Access to School and the Learning Environment I - Physical, Information and Communication

Webinar 10 - Companion Technical Booklet

unicef

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Australian Aid

With major thanks to Australian Aid for its strong support to UNICEF and its counterparts and partners, who are committed to realizing the rights of children and persons with disabilities. The Rights, Education and Protection partnership (REAP) is contributing to putting into action UNICEF's mandate to advocate for the protection of all children's rights and expand opportunities to reach their full potential.

Access to School and the Learning Environment I – Physical, Information and Communication

Webinar Booklet

What this booklet can do for you

The purpose of this booklet and the accompanying webinar is to support UNICEF's mission by assisting UNICEF staff and our partners to understand the basic concepts of **accessibility** and **universal design** as they relate to education both in the physical and learning environment, with an emphasis on children with disabilities.

In this booklet you will be introduced to:

- *The right of every child to receive an education, including children with disabilities.*
- *The benefits that accessible schools provide to an entire community.*
- *The types of barriers that limit access to education for children with disabilities.*
- *The concept and benefits of accessibility.*
- *The concept, goals and benefits of universal design.*
- *The accessibility continuum and how it applies to the design of schools.*
- *The importance of providing books and other learning materials in formats that can be read and understood by all children.*
- *Strategies for providing information to children in appropriate accessible formats.*
- *The importance of effective communication support within the classroom for all children.*
- *Strategies for providing communication support for children with disabilities.*

For more detailed guidance on programming for inclusive education, please review the following booklets included in this series:

1. Conceptualizing Inclusive Education and Contextualizing it within the UNICEF Mission
2. Definition and Classification of Disability
3. Legislation and Policies for Inclusive Education
4. Collecting Data on Child Disability
5. Mapping Children with Disabilities Out of School
6. EMIS and Children with Disabilities
7. Partnerships, Advocacy and Communication for Social Change
8. Financing of Inclusive Education
9. Inclusive Pre-School Programmes
10. Access to School and the Learning Environment I – Physical, Information and Communication (*this booklet*)
11. Access to School and the Learning Environment II – Universal Design for Learning
12. Teachers, Inclusive, Child-Centred Teaching and Pedagogy
13. Parents, Family and Community Participation in Inclusive Education
14. Planning, Monitoring and Evaluation

How to use this booklet

Throughout this document you will find boxes summarizing key points from each section and recommending additional reading. Keywords are highlighted in bold throughout the text and are included in a glossary at the end of the document.

If, at any time, you would like to go back to the beginning of this booklet, simply click on the sentence "Webinar 10 - Companion Technical Booklet" at the top of each page, and you will be directed to the Table of Contents.

To access the companion webinar, just scan the QR code.

Acronyms and Abbreviations

AAC	Augmentative and Alternative Communication
CC	Closed Caption
CCTV	Closed-Caption Television
CFL	Compact Fluorescent Light
CFS	Child-Friendly Schools
CRC	Convention on the Rights of the Child
CRPD	Convention on the Rights of Persons with Disabilities
DAISY	Digital Accessible Information System
EPUB	Electronic Publication
e-text	Electronic Text
IE	Inclusive Education
ISO	International Organization for Standardization
LED	Light-Emitting Diode
mm	Millimetres
SDG	Sustainable Development Goal
UN	United Nations
UNESCO	United Nations Education, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
VoIP	Voice over Internet Protocol
WASH	Water, Sanitation and Hygiene
WCAG	Web Content Accessibility Guidelines
WHO	World Health Organization

I. Introduction

Key Points

- *Access to education is the right of every child, including children with disabilities.*
- *Accessible schools benefit the entire community, facilitating growth of the whole social structure.*
- *If accessibility is considered from the start, the additional cost to create an accessible school is negligible.*
- *Accessible buildings alone are not enough to provide access to education – **assistive devices** must also be available to support learning.*
- *Along with **inclusive design, reasonable accommodation** measures are needed to promote **inclusion**.*

Healthy, safe and well-educated children are essential for a sustainable planet and vice versa. *Source: UNICEF*

This booklet supports UNICEF's fundamental mission to promote the rights of every child, everywhere, in everything the organization does, by enabling all children – including children with disabilities – to develop and reach their full potential, without discrimination.[1] UNICEF recognizes that access to education is a key element in the intellectual and social development of children, not only providing opportunities for them to fulfil their potential but also contributing to the sustained growth and stability of countries in which they live.

Accessibility is an enabler that allows children and adults with disabilities to enjoy their rights and entitlements. It is also a precondition for children and adults with disabilities to live independently and participate fully and equally in society.[2] Furthermore, UNICEF's involvement in school construction provides an excellent opportunity to advocate for the quality of learning environments within the local context through the implementation of design and construction excellence.

Figure 1: School in Madagascar with ramp access (*Source: UNICEF*)

Schools are often the centre of communities, both physically and figuratively. School facilities are frequently also the location for community meetings and other events, and are used as

shelters in the event of emergencies such as natural disasters and conflict. As such, integrating accessibility into the design of schools benefits not only the children but also the entire community.

The design and improvement of physical accessibility of schools is part of the social change required to implement inclusive education.

