance, the photos of the ramp with red-coloured directional tiles is an example of an incorrect material procurement. In this case, the contractor had selected those tiles for providing friction but as a consequence, it is misleading for a person with impaired vision since they indicate a wrong direction of movement.

Manufacturers (source: India mart)		
Natural Stone Anti-Skid Floor Tile Size/Dimension 1x1 feet	Usage/Application: Parking Properties: Anti-Skid Material: Natural Stone Packaging Size: 10 Pieces Shape: Square Country of Origin: Made in India	₹ 155/ Box

DSR - Vol. 2, 2021	
16.89	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath. court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.

(DSR.2018)	Description of items	Unit
10.28	Providing and fixing stainless steel (Grade 304) railing kg made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, I/c fixing the railing with necessary accessories & stainless dash fasteners , stainless bolts etc. of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of engineer-in charge, (for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts,bolts, fasteners etc.)	kg
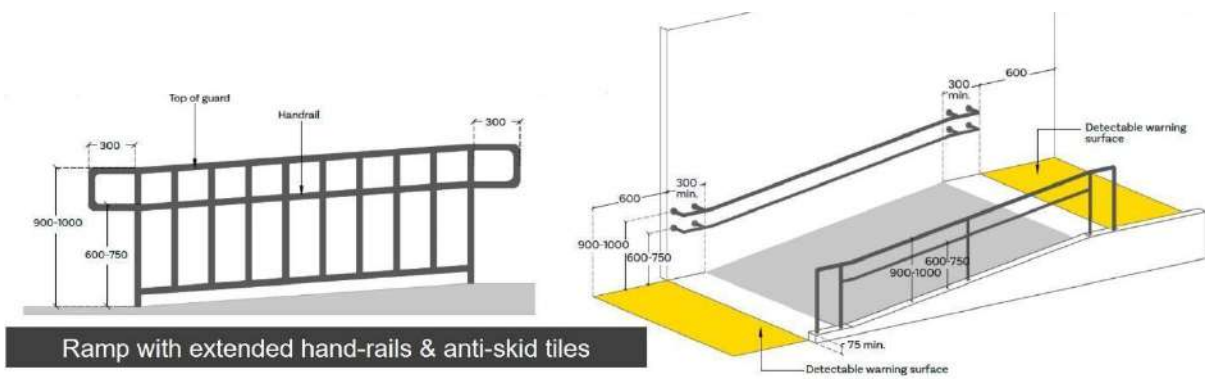
Ramp with extended hand-rails & anti-skid tiles

Some Manufacturers of TGSI (Source: IndiaMART)			
	Johnson Endura TAC outdoor Floor Tile	• Tile Size: 1x1 Feet (30x30 cm) • Finish: smooth profiled tactile • Range: Tac Tiles Series 1.5cm, 1.2 CM • Brand: Johnson • Color: Brown • Shape: Square • Tile Thickness: 10-15 mm • Material: Vitrified • Pattern: Plain • Usage/Application: Outdoor	Price Range: ₹ 35 to 100/-
	Matte Yellow Tactile Paving Tile (Tactile Walking Surface Indicators)	• Surface Finish: Matte • Thickness: 40 mm • Size: 300 x 300 mm • Colour: Yellow • Brand: SRC • Material: Concrete • Shape: Square • Usage/Application: Outdoor	₹ 40/- piece

Note: Prices mentioned above are approximate and subject to change

Some manufacturers of tactile features (Source: IndiaMART)			
	PU Tactile Stud with Stem	• Size: 35 mm x 5 x 22 mm • Quantity Per Pack: 1296 pcs. • Material: PU Polyurethane • Grade: 92 • Thickness: 5 • Surface Finishing: Drill and Fix on any surface	Price Range: ₹ 225/- Square feet
	Yellow PU Tactile Strip With Stem, Matte Finish	• Color Yellow • Finish — Matte Finish • Features — To advise vision-impaired people of the correct side to enter. • Material TPU — PU Polyurethane • Usage/Application — Surface • Tiles Size mm — 280 x 35 x 5 x 22 • Country of Origin — Made in India • Minimum Order Quantity — 25	₹ 225/- Square feet

Note: Prices mentioned above are approximate and subject to change

Stage 4: Implementation – construction at site

The application of accessibility requirements, material specifications, support installations, and maintenance services must be done with care if users are to have a holistic experience of ease of access, safety, and adaptable comfort in the built environment.

It is essential to understand the use of different materials, products and features related to accessibility for effective implementation. Few examples of improper implementation are shown below, which probably have raised out of lack of sensitization and awareness about inclusive environment among the lowest tier of people in the construction sector.

Inaccessible & Improper way of laying of TGSI

Inaccessible & Improper way of laying of TGSI

Accessible & appropriate way of laying of TGSI

Source: UN-Habitat

Every feature which is used to enhance safety, accessibility and inclusivity, such as tactile tiles, grab bars, automatic doors, and signage are very effective and powerful. But proper installation guidelines need to be followed for the benefit of the end users. Following is an example of a relevant guideline on proper fixing of Tactile Ground Surface Indicators (TGSI).

Ref (DSR-2018)	Description of items	Unit
16.90	Providing and laying tactile tile (for vision impaired persons as per standards) of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, courtyard milt , Multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement: 4 coarse sand) in all Shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. as per director of Engineer-in-Charge	sqm

Fixing of TGSI as per drawing and specifications

'+' shaped junction   'L' shaped junction   'T' shaped junction   'Y' shaped junction   'X' shaped junction

Warning Indicators   Guiding Indicators
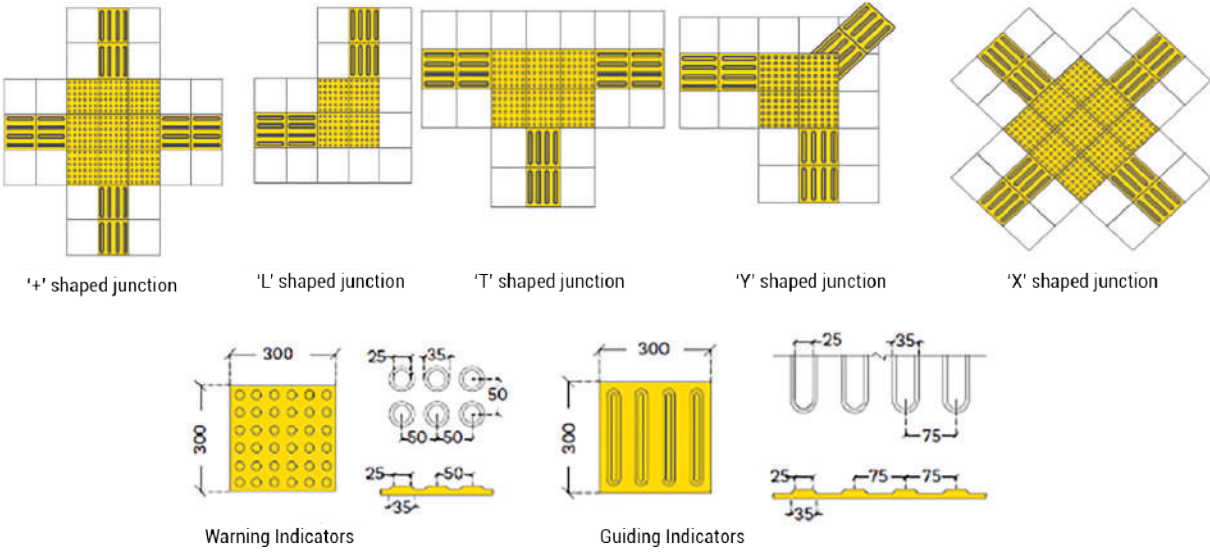
Source: (MoHUA, NIUA & IIT Roorkee, 2021.)