Integrating accessibility into the design of schools is usually viewed as being very expensive, adding significantly to the construction cost. However, the reality is that when accessibility is integrated at the planning stage for new school construction, it adds very little to the construction cost. In fact, the World Health Organization's (WHO) 2011 World Report on Disability notes that, "In new construction, full compliance with all the requirements of accessibility standards is generally feasible at one per cent of the total cost."[3]

Enhancing accessibility need not be expensive. Inexpensive upgrades to a school might include: adding handrails to a stair; using community resources to build a wooden ramp to overcome a change in level; or re-painting doors to make them more visible to children with low vision.

It is also clear that the cost to society of creating inaccessible schools is very high. If children with disabilities cannot attend school because the building or curriculum is inaccessible, there are many indirect costs. They include child-care costs for parents when their child cannot attend school, and loss of earnings for families if someone has to stay home to look after their child.

The creation of accessible school buildings alone will not provide appropriate access to education for all children. The abilities of children with disabilities can be greatly enhanced if appropriate assistive devices and technologies are available to support their learning needs. An assistive device is a tool, technology or other mechanism that enables a person to do everyday tasks such as moving through the community, lifting an object or reading a book. Assistive devices help people with disabilities to maintain their independence at home, at school and within the community. These devices and technologies, whether used as a mobility aid by an individual or as a communication aid within a classroom, can support a child with a **disability** to learn. They promote and facilitate inclusive education, whether this is allowing a child to get to school in a wheelchair or helping them understand a lesson through **Braille** or text-to-speech technology.

Reasonable Accommodation means necessary and appropriate modification and adjustments not imposing a disproportionate or undue burden, where needed in a particular case, to ensure to persons with disabilities the enjoyment or exercise on an equal basis with others of all human rights and fundamental freedoms (**Convention on the Rights of Persons with Disabilities** – Article 2, Definitions).

It should also be recognized that children with disabilities have unique needs that need to be met if they are to succeed at school. Specific accommodations catering to the needs of individual children are also required alongside addressing the general accessibility of schools. For example, a school may have many accessible features such as ramps, wider doorways and accessible toilets etc., but if a child with a disability does not have an assistive device to get to school and access her classroom, she is denied the right to an education. The provision of a wheelchair by the school administration would be a reasonable accommodation of the child's needs. Similarly, a child who has a vision impairment, has a learning disability or has limited use of his hands, may need assistance to complete a written test. Allowing the child more time to take the test and

providing a writer would be a reasonable accommodation. Such reasonable accommodations are critical to ensuring that children with disabilities can truly realize their right to an education.

There is a very strong social, sustainable and economic rationale for the integration of accessibility into the design and construction of schools, as well as the development of inclusive curriculum and learning resources, supporting the goals of UNICEF's Strategic Plan 2014-2017 to, "Improve learning outcomes and equitable and inclusive education", and "Provide safe drinking water, sanitation and good hygiene facilities in schools (with attention to the needs of girls)".[4] The creation of inclusive schools also directly contributes to achieving the proposed Open Working Group **Sustainable Development Goals**, specifically Goal 4: to "Ensure inclusive and equitable quality education and promote life-long learning opportunities for all". Furthermore, accessibility is a fundamental component of UNICEF's Child Friendly School (CFS) initiatives.

While the focus of this booklet is primarily on accessible school buildings, accessible curriculum materials and accessible communication systems, broader concepts of **inclusive education** are further discussed in another booklet in the series, titled Access to the Learning Environment II – Universal Design for Learning.

II. Accessibility and Universal Design – Including Everyone

Key Points

- *Various types of barriers limit access to education for children with disabilities.*
- *Accessibility encompasses the usability of environments, amenities and resources by persons with disabilities.*
- *Universal design recognizes the diversity of functional ability across the entire population – it is not just for people with disabilities.*
- *Applying the eight goals of universal design to schools.*
- *Applying the accessibility continuum to the design of schools.*

The inclusion of accessibility standards in the construction of all new buildings and facilities . . . guarantees the full consideration of disability issues already in the construction phase and involves significantly lower costs. *Source: Promoting Access to the Built Environments, CBM.*

Barriers to Education

Children with disabilities face many barriers in accessing the education they need to become healthy, happy and productive citizens of the world. These barriers deny children their right to education, as recognized in the United Nations **Convention on the Rights of the Child** (CRC) and the United Nations **Convention on the Rights of Persons with Disabilities** (CRPD). By adopting these conventions, a country is committing to provide every child, including children with disabilities, with access to an education.

According to the CRPD, persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which, in interaction with various barriers, may hinder their full and effective participation in society on an equal basis with others.

There are various types of barriers that can be eliminated to promote more inclusive environments. Some common barriers are as follows:

Figure 2: Education sign at school in Zambia (*Source: iStock*)

- **Institutional barriers and attitudes towards children with disability:**

  Children with disabilities are not valued within some societies, which is often reinforced through institutional policies and practices that exclude and segregate. Article 24 of the CRPD specifically addresses the rights of children with disabilities to attend school, at all levels. Not only do children with disabilities have the right to attend school, but the Convention states that children with disabilities have the right to attend inclusive mainstream programmes rather than segregated programmes.

- **Social stigma and attitude linked with disability:**

  Stereotypes linked to disability lead to negative attitudes towards children with disabilities and their education (such as that the child is 'defective' or that the disability is a punishment for 'sins'). Parents, teachers and school managers often ignore the rights and needs of children with disabilities, which results in discrimination and discourages parents and children with disabilities from attending school.