3

Post-Occupancy Evaluation

Stage 5: Post-Occupancy Evaluation (POE)

Stage 5 Post-Occupancy Evaluation (POE) for technical experts is a process of systematically evaluating the performance of buildings after they are built and occupied by its target users for some time. It entails assessing the health, safety, security, efficiency, comfort, accessibility, and other requirements, and records performance of the current status of the project and proposes enhancements or design solutions to the existing or any future issues. In addition, it can provide guiding principles and design criteria to improve similar future projects.

Evaluating Accessibility

The three key areas of information systems, infrastructure systems, and building management systems should be analysed and evaluated for accessibility in all built settings. The holistic approach to accessibility in built environments includes assessment and evaluation. A retrofitting strategy and action plan for the built infrastructure could be created based on the identification of accessibility barriers or service shortages identified by the evaluation.

I. What is an Accessibility Audit?

The purpose of an Accessibility Audit is to establish how well a particular environment performs in terms of access and ease of use by a wide range of potential users, including persons with disabilities, to recommend improvements, where necessary. The outcome is a set of recommendations for removing obstacles and making reasonable accommodations.

Observing how students/ staff/teachers use the school building.

Consultation with all users of school

The auditor can observe how the building works in a number of ways including:

Monitoring day-to-day running of school (e.g. toilet cubicles free from obstruction. etc.).

Analysis of the physical design of the school premises
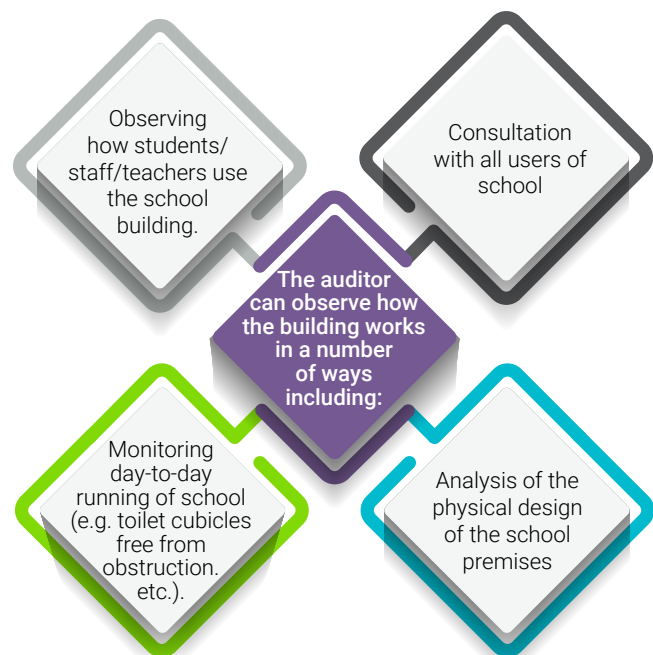
How to form an Audit team?

- A Team Leader (preferably an architect / engineer with knowledge of accessibility)

- School staff (teaching and non-teaching)

- Students (one senior and one junior, and if it is a co-educational school, one girl and one boy)

- Engineer / contractor's representative

- Maintenance staff

- A student or staff personnel having a disability should be part of the team

*	Number of members of each category will depend on the size of the school .

Steps for conducting a holistic accessibility audit

Following diagram illustrates the steps:

STEP 1
Stakeholder meeting with access audit team to define the scope of work.

STEP 2
Sharing of architectural drawings along with visual images of the built environment

STEP 3
Reconnaissance survey of built environment by the access audit team

STEP 4
Detailed Accessibility Audit on site along with stakeholder participation

STEP 5
Access Audit findings and discussions with stakeholders

STEP 6
Development of Accessibility Strategy for retrofitting and inclusion

STEP 7
Implementation of strategy based on results of the audit

Steps for Conducting Holistic Accessibiilty Audit

Content of an Accessibility Report

Typically, an Audit Report is produced as an outcome of an accessibility audit, with the scope and purpose of the audit clearly articulated at the beginning. The following could be the content of the report:

Introduction: This section generally covers a brief about the building audited in terms of building type and its use. It should contain information about the name of the client, name of the agency / organisation conducting the audit, dates of the audit, and other details that are relevant.

Scope of work: A detailed explanation of the aspects of the building audited is to be provided

like built environment / infrastructure / systems/ services / management and maintenance etc.

Methodology: The audit methodology, such as methods of observations, taking measurements, making sketches, and taking photographs need to be explained. Methods of collecting feedback from various stakeholders along with sample questionnaires are to be stated along with the audit checklist.

Documentation and identification of barriers: This is the main section of the report. This section may be divided in three parts – external environment, internal environment and information and communication. This will present a zone-wise documentation of barriers and

obstacles noted along with supportive sketches, photographs, part building plans etc.

Recommendations: This will include case-specific recommendations for different zones, preferably with supportive sketches, 3-D simulations, drawings and look-alike photographs from other cases. The recommendations should build upon minimum intervention strategy and be easy to accommodate. A tentative budget should be provided along with suggestions on the material procurement.

Accessibility Audit Checklist for school buildings and premises

The Accessibility Audit Checklist for Schools is a tool to assess the level of accessibility of a school in the following seven sections. The checklist outlines the access requirements to comply with the diverse needs of all children, including children with disabilities. The checklist has also included relevant indicators to assess information systems, infrastructure systems, and building management systems in these school zones apart from the physical layout.

The checklist has been divided into the following 7 zones:

- Site Entry and School Premises
- Vertical and Horizontal Movement
- WASH and Other Facilities
- Exit, Way-Finding and Communication
- Academic and Allied Spaces
- Extra-Curricular Activities
- Digital Infrastructure

Accessibility Assessment Scale

Description	Acronym	Score
exceeds requirement	ER	4
meets requirement	MR	3
approaches requirements	AR	2
missing	M	1
not applicable.	NA	0

The **'Remarks (RM)'** column is for observations/recommendations as required.

The **'Reference (RF)'** column refers to the respective sections in the online training modules on 'Enhancing Accessibility and Inclusion in Schools' by UN-Habitat India and IIT Kharagpur to find guidance on making the design element accessible.

The checklist for the seven zones are as follows:

SITE ENTRY AND SCHOOL PREMISES							
1. SITE ENTRANCE AND EXIT	ER	MR	AR	M	NA	RM	RF
1. Is the entry easily accessible from the road/footpath outside?							
2. Does the pedestrian entry gate have a minimum width of 900 mm?							
3. Is the counter at the security gate low-height for interaction with security personnel?							
4. Are there tactile ground surface indicators (TGSIs) at the entry and exit points?							

	ER	MR	AR	M	NA	RM	RF
5. Are there reserved parking bays available for adapted scooters, tricycles or other personal mobility devices (in two wheeler category) with minimum bay size of 3000 mm x 2400 mm?							
6. Is the site entrance marked with legible and clear signage?							
7. Are there additional road-safety signs at the entry stating the presence of a school?							
8. Are accessible pedestrian crossings available in and around the school?							
9. Is it ensured that there are no obstructions (for example, parked vehicles, manholes, potted plants) allowed outside the gate blocking the gate/ entrance/ exit to the school?							
10. Is the approach to the school well-maintained with a level surface?							
11. Is a site map provided with braille/tactile features at the site entrance?							
2. PARKING	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Are there accessible parking facilities?							
2. Are these accessible parking spaces located within a distance of 30 m from the accessible building entry?							
3. Is the number of accessible parking spaces sufficient (minimum 1 accessible parking per 50 parking lots)?							
4. Are the designated spaces wide enough (3600 mm x 5000 mm)?							
5. Is there a kerb ramp leading to the pathway from the parking area?							
6. Is there an accessible path of travel from the drop-off area to the main entrance?							
7. Are accessible parking spaces marked by the universal symbol of accessibility at a visible height range of 1500 mm to 1800 mm?							
8. Is the drop-off area marked by signages?							
9. Are reserved accessible parking spaces used by unauthorised individuals without disabilities or for any other purpose?							
3. ACCESS ROUTES	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Is there a continuous walkway to every facility/ place requiring access by students/ staff with disabilities all over the school premises?							
2. Is the minimum width of the walkway (one-way traffic) 1200 mm?							
3. Is the minimum width of the walkway (two-way traffic) 1800 mm?							