- **Barriers to access information and educational material:**

  In many schools, educational materials and teaching methods remain inaccessible for children with sensory impairments (visual, speech and hearing) as well as learning and other developmental disabilities. Inclusive teaching methods as well as learning materials should be provided to children with disabilities in inclusive settings.

- **Barriers to access physical infrastructure:**

  Inaccessible and faulty designs create physical and architectural barriers for children with disabilities and their families. This hampers accessibility to education, both services and facilities.

- **Limited understanding and awareness of accessibility, disability and ability:**

  Accessibility is often over-simplified, such as thinking that providing a ramp will address all of the accessibility needs within a school. Accessibility should be considered at every stage of a child's journey from home to their classroom, and for every activity within the school. For example, providing a ramp will not help a child with a vision or hearing disability.

One of the most powerful ways to address such barriers in the development of schools is to involve the local community, including children with disabilities and their families, in a meaningful way within the planning and decision-making processes of a project. Children with disabilities and their parents are experts on their own needs and can often bring innovative and cost-effective ideas to the table. Their participation will help the entire community to better understand the needs of children with disabilities and contribute to their integration into the community.

What is Accessibility?

Accessibility is a broad concept that encompasses the usability of environments, amenities and resources by persons with disabilities. Environments include physical spaces such as schools, playgrounds and Water Sanitation and Hygiene (WASH) facilities. Amenities include facilities such as a pump, well or school furniture within a classroom. Within the context of schools, resources include books and other learning materials, as well as computers, computer software and internet services where they are available.

Involving children with disabilities and their parents directly in the design process is one of the easiest and most effective ways to create schools that are truly inclusive and reflective of local needs. Children with disabilities and their parents are experts on their own needs and abilities, and are a great source of knowledge and design ideas.

What is Universal Design?

Universal design is a concept that has evolved from the more traditional view of accessibility as being solely for the benefit of persons with disabilities. Much like the more progressive interpretation of accessibility, universal design recognizes the diversity of functional ability across the entire population, and encourages architects and other designers to design buildings and products that can be used by persons with a wide range of abilities and different body sizes.

The concepts of universal design can be applied to anything that is designed, be it a building, website, playground, piece of furniture, computer programme, school curriculum or a consumer product such as a tea kettle.

The CRPD defines universal design as: "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".[5]

The concept is consistent with UNICEF's philosophy of child-friendly schools, which strives to integrate all children into local schools and recognizes the child as the main user of learning spaces and environments, with the understanding that family and community participation is fundamental for best results.[6]

Figure 3: Universal design addresses the diversity of all children in a classroom – not just those with disabilities. (*Source: iStock*)

The Goals of Universal Design

The practical application of universal design is achieved through understanding and using the goals of universal design. These goals establish criteria to inform the design process. They can also be used to determine the level of universal design within existing goods, services, equipment and facilities.

In 2012, the Centre of Inclusive Design and Environmental Access developed the following eight goals of universal design:[7]

Goal 1: Body Fit
Goal 2: Comfort
Goal 3: Awareness
Goal 4: Understanding
Goal 5: Wellness
Goal 6: Social Integration
Goal 7: Personalization
Goal 8: Cultural Appropriateness

The goals of universal design are presented below, along with some examples of how they might apply to a school project.

Goal 1: Body Fit

Accommodates a wide range of body sizes and abilities.

Examples:

- Pathways, hallways and doors are wide enough to accommodate wheelchairs and other types of assistive devices.
- School desks are appropriately sized for the age of the children using them.
- Handrails are shaped and sized for small hands.
- Larger-sized buttons on switches and other operating devices for those with functional limitations of reduced fine motor control or manual dexterity. High-contrast colours/tones distinguish them from their surroundings.

Goal 2: Comfort

Keeping demands within desirable limits of body function.

Examples:

- No step entry to buildings for all users.

Figure 4: Work surface with knee-space for a child using a wheelchair (*Source: Dani Resource Centre*)

Figure 5: Classrooms with level access at school in Burundi. (*Source: UNICEF*)

- Where ramps are used, they are not too steep.
- Doors are not heavy to open. Simple design of door handles such as levers, instead of knobs, that enable a child with limited hand movement to open the door.
- The blackboard and shelves are within reach of all children to write comfortably, including wheelchair users and persons of shorter stature.
- Illumination, heat and humidity levels within classrooms can be controlled.
- Background noise is minimized.

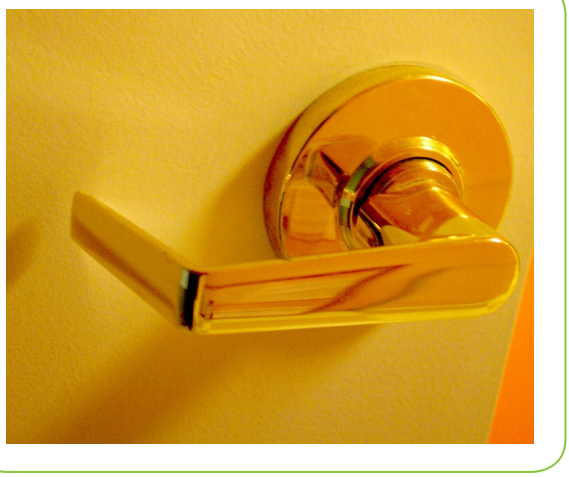

Figure 6: Lever door handles are easier to use for everyone. (*Source: MoneyBlogNewz*)

Goal 3: Awareness

Ensuring that critical information is easily perceived using different senses.

Examples:

- Signs incorporate high colour and tonal contrast, **tactile information** and **pictograms**.
- Signage lettering is large enough to be viewed from a distance appropriate to the information provided.
- **Sign-language** interpretation and/or **assistive listening systems** are available for children who are deaf or hard of hearing.
- Educational materials made available in alternate formats such as Braille, audio, **closed captioning** (CC), etc.
- Colour and tonal contrast between the wall and floor surfaces.

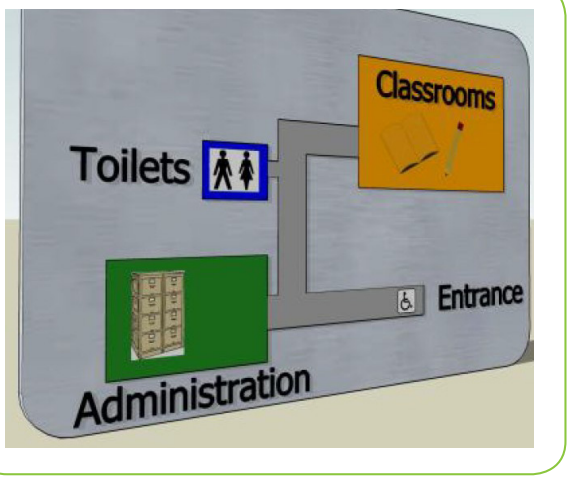

Figure 7: Tactile map with raised features, pictograms and high colour-contrast. (*Source: UNICEF*)

Goal 4: Understanding

Making methods of operation and use intuitive, clear and unambiguous.

Examples:

- Room signs are consistently located at the same height on the latch side of doors.
- Colour coding is used to identify similar elements and spaces, e.g. doors to classrooms are a different colour from doors to offices.
- Pictograms are used wherever possible.

Goal 5: Wellness

Contributing to health promotion, avoidance of disease and prevention of injury.

Examples:

- Gender-appropriate toilets are available.
- Handrails provided on both sides of stairs and ramps.
- Guards used where overhead obstructions are low enough that someone may hit his or her head.
- Classrooms are located away from odour sources (such as toilets) and are well-ventilated.

Goal 6: Social Inclusion

Treating all groups with dignity and respect.

Examples:

- School entrances accommodate all children, including children with disabilities.
- Children with disabilities are included in classrooms with other children of their own age.
- 'Special' facilities for children with disabilities are avoided. If provided, they should maximize inclusion.
- The same **learning resources** are used for all children.

Goal 7: Personalization

Incorporating opportunities for choice and the expression of individual preferences.

Examples:

- Toilets provide each gender with appropriate level of privacy and safety. Menstrual hygiene needs do not limit girls with disabilities' attendance at school.
- Where stairs are used, ramps also available in the same location.
- Learning resources appropriate for left- and right-handed users, such as scissors.

Figure 8: Accessible toilet facility, Indonesia (*Source: UNICEF*)

Figure 9: Inclusive classroom –child with low vision reading a Braille document (*Source: Send ALL my Friends to School*)

Figure 10: Toilet facility with both step and ramp access (*Source: UNICEF*)

Goal 8: Cultural Appropriateness

Respecting and reinforcing cultural values, and the social and environmental context of any design project.

Examples:

- School designs reflect cultural norms.
- Gender-appropriate facilities are available, such as toilets for girls with privacy.
- Learning resources incorporate culturally appropriate information and examples.

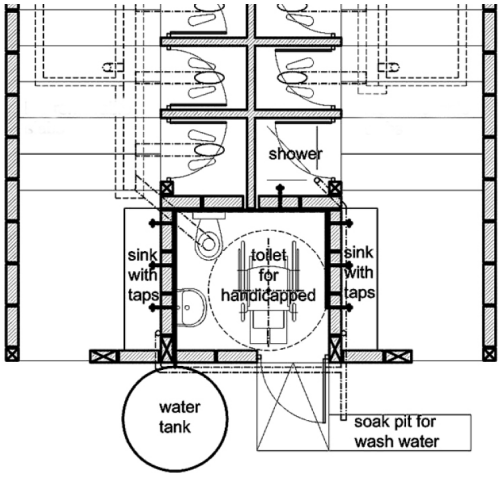

Figure 11: Plan of toilet facility in Rwanda (*Source: UNICEF*)

Figure 12: Local construction systems used for school in Solomon Islands (*Source: UNICEF*)

All children, including children with disabilities, have the right to attend a child-centred school which is well-designed, properly constructed and safe. If the concepts of universal design are applied to the development of a new school, or to the renovation of an existing one, it will result in the creation of inclusive environments that are accessible to and usable by everyone, including children with disabilities.

One of the most unique aspects of universal design is that if it has been successfully applied to a project it will be invisible! As the previous examples illustrate, a school, classroom, website, story book, playground or WASH facility that incorporates the principles of universal design will look just like any other. It's simply good design that everyone can use.

The Accessibility Continuum

When considering the design of a school, accessibility and universal design should not be considered as discreet elements. They are part of an interconnected system of design requirements which should be considered from the conceptual level of planning a community, through to the detail level of designing a door handle, including all of the elements of design between these extremes. Figure 13 illustrates this design philosophy, identified as the Accessibility Continuum.