4. Is the gradient of the walkway provided at a ratio of 1:20 or lesser?							
5. For walkways greater than 60 m in length, is there provision of resting spaces at every 30 m?							
6. For walkways greater than 60 m in length, is there provision for rain protection at every 30 m?							
7. For walkways built at sloping and undulating terrains, is there provision of handrails on both sides of the access route?							
8. Are the handrails provided at two levels as specified in Harmonized Guidelines 2021?							
9. Are there TGSIs provided along the length of the walkway?							
10. Are the level changes in the walkway highlighted with contrasting colour strips or distinct material change?							
11. In case there is a presence of manholes or other inspection chambers on the walkway, is the top cover flushed with the finished floor surface of the walkway?							
12. Is the walkway well-illuminated and also glare-free?							
13. Is there provision of signages showing public amenities, resting spaces near the facilities, and at important decision points?							
14. In case of gratings on or along the access walkway, is the maximum gap in grating kept at 12 mm wide?							
15. Is the length of grating placed perpendicular to the dominant direction of movement?							
16. Is the walkway well-maintained?							
17. Is the surface of the walkway smooth and have a slip-resistant finish?							
4. KERB RAMP	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Is there a kerb ramp at every point of transfer, such as from parking and at crossings?							
2. Are the kerb ramps free of any obstruction such as signposts, traffic lights, etc.?							
3. Are TGSI provided around the kerb ramp to make it easier to identify?							
4. Is the ramp gradient of the kerb ramp no steeper than 1:12?							
5. Is the minimum width of the kerb 900 mm?							
5. MAIN ENTRANCE	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Do the steps at the entry have a handrail on both sides?							

	ER	MR	AR	M	NA	RM	RF
2. Is there a ramp to the entrance in case of level difference?							
3. Does the ramp have a railing on both sides?							
4. Is there a landing of minimum dimension of 1200 mm x 1500 mm?							
5. Is the landing surface non-slippery?							
6. Is the clear door width at least 900 mm?							
7. Can the entrance door be operated independently?							
8. Is the height of the door handle between 800 mm and 1100 mm?							
9. Does the accessible entrance lead to an elevator?							
10. Is the accessible entrance clearly identifiable with contrast colour and appropriate signages?							
11. Is there any threshold at the entry which is not bevelled (merged with gentle slope)?							
6. RECEPTION & INFORMATION COUNTERS	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Are the counters easily identifiable?							
2. Is there sufficient space for wheelchairs in front of the reception/ information counters?							
3. Is a part of the counter lowered to an accessible height in the range of 750 mm to 800 mm with specified knee and toe clearances?							
4. Is a loop induction unit/ assistive technologies for hearing impaired installed at the counter?							
5. Are there tactile pictographic maps of the building near the counter?							
6. Is the counter well-illuminated?							
7. Is there waiting space next to the reception?							

VERTICAL AND HORIZONTAL MOVEMENT

7. DOORS	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Are there automatic doors at the entrance with sufficiently long opening intervals?							
2. Can the doors be operated without much effort by children?							
3. Are push buttons for automatic doors located at a maximum height of 1 m?							
4. Is there sufficient space beside the latch side of the doors (450- 600 mm)?							
5. Are accessible doors placed adjacent to revolving doors and turnstiles and with proper signage?							
6. Are glazed doors marked with a colour band at eye-level for children with visual impairments?							

		ER	MR	AR	M	NA	RM	RF
7.	For double-leaf doors, is the width of one of the leaves at least 900 mm?							
8.	Do doors fitted with spring closers have an extra pull handle?							
9.	Is manual door accessories/hardware (handle, lock pull, etc.) at a height of 800 mm - 1000 mm from the floor?							
10.	Are doormats flushed/ embedded in the flooring and edges secured to the floor?							
11.	Is the threshold (door sill), no more than 10 mm high and bevelled?							
8. CORRIDORS		**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1.	Is the minimum unobstructed width of corridors at least 1200 mm?							
2.	Does the width of corridors allow manoeuvring and entry through doors located along its length?							
3.	Are differences in level bridged by ramps or lifts?							
4.	Is it ensured that there are no objects protruding more than 100 mm from the walls in the corridors?							
5.	Are there any hanging/ protruding objects from the ceiling or wall in the movement path below 2200 mm?							
6.	Are there continuous TGSI leading to required destinations?							
7.	Is the surface non-slippery and well-maintained?							
8.	Is there adequate signage along with braille versions at door entries and decision points?							
9. LIFTS		**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1.	Is there an accessible path leading to the elevator?							
2.	Does the accessible path have continuous TGSI from the building entry/ reception?							
3.	Is the location of the elevator in the building easy to identify?							
4.	Is the height of the call button (outside the lift) between 900 mm – 1200 mm, from floor level?							
5.	Is the clear door opening width 900 mm?							
6.	Is the door of the elevator automatic?							
7.	Are the minimum internal dimensions of the elevator 1900 mm x 1900 mm?							
8.	Is the control panel placed at a height between 900 mm – 1200 mm from floor level?							
9.	Are there handrails mounted on three sides at a height 800 mm - 900 mm from floor level?							
10.	Is there an audio and video system installed in the lift indicating arrival at a floor?							

	ER	MR	AR	M	NA	RM	RF
11. Are there braille/raised numbers on the control panel, with colour contrast on buttons?							
12. Is there provision of mirror(s) on the opposite side of the lift door?							
13. Is an emergency intercom provided inside the elevator?							
14. Is the emergency intercom usable without voice communication?							
15. Are there tactile or braille instructions for the communication system?							
16. Is the door opening/ closing interval long enough?							
17. Is the finish of the elevator floor skid-resistant?							
10. STAIRCASE	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Is the location of the stairs easily identifiable with signage?							
2. Is the minimum width of the stairs 1500 mm?							
3. Are there continuous handrails, on both sides, at a height of 760 mm - 900 mm from the floor?							
4. Are handrails easy to grip with a diameter of 38 mm - 45mm?							
5. Are the handrails painted in colours contrasting with the wall colour to be easily identifiable by those with low vision?							
6. Is it ensured that stairs do not have a nosing (extension of step edges for beautification)?							
7. For staircases more than 3000 mm wide, are there handrails installed in the centre ?							
8. Is the landing length equal to the clear width to the stairs?							
9. Do the edges of steps have a different colour or texture for easy identification?							
10. Are there warning blocks installed at the beginning and end of all flights of stairs?							
11. Is the location of emergency (or fire escape) stairs clearly identifiable with adequate signage?							
12. Is it ensured that there are no open gaps in between the step risers?							
13. Is the height of the risers 150 mm maximum and width of the tread 300 mm minimum?							
14. Do treads have a non-slip surface?							
15. Do the staircase steps have open risers?							
16. Is there any curved/ spiral staircase used for public access?							
17. If there is an open space under the staircase, is it blocked off?							

11. RAMPS	ER	MR	AR	M	NA	RM	RF
1. Is there a ramp next to the stairs?							
2. Is there a ramp at the entry to the plinth level if there is a level difference?							
3. Is the location of the ramp clearly identifiable?							
4. Is the ramp gradient no steeper than 1:12?							
5. Is there a landing of at least 1500 mm x 1500mm provided at 9 m intervals?							
6. Is there a landing at every change in direction?							
7. Is there landing at the top and bottom of every ramp?							
8. Is the minimum width of the ramp 1200 mm?							
9. Are there continuous handrails, on both sides at a height of 760 mm - 900 mm from the floor??							
10. Is the surface of the ramp anti-slip or with a matte finish?							
11. Is there an edge protection on both sides of the ramp to prevent wheelchairs from falling off?							
12. Does the ramp have TGSIs at the beginning and end?							
12. HANDRAILS FOR STAIR AND LIFT	ER	MR	AR	M	NA	RM	RF
1. Are there continuous handrails, on both sides mounted at a height between 760 mm – 900 mm?							
2. Are handrails easy to grip and securely attached?							
3. Do handrails extend horizontally 300 mm at the top and bottom of every staircase or ramp?							
4. Are the endings of the handrails grouted in the ground or turn downward?							
5. Is the space between the handrails and the wall no less than 50 mm?							
6. Are the handrails painted in contrasting colours to be easily distinguishable?							
7. Are there tactile strips/ braille plates on handrails for emergency stairs and floor levels?							

WASH AND OTHER FACILITIES

13. TOILETS	ER	MR	AR	M	NA	RM	RF
1. Are there accessible toilets in all floors which can be accessed by children and staff with disabilities?							
2. Is there a ramp provided to the accessible toilet cubicles?							
3. Are there separate toilet cubicles (one each in boys' and girls' toilets) for children with disabilities?							

4.	Are the toilets easily identifiable with proper signage?						
5.	Is there sufficient space of 2 m x 2.2 m inside the toilets to manoeuvre a wheelchair?						
6.	Does the toilet door have a clear width of 900 m or more?						
7.	Does the toilet door open outwards?						
8.	Are water closet (WC) and bidets mounted at a height between 450 mm – 480 mm?						
9.	Is the space between WC & closest adjacent wall fitted with a grab bar that is between 450 mm - 500 mm?						
10.	Is the accessible washbasin mounted at a height between 750 mm – 850 mm?						
11.	Is the lower edge of the mirror positioned at a height not exceeding 1 m?						
12.	Are the accessible showers provided with a folding seat?						
13.	Are there transfer grab bars (L-shape on the wall side and U shape on the open side of the toilet) installed near the toilet?						
14.	Are grab bars installed near WC & showers at a height between 750 – 850 mm?						
15.	Do grab bars have a diameter of 38 mm?						
16.	Do wall mounted grab bars have knuckle space of 50 mm?						
17.	Can the grab bars withstand the load of at least 200 kg?						
18.	Are faucets easy to grip and operate with one hand?						
19.	Are shower fixtures with at least 1500 mm long hoses?						
20.	Are hot water pipes insulated or covered?						
21.	Is the toilet equipped with an emergency alarm system?						
22.	Can doors be locked from inside and releasable form outside under emergency situations?						
23.	Are flushing arrangements, dispensers & toilet paper mounted between 300mm and 800mm?						
24.	Is the flushing equipment easy to operate?						
25.	Is the floor material skid-proof, well-drained, and waterproof?						
26.	Is there a drain in the floor in the toilet for all excess water so that the floor can be kept dry?						

14. DRINKING WATER	ER	MR	AR	M	NA	RM	RF
1. Is the drinking water space clearly identifiable by diverse user groups?							
2. Is the water tap/ spout accessible?							
3. Do the taps have lever-type handles?							
4. Can the taps be easily manoeuvred by a person with poor hand function/ wheelchair user?							
5. Is the drinking water area dry and hygienic?							
6. Are clean glasses/ water filling stations/ basins provided at an accessible height and can be easily reached by students/ staff with disabilities?							

15. CANTEEN	ER	MR	AR	M	NA	RM	RF
1. Is the eating outlet accessible for diverse user groups including persons with disabilities?							
2. Is the width of the entrance to the canteen 900 mm minimum?							
3. Is there a circulation path of at least 900 mm width to allow a wheelchair user to move around the eating outlet?							
4. Are the cash and service counters' height below 800 mm?							
5. Do the tables have a height of 750 - 850 mm with knee space of 750 mm wide and 480 mm deep?							
6. Do the tables with fixed stools have accessible spaces for wheelchairs?							
7. Is the hand-wash area accessible?							

16. RESTING FACILITIES	ER	MR	AR	M	NA	RM	RF
1. For long corridors/ large open grounds, are resting facilities provided at 30 m of intervals?							
2. Is there an adjoining space for a wheelchair next to benches and public seats?							
3. Are public seats with height of 450-500 mm with backrest and armrest?							

EXIT, WAY-FINDING, AND COMMUNICATION

17. SIGNAGES	ER	MR	AR	M	NA	RM	RF
1. Are accessible spaces identified by universal symbols of accessibility?							
2. Are there directional signs indicating the location of classrooms and other accessible facilities?							
3. Are maps, information panels and wall-mounted signs placed at a height between 900 - 1800 mm?							
4. Is the signage clear, simple, and easy to read?							
5. Is the colour of signage clearly distinguishable?							

	ER	MR	AR	M	NA	RM	RF
6. Is the surface of the signage processed so as to prevent glare?							
7. Are all signages in braille, text, and using pictograms?							
8. Is the lettering size proportional to the reading distance?							
9. Is the signage provided in bilingual/trilingual formats?							
10. Does the signage have appropriate pictograms for ease in identification/ navigation?							
11. Is there signage for girls' and boys' general toilets?							
12. Is there signage for girls' and boys' accessible toilets?							
18. EMERGENCY EXITS	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Is the minimum unobstructed width of corridors at least 1200 mm?							
2. Does the emergency exit lead to the accessible assembly areas?							
3. Is there adequate TGSI leading to the accessible assembly areas?							
4. Are emergency exits clearly marked with directional arrow signs?							
5. Are there adequate alarm systems compatible for those with disabilities, especially for hearing and visual impairments?							
19. PUBLIC TELEPHONES	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Are there public telephones accessible to wheelchair users (800 mm and 1000 mm)?							
2. Is there a clear manoeuvring space in front of the telephone?							
3. Is there at least one telephone in the building equipped with a loop induction unit?							
4. Are the numerals on the telephone raised to allow identification by touch?							
5. Is there proper signage directing to the public telephone?							
20. COMMUNICATION	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Is there any teacher or/and staff who are specially trained to communicate with children with disabilities?							
2. Is the website of the school accessible to those with disability in seeing?							
3. Does the website provide different accessible features available to those with disabilities and is it updated regularly?							

		ER	MR	AR	M	NA	RM	RF
4.	Is there a telephone number for audio description of accessible services before visit?							
5.	Are the hearing enhancement and public address systems monitored, tested, and maintained on a regular basis?							

ACADEMIC AND ALLIED SPACES							

21. CLASSROOM LAYOUT	ER	MR	AR	M	NA	RM	RF
1. Is the width of entry to the class room minimum 900 mm?							
2. Is there a circulation path of at least 900 mm wide to allow a wheelchair user to move around?							
3. Is there sufficient space for flexible classroom seating arrangements (such as cluster seating, one-to-one seating, straight row arrangement with all chairs facing ahead)							
4. Are classrooms separated from noise-generating activities (inside and outside of the school)?							
5. Are classrooms designed considering good viewing angles for all the students from every seat?							
6. Are there any columns/posts creating physical/ visual obstruction anywhere in the classroom?							

22. CLASSROOM INTERIORS	ER	MR	AR	M	NA	RM	RF
1. Is the classroom furniture (seating desk, table) accessible with a height of 750 - 850 mm with knee space of 750 mm wide and 480 mm deep?							
2. Is the furniture suitable for both left-handed and right-handed users?							
3. Is there a special seating zone for students with disabilities and does it have appropriate viewing to the blackboard and teaching desk?							
4. Is the special zone located adjacent to an accessible route which can serve emergency egress?							
5. Is there sufficient lighting as per standards (National Lighting Code 2010 by Bureau of Indian Standards)?							
6. Is the position of the blackboard such that it is visible from all positions and is glare-free?							
7. Does the floor of the classroom have a smooth surface?							
8. Is the flooring of the school skid-proof/ anti-skid?							
9. Are the painted surfaces of light colours without glare?							
10. Is there adequate quality of fresh air circulated in the classroom?							