The Accessibility Continuum might be viewed as a chain of events or a path of travel from a child's home, through the community, into the school, then into the classroom. As with all chains, if one link is broken the chain is broken. To accommodate the needs of children with disabilities and their families to attend school, the chain must be complete. For example, if the chain is complete from a child's house to the door of the

classroom, but the classroom door is too narrow for a wheelchair to get through, then the chain is broken and that child cannot attend class.

Similarly, if the pathway to the school is full of obstacles and tripping hazards, someone with low vision may not be able to travel safely to school by themselves.

Those involved in the development of schools are encouraged to consider accessibility requirements throughout the entire Accessibility Continuum, which may mean working with other partners, organizations and community members outside of the education sector.

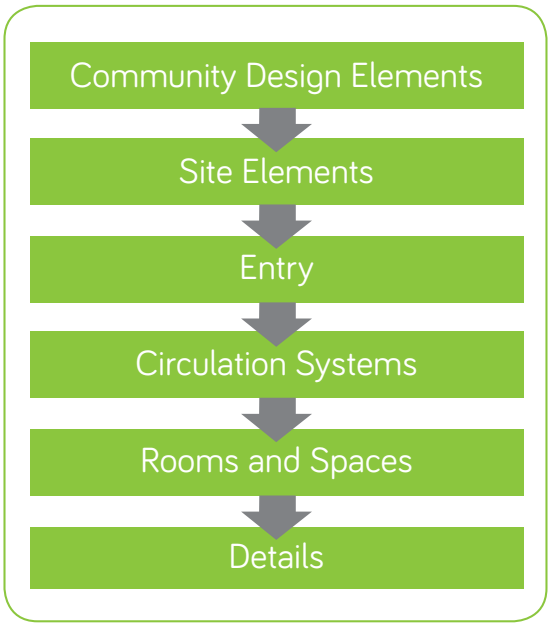

Figure 13: The Accessibility Continuum (*Source: GAATES*).

This underscores the importance of a multi-sectoral approach. For example, several components are outside the purview of the education department in a country. For a child with a mobility impairment the commute to school may require intervention from the transport/road works department. Next, the public works department may be involved for accessing the school; the social services department for assistive devices; the health department for a disability certificate; and the education department for learning materials in alternative formats, along with trained and sensitive teachers and school management. Unless all these departments come together and work in tandem the chain is not likely complete and there will be a broken link.

Getting to School

Getting from their house to school can be a challenge for any child, but it is particularly challenging for children with disabilities. Routes children use to reach their school should be safe, free of obstacles and well maintained.

The main roads/busy arterial roads usually face high traffic and vehicular movement, which can result in accidental hazards for all children. Also, a lack of a sidewalk or designated pathway and noisy roads pose discomfort and confusion to children with hearing disabilities.

Figure 14: Walking to school (*Source: Send ALL my Friends to School*)

Ensuring children with disabilities can get to school again involves a multi-sectorial approach amongst the various ministries involved in urban design. Other components of this approach may include access audits to identify barriers and the inclusion of the community, especially people with disabilities, to identify and overcome barriers and advocate for policy options that ensure accessible communities.

General recommendations for accessibility strategies to consider when constructing new routes to schools, or when renovating to remove the barriers, include: providing ground surfaces that are firm and stable, as well as ramps at road curbs and other changes in level; ensuring trees along routes are trimmed to keep the route clear; and providing a curb or barriers at the edge of routes where there is a vertical drop or steep slope down.

Entering the School

Welcoming all children into a school starts at the main entrance. It is very important that children with disabilities and their families enter the school at the same entrance as the other children. Creating a separate entrance for children with disabilities separates and stigmatizes these children and does not conform to the principles of universal design, or embrace the concept of a child-friendly school. Entrances should be free of steps and be wide enough to accommodate children who use wheelchairs and other assistive devices. Entrance doors/gates should provide at least 850mm of clear width when they are open.

Figure 15: School entrance (*Source: CBM*)

Some common barriers are entry surfaces that are uneven and unmaintained. Cow catchers (cattle traps) in many towns and villages provided at the main gate act as a barrier for children with disabilities using **mobility aids**, who cannot cross these independently. Collapsible gate channel strips, commonly found in school buildings, are a trip hazard for everyone but especially for children who have impaired mobility or vision loss.

Figure 16: Ramp at school entrance (*Source: Janett Jimenez*)

Some general recommendations on accessibility strategies to consider when constructing a new school, or when renovating to remove the barriers, include providing a level-surface approach to the school that is well maintained. Paved flooring within the building provides comfortable access to all students and teachers and will benefit children and adults with disabilities. All surfaces should be firm and even, with a finish that is slip resistant in all weather conditions. Any curbs along access routes through the property should have appropriate drop curbs to allow access for a wheelchair or other assistive wheeled devices to the same approach as everyone else.

Moving Through the School

Hallways and Walkways

Walkways and hallways should be wide enough to allow a teacher or child using a wheelchair to pass another child or adult who is walking in the same or opposite direction.

General recommendations for creating accessible hallways and walkways include a width of at least 1,500mm, although a width of 1,800mm is preferred to allow two wheelchair users to pass each other. Wall-mounted objects should be avoided along primary paths of travel. Walkways, particularly those on the outside, require regular maintenance.