		ER	MR	AR	M	NA	RM	RF
11.	Is there natural lighting without glare and outside views are available from the classroom?							
12.	Do the windows open into classrooms and other rooms and not out to corridors/ hallways?							
13.	Is the height of windows between 600 mm (bottom-edge) and 1450 mm (top-edge) enabling everyone to see outside while seated?							
14.	Are there grills/wire meshes on the windows to safeguard from falling outside?							
15.	Is the minimum ceiling height of the classroom 10 feet?							
16.	Are the classrooms equipped with assistive listening devices, such as the induction loop system?							
17.	Is there sufficient contrast between the chalk and board?							
18.	Is there a green board in the classroom at appropriate height?							
19.	Is it ensured that the lower edges of green/ blackboards are not above 500 mm from the floor so that those using wheelchairs can access them?							
20.	Do the stepped lecture halls have ramped aisles with a minimum width of 900 mm?							
21.	Is the temperature and humidity maintained at an acceptable level within classrooms?							
23. LABORATORIES		**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1.	Is the width of entry to the laboratory minimum 900 mm?							
2.	Is there a circulation path of at least 900 mm wide to allow a wheelchair user to move around?							
3.	Do a few stations in the labs have adjustable height to accommodate users in wheelchairs?							
4.	Are the equipment and shelves accessible?							
5.	Is the lab furniture (seating desk, table) accessible with a height of 750 - 850 mm with knee space of 750 mm wide and 480 mm deep?							
6.	Is the floor well-maintained and has an anti-skid surface?							
7.	Do the laboratories with wet systems involving water, chemicals or fluids follow safety protocols to ensure complete avoidance of accidents and prevention of slips or falls?							
8.	Are all the technical and safety instructions provided in legible format in proper font, contrasting colours, are glare-free, and are appropriately located?							

	ER	MR	AR	M	NA	RM	RF
9. Are the emergency or safety signs visible in high contrast along with tactile guiding systems?							
10. Is there adequate TGSI for guided movement?							
11. Are the hazardous areas marked with appropriate TGSI?							
12. Are there adequate safety provisions/ alarms/ calling bells for emergencies ?							
13. Is there any surveillance through CCTV?							
14. Is the alarm system compatible for those with disabilities in hearing and seeing?							
24. LIBRARY	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Is the width of entry to the library minimum 900 mm?							
2. Is the minimum width of the aisle between the bookshelves 900 mm?							
3. Is the library furniture (seating desk, table) accessible with a height of 750 - 850 mm with knee space of 750 mm wide and 480 mm deep?							
4. Is there adequate TGSI for guidance?							
5. Is the height of shelves restricted to 1200 mm for easy access to the books?							
6. Is there an exclusive reading room with enhanced audio features or cubicles with audiobook integration?							
7. Is there a Radio-frequency identification (RFID) tagging system installed for ease of identification and location of books?							
8. Is there provision for integrated online services and repositories of accessible literature in diverse fields of education?							
9. Are there braille printing facilities for readers with special needs of tactile format of reading?							
10. Is there a provision of an accessible digital catalogue which provides information on all books that can be easily accessed in the library.							
11. Are there adequate numbers of braille text and reference books in all subjects?							
12. Is there a talking library?							
13. Are there accessible computers in the e-library for those with visual impairments?							

EXTRA-CURRICULAR ACTIVITIES

25. PLAYGROUND AND SENSORY GARDEN	**ER**	**MR**	**AR**	**M**	**NA**	**RM**	**RF**
1. Is there an accessible playground or playing facilities?							

2.	Are the surfaces of the playground smooth and firm and free from any sharp objects, projections, etc., in order to avoid injury or accidents?						
3.	Does the playground have a paved pathway with a minimum width of 1800 mm, which can be used by wheelchair/ crutch/ walker users?						
4.	Is the playground covered with grass?						
5.	Are the materials used in the playground heat-resistant?						
6.	Do the playground surfaces consist of rubber or compacted sand?						
7.	Do the materials used to design children's games, especially the sliding ones, contain plastics or metals that produce electrostatic discharges that may deprogram hearing aids?						
8.	Is there a universally accessible sensory garden available in the school?						
9.	Is the playground/ sensory garden equipped with safety provisions?						
10.	Does the playground/ sensory garden have a variety of activities which can encourage exercise, learning, and fun?						
11.	Is there any surveillance through CCTV?						

26. INDOOR PLAY AREAS/ MULTI-PURPOSE HALLS		ER	MR	AR	M	NA	RM	RF
1.	Are there universally accessible indoor play areas/ multi-purpose halls?							
2.	Is there a circulation path of at least 900 mm wide to allow a wheelchair user to move around?							
3.	Is there any obstruction (such as columns or posts) anywhere?							
4.	Do the indoor play areas/ multi-purpose halls have a variety of activities which are tailor-made for children with disabilities?							
5.	Are there audio-visual means of communication with assistive technologies?							
6.	Are closed captioning systems, subtitles and/ or sign language services provided during performances?							
7.	Are there adequate safety provisions/ alarms/ calling bells in emergencies ?							
8.	Is there any surveillance through CCTV?							

27. COMPUTER ROOMS		ER	MR	AR	M	NA	RM	RF
1.	Is the width of entry to the computer room minimum 900 mm?							
2.	Are a few stations accessible with a height of 750-850 mm with knee space of 750 mm wide and 480 mm deep?							

3.	Is there a circulation path of at least 900 mm wide to allow a wheelchair user to reach the accessible seats?							
4.	Are all the technical and safety instructions provided in legible format in proper font, contrasting colours, are glare-free, and are appropriately located?							
5.	Is sign language interpretation services, closed captioning (CC) and/or subtitles provided through technological interface to address the learning accessibility needs for persons with hearing impairments?							
6.	Are there high tonal contrasts on system controls compared to the mounting surface?							
7.	Is there any surveillance through CCTV?							

DIGITAL INFRASTRUCTURE

1.	Are induction loops (either permanent or portable) provided in the classrooms and reception desk/ enquiry desks?							
2.	Are infrared systems which can be operated through headsets or be linked to personal hearing aid devices provided? *(Ideal for use in controlled environments such as lecture theatres and confidentiality is important as the signal cannot be picked up outside of the source room)*							
3.	Are radio systems provided? *(Useful in situations where portability is important, e.g., guided tours, but can also be used in an education environment where children move between classrooms and carry the equipment with them)*							
4.	Are the electronic keypads or push button systems provided?							
5.	Are buttons raised from the surface in computers, mounted on a surface with high tonal contrast, and have raised numerals or letters to assist users with vision loss?							
6.	Are electronic keypads/ push buttons self-illuminated for better visibility?							
7.	Are both audible and visual indicators provided to alert users when access has been granted or denied?							
8.	Are audio signs provided – which can play a recorded message when touched or activated by a person's movement or presence?							
9.	Are accessible pedestrian signals installed in the crossing immediately outside school entry?							

II. What is a Simulation Exercise?

In this exercise, participants recognize and gain an understanding of the lived experiences of different population groups, such as children, the elderly, and persons with disabilities. With respect to the school environment, it is most effective if the exercises are undertaken during regular school hours to align with daily routines and experiences of students, such as going to the toilet, drinking water, travelling to school, entering into class, or taking the stairs to go to different floors.

It can be conducted within the school premises among small groups of five or six people or a large group of up to 30 which is divided into smaller subgroups.

What conditions/experiences can be simulated?

- Physical disabilities
- Locomotor disability – leprosy cured person, cerebral palsy, dwarfism, muscular dystrophy, acid attack victims
- Visual impairment – blindness, low-vision
- Hearing impairment – deaf, hard of hearing
- Speech and language disability
- Elderly–Heart conditions / fatigue / breathlessness due to age
- Gender perspectives

How can we conduct the simulation?

Different types of vulnerabilities can be simulated by using props and devices, such as wheelchair, two pairs of adjustable crutches, camera jacket (with several pockets), sunglasses (lenses smeared thickly with soap), sunglasses (adapted for tunnel vision), one set of industrial protective earmuffs, ankle weights, etc.

Steps for conducting simulation exercises:

Step 1: Pre-Exercise Preparation

- Procuring props and devices which are required to simulate the vulnerabilities
- Conducting reconnaissance visits in the locations and identifying the routes
- Identifying the volunteers and also any pre-existing medical conditions to ensure safety

Step 2: Conducting the Exercises

- Briefing to volunteers and participants on the disabilities being simulated
- Dividing into pairs or groups, as applicable, and demonstrating the use of props & devices and explaining the procedures
- Conducting the exercises along pre-identified routes

Step 3: Feedback and Reporting

- Gathering feedback from volunteers and participants
- Documenting and reporting the proceedings

Step 1: Pre-exercise Preparation:

- Assemble the various props and "devices" that will be required during the exercises. Be sure to have enough for the whole group. Keep a first-aid box ready.
- Conduct reconnaissance visits at identified venues and inform administration about the exercises to obtain permission/authorization in case of any legal issues or liabilities.

- Identify and inform the volunteers and participants of the groups to assemble at the required place and time with the necessary fitness certificate to carry the exercise as advised by a doctor.

- Prepare an itinerary of activities and identify locations and routes for each group, i.e., four or five places could be visited in sequence, or there could be two routes where one is relatively "accessible" and one is "not accessible".

Examples could be: a school entrance; parking space; corridors and a school toilet; a drinking water space; a classroom; a set of stairs; entry to the venue; a playground to understand the safety provided.

- Decide beforehand the duration and itinerary of the exercises—A separate itinerary should be prepared for each group with a list of the activities that they should undertake in each location.

Step 2: Conducting the Exercises

Step 2 (a): Briefing of participants

- Give a briefing on the types of vulnerabilities being simulated.

- Outline the itinerary and specify the tasks at each identified location or route.

- Divide the larger group into smaller subgroups or pairs and allocate the "disabilities".

- Each subgroup or pair should simulate a different "disability".

- Advise the subgroups or pairs to change "disabilities" after a specified time depending on the duration allocated for the entire activity.

Orientation session for briefing of volunteers for the simulation exercises

Step 2 (b): Demonstrating the simulation:

- For physical disability—For simulating amputation or paraplegia—using bandages to tie limbs and utilising crutches/wheelchairs to move around.

- For hearing impairment—Using a set of industrial ear protectors with cotton wool tightly packed inside them. An alternative is using wads of cotton wool over the ears, held securely in place by a crepe bandage, but this may not cut out sound as effectively as the ear protectors.

- For visual impairment—Blindness—Using a black bandage/handkerchief and cotton pads.

- Cataract—Using sunglasses, the lenses of which have been thickly smeared with soap. The lenses may be covered by semi-opaque plastic.

- For the elderly (Teacher/Parents/Caretaker, etc.)—Simulating heart condition or fatigue due to age by using a camera jacket. Put weights into the various pockets of the jacket. Judge the total weight according to the size of the person. Ideal weights to add for women is 5 kg and for men is 8 kg.

- For gender perspectives - Male participants can be asked to perform routine tasks wearing women's attire.

Demonstrating how to use a wheelchair before initiating simulation exercises

Preparing volunteers and giving instructions to participate in the simulation exercises

Step 2 (c1): Demonstrating how to use devices

- Demonstrating the correct use of the various props and devices and confirming with the participants that it is understood through practice demonstrations.
- Demonstrating how to measure and adjust the devices for correct height and confirm that this is understood.

Step 2 (c2): Participants will follow designated routes

The participants will be divided into groups and each group will choose one particular disability for 'role playing'. One group will comprise one performer / role player and one guide or helper. The performer will accomplish the task assigned to him by following the designated route. The duty of the helper is to guide him in case of any unsafe situation or any deviation from the route. The helper is to silently follow the performer and ensure his/her safety.

Conducting the exercise with a volunteer simulating the experiences of person with vision impairment

Conducting the exercise with a volunteer simulating the experiences of a person with physical disabilities or a wheelchair user

Volunteers moving through designated routes during the simulation exercises

Pairing of teacher and student volunteers to help navigate designated routes during simulation exercises

Step 3: Feedback and Reporting

Step 3 (a): Feedback from Participants

- The entire group of participants assemble at the end of the exercises and return all the props and devices used to conclude the simulation exercises.

- A platform to be provided for participants to express their feelings and to discuss the barriers and difficulties encountered during the exercises.

- Observer/feedback forms to be distributed among the volunteers to document their experiences and recommendations.

Feedback session with participants of simulation exercises

Conducting of training programmes in schools

Conducting of training programmes in schools

Step 3 (b): Filling in observation/feedback forms

Form 1 - Vulnerable person		
Name:	Designation/occupation	Type of Vulnerability
Age: Gender:	Route selected/task performed:	
Tell us about 5 major problems you faced / 5 situations where you had maximum problem?	How did you overcome those?	
1.	1.	
2.	2.	
3.	3.	
4.	4.	
5.	5.	
6. Others	6. Others	
How long was the exercise?		
When did you feel the exercise most difficult?		
☐ at the beginning ☐ all through ☐ towards the end when I got tired		
Did anyone help you during the exercise most difficult? If yes, how?		
General comments.		

Form 2 - Helper / Observer		
Name:	Designation/occupation	Type of Vulnerability you were assisting
Age: Gender:	Route selected/task performed:	
Tell us about 5 major problems the person you were helping had faced/5 situation where he/she had maximum problem? Also tell us in how many attepmts he could perform each of the task mentioned below.	How did you overcome those?	
1.	1.	
2.	2.	
3.	3.	
4.	4.	
5.	5.	
6. Others	6. Others	
In which of the above-mentioned task, you think, the participant took usually long time as comapred to an able-bodied persion? why do think so?		
Also, did you help him/her with performing in any of the above tasks? If yes in what way?		
General comments.		

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A. Global Frameworks on Inclusion

UN Convention on the Rights of the Child, 1989

Universal Declaration of Human Rights (UDHR) and other declarations have proclaimed that children are entitled to special care and assistance. In 1989, world leaders made a historic commitment to the world's children by adopting the United Nations Convention on the Rights of the Child (UNCRC) – an international agreement for rights of children. For the purposes of the present Convention, a child means every human being below the age of eighteen years.

Article 17: To ensure that the child has access to information and material from a diversity of national and international sources, especially those aimed at the promotion of his or her social, spiritual and moral well-being and physical and mental health.

Article 23: Recognizing the special needs of a disabled child, to ensure that the disabled child has effective access to and receives education, training, health care services, rehabilitation services, preparation for employment and recreation opportunities in a manner conducive to the child's achieving the fullest possible social integration and individual development, including his or her cultural and spiritual development.

Article 24:
- To ensure that no child is deprived of his or her right of access to such health care services.
- To ensure that all segments of society, in particular parents and children, are informed, have access to education and are supported in the use of basic knowledge of child health and nutrition, the advantages of breastfeeding, hygiene and environmental sanitation and the prevention of accidents;

Article 28:
- To encourage the development of different forms of secondary education, including general and vocational education, make them available and accessible to every child.
- To make educational and vocational information and guidance available and accessible to all children.

UN Convention on Rights of Persons with Disabilities, 2006

An international human rights agreement known as the Convention on the Rights of Persons with Disabilities (CRPD) was created by the United Nations to safeguard the rights and dignity of people with disabilities. It was adopted on December 13th , 2006 and discusses human rights frameworks related to accessibility, elements of universal design, reasonable accommodations, and international accessibility standards. Accessibility is a fundamental aspect of the CRPD, and the treaty contains several provisions related to accessibility.