Stairs

Stairs are used by many children with disabilities, including those who are visually impaired or who use crutches or canes to assist with walking. Accessibility features such as handrails on stairs make them safer for all building users, not just children with disabilities.

Some common barriers on steps and staircases are missing handrails, with often only a parapet wall provided on the open side and colour/tonal contrast along the leading edge of steps.

Colour/tonal contrast should be considered for both the front edges of the steps and the handrails, as well as tactile warning pavers used before the step edges. Spiral stairs and stairs with tapered treads should be avoided, as they are much more likely to cause tripping.

Ramps

Path access to ramps should avoid sandy or muddy areas as it is extremely difficult to access for wheelchair and crutch users. General recommendations for ramps include keeping the ramp entrance clear of vehicles or other elements, and ensuring ramp entry points are not kept locked. The gradient or slope of the ramp should be no more than 1:12 maximum (for every rise of 1 unit height, the length of the ramp should be 12 units). A gentler slope of 1:15 gradient is preferred as it is easier to maneuver and requires less effort. The top and bottom edge of ramps should be flush with the flooring and the pathway leading to ramps. L-shaped ramps (with a turning platform or landing) and dog-leg (switch back) ramps are preferred if the height change is large, to give users a rest and reduce the overall length impact on the site. The width of the ramp should be at least 1,500mm, but a width of 1,800mm is preferred to allow two wheelchair users to pass each other. Ramps, particularly those on the outside, require regular maintenance.

Figure 17: Children using hallway wall for guidance (*Source: Christian Blind Mission*)

Figure 18: Child accessing toilet – features tactile strips on pathway and safety curbs (*Source: Government of Tanzania*)

Figure 19: Ramp slope (*Source: GAATES, Bob Topping*)

Entering and Using Classrooms, and Other Spaces

Classrooms and other learning spaces should be bright, well ventilated, quiet and flexible. Age- and disability-appropriate furniture should be available and the space should allow for a variety of student groupings to provide opportunities for a range of learning activities. Layouts should be flexible enough to provide appropriate space for children with disabilities and any assistive equipment they use. Classroom doors should provide at least 850mm of clear width when they are open.

Figure 20: An open teaching space with no-glare flooring of a consistent colour and the availability of shade. Manik Prabhu School, India (*Source: Mangala Bhagwat*)

Some common barriers in classrooms and other teaching spaces include the absence of signs and classrooms that use fixed furniture.

General recommendations on accessibility to consider when constructing a new school, or when renovating, include: providing signs at strategic locations with bright colour/tonal contrast text in larger-sized fonts for easy visibility from a distance; adequate lighting levels on the face of the signage for visibility at night or in low-light areas; name plates and room numbers provided in Braille as well as raised characters in bold and colour, contrasted with their background; some work areas should have movable tables and seats to adapt to changing user needs; and some desks and tables should provide sufficient knee clearance for children who use wheelchairs – ideally desks should be used by no more than two to three children and be modified by providing a shelf or storage space under them so that children can store their bags, as well as use the seat space for resting purposes, without blocking the required knee space. Furthermore, where possible adjustable-height seats and desks are preferred to accommodate students of different sizes and heights, although child-sized furniture sized for the age range is also important; a lowered blackboard height is helpful for teachers with short stature; and anti-skid/slip and no-/low-glare flooring is recommended throughout the school.

Figure 21: Adapted seating system made from cardboard and wood (*Source: AdaptiveDesign*)

Flooring

Some common barriers in flooring include glazed tiles or marble, which can become very slippery. Uneven and unmaintained surfaces can provide difficulties for everyone, but are particularly problematic for all children, especially those with disabilities.

General recommendations to consider when constructing a new school, or when renovating to remove the barriers, include: slip resistant and no- or low-glare flooring material of a uniform shade; avoid mosaic pieces, which can be confusing; where there is a level difference, provide a ramp to merge the change in

levels and connect pathways; and place sitting areas along a paved pathway, under some form of protection such as a shed/tree, with a clear space of 800mm x 1,200mm for wheelchair and assistive-device users to sit with others at the bench.

Blackboards/Whiteboards

Some common barriers include blackboards or whiteboards that are too high to reach for smaller children and children who use wheelchairs, as well as whiteboards that are difficult to distinguish because they are located on white walls. The outline framing of whiteboards should be in a contrasting colour for children with low vision to be able to identify the board from the wall. Similarly, it is important to use chalk or markers that have a strong contrast with the board.

Illumination/Lighting Levels

Naked bulbs should be avoided as the glare from the bulb can cause eye stress and headaches for everyone.

Ensure all activity and internal areas are well lit at 250-300 lux and positioned to facilitate reading and other activities. This benefits everyone, especially children with hearing impairments who use lip reading. Corridors and staircases require a minimum lighting of at least 100 lux. Shaded light fixtures such as compact florescent lights (CFL) or those using light-emitting diodes (LED) aimed downward are recommended.

Figure 22: Well-lit classroom in school in Myanmar (*Source: UNICEF*)

Windows

The height of the window sills should start at 600mm above the floor, enabling the children to see out when seated. Glare on shining objects from the light coming in through the window can be minimized by providing blinds or curtains.