Article 24 – Education

1. States Parties shall enable persons with disabilities to learn life and social development skills to facilitate their full and equal participation in education and as members of the community. To this end, States Parties shall take appropriate measures, including facilitating:
   - learning of Braille, alternative script, augmentative and alternative modes, means and formats of communication and orientation and mobility skills, and facilitating peer support and mentoring;
   - learning of sign language and the promotion of the linguistic identity of the deaf community;
   - education of persons, and in particular children, who are blind, deaf or deafblind, is delivered in the most appropriate languages and modes and means of communication for the individual, and in environments which maximise academic and social development.

2. States Parties shall ensure that persons with disabilities are able to access general

tertiary education, vocational training, adult education and lifelong learning without discrimination and on an equal basis with others. To this end, States Parties shall ensure that reasonable accommodation is provided to persons with disabilities.

Article 9 – Accessibility

This article recommends to enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas. Among other aspects, this article focuses on —

- training for stakeholders on accessibility issues facing persons with disabilities;

- promoting the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost.

United Nations Disability Inclusion Strategy, 2019

The commitment of the United Nations to promoting accessibility, inclusion and advancement of persons with disabilities in society and development is deeply rooted in its Charter and the pursuit of promoting economic and social progress and human rights for all. UN system organisations have made progress in establishing internal policies aimed at promoting built environments and facilities and services that are accessible and inclusive for all.

UN agencies have been actively promoting accessibility and disability inclusion in contexts of sustainable and inclusive development for all. They are working on: closely consulting and actively involving persons with disabilities and their representative organisations in everything they do; ensuring full accessibility for all—to their buildings and facilities, workspaces, information and communications, conferences and events— with specific measures, equipment and services to achieve it.

2030 Agenda for Sustainable Development

The Sustainable Development Goals (SDGs) recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests. Leave No One Behind (LNOB) is the central, transformative promise of the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs). It represents the unequivocal commitment of all UN Member States to eradicate poverty in all its forms, end discrimination and exclusion, and reduce the inequalities and vulnerabilities that leave people behind and undermine the potential of individuals and of humanity as a whole. The targets and indicators for the following SDGs specifically mention accessibility of the built environment as part of its framework:

- SDG 4: Sustainable Development Goal 4, focuses on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. Within this goal, there is a specific emphasis on the accessibility of the built environment for children with disabilities (in SDG 4.a).

- SDG 6 focuses on ensuring access to clean water and sanitation for all. Within this goal, there is a specific emphasis on addressing the accessibility of sanitation facilities for children with disabilities.

- SDG 11 focuses on making cities and human settlements inclusive, safe, resilient, and sustainable with specific emphasis for children in Target 11.7.

Universal Design Principles, 1997

Universal Design is an approach, philosophy and a guiding code that aims to provide a constructive and inclusive mindset to respond to the needs of diverse population types including all and free from any form of stigma on the basis of age, gender, ability or any other human attribute. Coined as a term by a well-known American Architect, Ronald L.Mace, the earliest definition of Universal Design is:

> "The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design."
>
> —Ronald L.Mace

The seven (07) Principles of Universal Design were developed in 1997 by a working group of architects, product designers, engineers, and environmental design researchers, led by Architect Ronald Mace. The Seven Principles along with their guidelines are mentioned below:

The advantage of using the universal design is that environments, buildings, and products are inclusive of, usable by, and accessible to everyone to the greatest extent possible, including children, adults, older persons with and without disabilities, pregnant women, parents with children or using baby strollers, and people carrying heavy equipment, suitcases, groceries, etc.

01 EQUITABLE USE
Design is useful and marketable to people with diverse abilities

02 FLEXIBILITY IN USE
Design accommodates wide range of individual preferences and abilities

03 SIMPLE AND INTUITIVE USE
Use of the design is easy to understand, regardless of user's experience, knowledge language skills or current concentration level.

04 PERCEPTIBLE INFORMATION
Design communicates necessary information effectively to user, regardless of ambient conditions or user's sensory abilities

05 TOLERANCE FOR ERROR
Design minimizes hazard, adverse consequences of accidents

06 LOW PHYSICAL EFFORT
Design can be used efficiently and comfortably and with minimum fatigue.

07 SIZE AND SPACE FOR APPROACH AND USE
Appropriate size& space is provided for approach, reach, manipulation, use of all user's body size, posture, or mobility.

B. National Frameworks on Inclusion

Right of Children to Free and Compulsory Education Act, 2009

Education is a fundamental right of all children, including children with special needs. The current mandate of free and compulsory education for all children aged 6-14 years is based on the principle of inclusive education. Behind this constructive move is the recognition of education as a fundamental right under Article 21A of the Indian Constitution, the Right of Children to Free and Compulsory Education Act, 2009 (RTE) and the 'no rejection policy' of Sarva Shiksha Abhiyan (SSA).

01 Right of children to free and compulsory education till completion of elementary education in a neighborhood school.

02 It clarifies that 'compulsory education' means obligation of the appropriate government to provide free elementary education and ensure compulsory admission, attendance and completion of elementary education to every child in the six to fourteen age group.

03 It makes provisions for a non-admitted child to be admitted to an age-appropriate class.

04 It specifies the duties and responsibilities of appropriate Governments, local authority and parents in providing free and compulsory education, and sharing of financial and other responsibilities between the Central and State Governments.

05 It provides for rational deployment of teachers by ensuring that the specified pupil teacher ratio is maintained for each school, rather than just as an average for the State or District or Block, thus ensuring that there is no urban-rural imbalance in teacher postings.

06 It lays down the norms and standards relating inter alia to Pupil Teacher Ratios (PTs), buildings and infrastructure, school-working days, teacher-working hours.

07 It also provides for prohibtion of deployment of teachers for non-educational work, other than decennial census, elections to local authority, state legislatures and parliament, and disaster relief.

08 It provides for appointment of appropriately trained teachers, i.e. teachers with the requisite entry and academic qualifications.

09 It prohibits (a) physical punishment and mental harassment; (b) screening procedures for 09 admission of children; (c) capitation fee; (d) private tuition by teachers and (e) running of schools without recognition,

10 It provides for development of curriculum in consonance with the values enshrined in the Constitution, and which would ensure the all-round development of the child, building on the child's knowledge, potentiality and talent and making the child free of fear, trauma and anxiety through a system of child friendly and child centered learning

The Right of Children to Free and Compulsory Education Act (RTE) mandates schools to become child-friendly, inclusive spaces where children from diverse backgrounds can actively participate in learning through child-centred activities. The current mandate of free and compulsory education for all children aged 6-14 years in India is based on the principle of inclusive education. As per the RTE norms, all schools should be barrier free and accessible to children with disabilities. The Rights of Persons with Disabilities Act also mandates universal access for all children to

inclusive schools and calls for making educational buildings, campuses and various facilities accessible to children with disabilities.

Accessible India Campaign, 2015

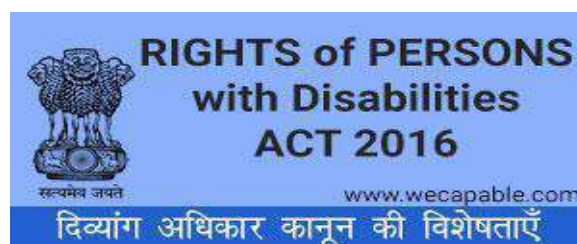Department of Empowerment of Persons with Disabilities (DEPwD) launched Accessible India Campaign (Sugamya Bharat Abhiyan) as a nation-wide Campaign for achieving universal accessibility for Persons with Disabilities (PwDs) on December 3,2015. It has three important verticals, namely–the Build Environment, the transportation sector and the ICT ecosystem.

ICT ECOSYSTEM ACCESSIBILITY

Objective 5: Enhancing proportion of accessible and usable public documents and websites that meet internationally recognized accessibility standards

Objective 6: Enhancing the pool of sign language interpreters

Objective 7: Enhancing the proportion of daily captioning and sign-language interpretation of public television news programmes

TRANSPORT SYSTEM ACCESSIBILITY

Objective 2: Enhancing proportion of accessible airports

Objective 3: Enhancing the proportion of accessible railway stations

Objective 4: Enhancing the proportion of accessible Public Transport

BUILT ENVIRONMENT ACCESSIBILITY

Objective 1: Enhancing the proportion of accessible government buildings

Rights of Persons with Disabilities Act, 2016

In December 2016, the RPWD Act was passed. It advocates for and defends the rights and dignity of individuals with disabilities in all spheres of life, including the educational, social, legal, economic, cultural, and political ones.

Government, non-government, and private groups are all affected.

Provisions in RPwD Act, 2016	SDG	Impact Area
• Barrier-free access in all parts of **Government and private hospitals** and other healthcare institutions and centres	**SDG 3**	PHCC, hospitals, nursing homes, diagnostic
• **Reservation in higher education (not less than 5%)** • **Government educational institutions must provide inclusive education to the children with disabilities**	**SDG 4**	**Schools, college, universities,training centres**
• Access to safe drinking water and appropriate and accessible **sanitation facilities** especially in urban slums and rural areas	**SDG 3 and SDG 6**	Accessible water supply to all formal and informal houses

Provisions in RPwD Act, 2016	SDG	Impact Area
• **Employment** of persons with disabilities • Vocational training and self-employment • Reservation in government jobs (not less than 4 %) • Employment in private sector	SDG 8	Workplaces and Factories
• All are given access to a range of in-house, residential and other **community support services**, including personal assistance necessary to support living with due regard to age and gender	SDG 10	Accessible urban amenities and services in all public places

There are requirements and deadlines for establishments to follow in order to guarantee infrastructure and service accessibility. Rights of Persons with Disabilities Act (RPWD) for inclusive education, defined as a system of education where students with and without disabilities learn together. The recommendations include non-discrimination in schools, accessible infrastructure, reasonable accommodations, individualised support, use of Braille and Indian Sign language in teaching, and monitoring among others.

Major recommendations:

- Equal educational opportunities;
- Opportunities for sports and recreation activities equally with others;
- Making building, campus and various facilities accessible;
- Reasonable accommodation according to the individual's requirements;
- Individualised support and other supportive measures;
- Imparting education in most appropriate languages and modes and means of communication;

- Suitable pedagogical measures;
- Suitable modifications in the curriculum and examination system;
- Facility of scribe or amanuensis, exemption from second and third language courses;
- Monitoring participation and progress;
- Transportation facilities;
- Training & employing teachers, teachers with disability, teachers qualified in sign language & Braille,
- Training professionals and staff to support inclusive education,
- Establishing adequate number of resource centres,
- Promotinguse of appropriate augmentative & alternative modes, means formats of communication,
- Providing books, learning materials and appropriate assistive devices,
- Provision of scholarships,
- Promoting research to improve learning etc.

National Education Policy 2020

The National Education Policy of India 2020 (NEP 2020), which was started by the Union Cabinet of India on 29 July 2020, outlines the vision of new education system of India.[1] The new policy replaces the previous National Policy on Education, 1986.[a] The policy is a comprehensive framework for elementary education to higher as well as vocational training in both rural and urban India. The policy aims to transform India's education system by 2030.

National Education Policy 2020, The policy has provisions for recruitment of special educators with cross-disability training and incorporates disability awareness within teacher education. A key focus on the extensive use of technology in teaching and learning, removing language barriers, increasing access for students with disabilities and educational planning and management. It endorses the idea of creating an educational system that is designed for children with and without disabilities to be in the same classroom, addresses barrier-free access, and puts forth a plan for the inclusion of children with disabilities in the curriculum and assessment.

NEP 2020 is in complete consonance with the provisions of the RPWD Act 2016 and endorses all its recommendations with regard to school education considering inclusive education as a system of education wherein students with and without disabilities learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities. The following are some of the recommendations in the NEP

- Barrier free access for all children with disabilities

- Assistive devices and appropriate technology-based tools, as well as adequate and language-appropriate teaching-learning materials (e.g., textbooks in accessible formats such as large print and Braille)

- Choice of schooling and equity in education: Children with benchmark disabilities choose between regular or special schooling andHome-based education (for children with severe and profound disabilities who are unable to go to schools). An audit of home-based education for its efficiency and effectiveness will be initiated and guidelines and standards would be developed based on this audit.

- Resource centres will support the rehabilitation and educational needs of learners with severe or multiple disabilities and will assist parents/guardians in achieving high-quality home schooling and skilling for such students as needed. Special educators along with regular teachers would assist in these tasks

UDIP (Universal Design India Principles), 2011

Besides these well founded international origins of Universal Design as an approach, a group of Indian experts also formulated and created a theory and philosophy in 2011, popularly known as Universal Design India Principles (UDIP). The idea being to contextualise and advance Universal Design for Indian perspectives.

The UDI principles are stand-alone universal design ideologies that focus on Indianness and inclusivity as they relate to age, gender, disability, caste, class, religion, poverty and urban/rural background. UDI principles neither make any connection nor build on the seven Universal Design Principles. They recognize the overarching importance of seven Principles and extend it to Five Principles to contextualise their relevance to India.

Universal Design India Principles paves a context specific direction towards achieving greater accessibility and inclusion of diverse population groups in Indian contexts. This may include diverse population contexts, low resource settings, diverse geographical and regional locations along with new technological paradigms.

CULTURAL
सांस्कृतिक

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सहज

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सस्ता

EQUITABLE
समान

AESTHETICS
सुन्दर
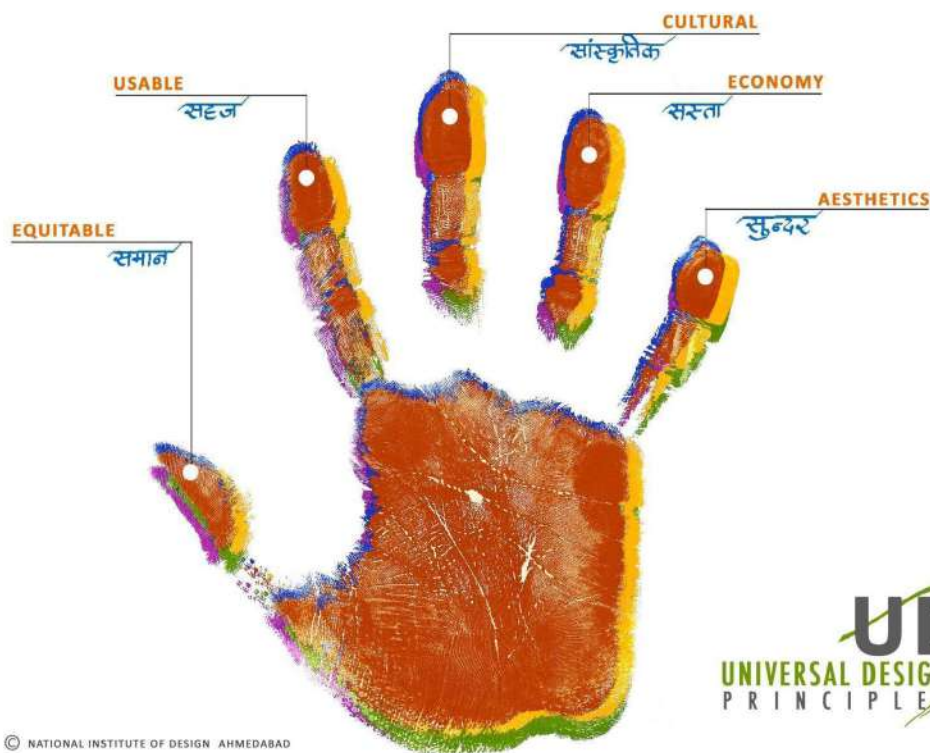
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