Water, Sanitation and Hygiene (WASH) Facilities

General

Accessible, gender-sensitive, safe, usable and functional toilet, hand-washing and drinking-water facilities should be provided for all children. For children with disabilities, it is essential that toilets have appropriate lighting as well as doors and roofs for safety and privacy. Water and soap for washing hands assist in learning safe hygiene management. Access to clean running water is very important for adolescent girls in menstruation hygiene management.

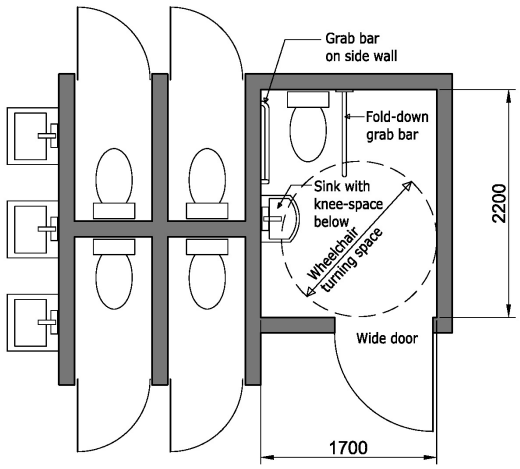

Figure 23: Plan of toilet block with wheelchair-accessible facilities (*Source: GAATES, Bob Topping*)

It is important to note that providing accessible WASH facilities alone may not meet the needs of all children with disabilities. Some children will require assistance to reach the toilet, wash their hands or access drinking water. Some more children with more severe disabilities may require additional forms of support, such as special arrangements for incontinence.

Proper operation and maintenance of WASH facilities is critical for their sustainability and for providing clean and hygienic facilities. Fixtures and finishes should be chosen which will not absorb liquids or dirt and are easy to clean.

Accessible Toilet Fixtures

Inaccessible toilets can be a cause for children, especially girls with disabilities, to drop out from school. Ensure there are no barriers and obstructions that block the approach to the toilets.

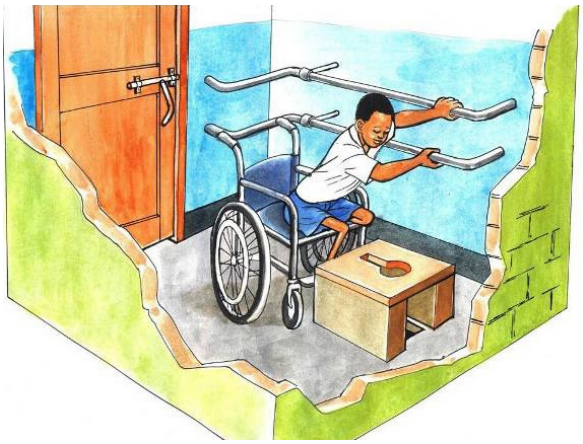

Figure 24: Toilet in Tanzania with toilet stool and grab rails (*Source: Government of Tanzania*)

Accessible toilets should be integrated into existing toilet cubicles and located near to the school buildings.

Wheelchair-accessible toilet cubicles with western commode seats should have a minimum clear floor space of 1,500mm x 1,500mm, a door at least 900mm wide which opens to the outside and a wash basin provided in the corner. Children with reduced mobility, but who do not use wheelchairs, may benefit from having a squatting seat (if this is in keeping with local customs) with grab-bars and a clear floor space of at least 1,200mm x 1,500mm. L-shaped grab-bars should be placed immediately next to the toilets to be used for independent transfers.

Cleansing supplies and equipment should also be easily accessible. Straight and unobstructed paths to toilets will help children with visual impairments and those using mobility aids. Toilet doors should provide at least 850mm of clear width when they are open. Management and monitoring may be necessary to ensure that accessible facilities are used appropriately and are available for those that require them.

Figure 25: Urinal (*Source: SuSanA Secretariat*)

Accessible Urinals

At least one urinal should be provided with level access as well as support grab-bars on either side. The accessible urinal should be provided closest to the entry at the beginning of the urinal row.

Accessible Drinking-Water and Hand-Washing Facilities

Hand-washing facilities with soap should be located close to toilet facilities. The route to a drinking-water or hand-washing area, as well as the areas themselves, should be well maintained with level surfaces at the fountain or pump. Accessible drinking-water units should have one control at 400mm and another at 800mm above the floor to allow both foot and hand operation. A basin with a drain should also be provided.

Some common barriers at drinking-water and hand-washing facilities include controls and taps that are too high and cannot be accessed by small children and wheelchair users. Drinking-water units are often located on elevated platforms, which make them inaccessible for small children and children using wheelchairs or other seated devices.

Figure 26: Woman with a wheelchair using a water point (*Source: UNICEF*)

Toilet Facilities – Signage

Text and pictogram signage for toilets are necessary, located to be visible and touchable. The use of pictograms of male and female symbols, in accordance with local customs and standards, with raised outlines and bright colour contrast will be more evident to everyone, and particularly helpful for children with visual impairments.

Playing

A paved pathway with a width of at least 1,800mm can be used by children and their families who use wheelchairs, crutches or walkers to access play facilities. Where there is a level difference, provide an accessible ramp to merge the change in levels and connect the pathway. Ensure the nearest sitting area is on a paved pathway, with a clear space of 800mm x 1,200mm for wheelchair users, under some form of overhead protection such as a shed or tree. Provide equipment and play materials that will be inclusive of a range of abilities. A variety of ground-surface materials should be considered in play areas to provide a more diverse sensory experience. Such surfaces should be firm and stable, with characteristics to reduce impact and injuries. Some suitable surfaces include sand, wood chips, bark mulch, engineered wood fibre and recycled rubber chips.

Figure 27: Play area at school in Myanmar (*Source: UNICEF*)

Evacuating the School in an Emergency

A common barrier in evacuating the school during an emergency is the lack of planning for emergency evacuation. This can result in severe mishaps and accidental hazards at the time of fire, disaster or other emergency situation. Classrooms that are overcrowded with children can present a hazard as too many people trying to leave quickly can cause delays and people may be left behind.

Figure 28: Exit sign (*Source: BowBell51*)

General recommendations include providing both visual and audio alarms to warn children of emergency situations. All staff and caretakers should participate in regular fire safety drills. Exit areas and assembling areas in an emergency and evacuation process should be part of the fire safety plan, and personal strategies should be developed to assist in evacuating each child.

To learn more go to:

- Child Friendly Schools Manual, *UNICEF.*
- Equity of Access to WASH in Schools, *UNICEF.*
- *ISO/FDIS 21542:2011(E), Building construction – Accessibility and usability of the built environment.*
- Principles of Universal Design, Center for Universal Design, *NC State University.*
- Goals of Universal Design, *Edward Steinfeld, Center for Inclusive Design and Environmental Access.*
- Promoting Access to the Built Environment – Guidelines, *CBM, 2008.*

Notes

III. Universal Access to Information

Key Points

- *Books and other learning materials should be available to all students in a format that they can read and understand.*
- *The education system should have the ability to provide their students with learning materials in the alternate formats to print that are commonly in use.*
- *Accessibility can also be enhanced in the classroom through the provision of information in different formats, including structured/tagged electronic documents, and the use of accessible software and hardware.*

Learners with disabilities who enrol in school need to be adequately and appropriately supported in and out of the classroom with the right resources and assistive devices, and with leadership, teaching staff and school communities that are responsive to their needs. *Source: Send All My Friends to School, Global Campaign for Education, 2014*

One of the fundamental concepts of inclusive education is to address the individual needs of learners, including the needs of children with disabilities. Inclusive educational environments also promote better social equality among all children.

Adopting an inclusive approach requires the commitment of ministries of education, regional and local school administrations, principals and teachers, all working together to adopt and implement the following strategies:

- Value all students and staff equally, including staff, children and youth with disabilities.
- Acknowledge the rights of children and young pupils to an education in their locality.
- Increase the participation of students in cultural events, curricula and the communities of their institution.
- Examine the cultures, policies and practices of the institution to respect the diversity of learners in the community.
- Assess digital barriers to learning and participation for all students. Ensure that everyone has access, not just

Figure 29: Sign-language captioning of video (*Source: Newsbiscuit*)

those with visible impairments or those categorized as 'having inclusive educational needs' or learning disabilities.

- Review attempts to overcome education barriers to access and participation and learn from both mistakes as well as successes.
- Improve institutions for all people with disabilities in the community as well as for the students of the school.
- Foster mutually sustaining relationships between learning institutions and communities. Recognize that inclusion in education is an important part of inclusion in the greater society.

Central to the implementation of an inclusive education strategy is making books and other types of learning resources available to all students in a format that they can read or use and understand. This section of the booklet will overview the types of information typically found in classrooms and provide guidance on the types of alternate accessible formats that will benefit many students with disabilities.

Books and Other Printed Documents

Much of the learning in classrooms is structured around reading, understanding and discussing printed materials such as books, newspapers and magazines. If a child cannot read a book because of a visual, cognitive or learning disability, the information in the book should be available in an alternate accessible format that can be used by the child.

Figure 30: Reading a Braille graph (*Source: UFB Pictures*)

Why is print information inaccessible to some children?

You have to be able to see it and you have to be able to see it clearly, which impacts children with blindness or low vision.
You may have to be able to hold it in order to read it or turn pages to access it, which impacts children with little or no dexterity (perhaps due to paralysis, missing limbs or temporary injury).
You have to be able to understand what's written for it to be useful, which impacts children who don't or can't read the language of the printed text, children who have limited literacy or those who have a range of cognitive or learning disabilities.

Alternate Formats to Print that are Commonly Used

Braille

Braille is a tactile lettering system consisting of raised dots that a child or adult with a vision impairment can be taught to use by reading using their fingertips. Patterns of raised dots are used to represent letters and words. Once children know Braille, they can share in discovering new information independently about the

world in the same way that any reading child does. But this can only happen if the training and the materials are available in Braille.

Computerized Braille production is available and is an accepted method for providing Braille documents all over the world. As such, Braille printed materials should be available in all schools attended by children who can read Braille. However, it should be noted that not all children with vision loss can read Braille.

Audio Books

An audio book is a recording of a book being read aloud, supplemented with verbal descriptions of photographs, illustrations and other graphic content contained within the printed book. The four most common formats used for digital audio books are: UNICODE, Electronic (e-book), EPUB 3, and DAISY.

Digital recording provides additional benefits over analog recording, including smaller storage space requirements, bookmarking and tagging. As such it has become the preferred choice for audio books within some developed countries. Efforts are under way to ensure that the benefits of this technology are also readily available to developing countries.

Digital audio books are an effective vehicle for learning and should be available to children with disabilities who need them.

Large Print

Making printed information available as large-print documents is a cost-effective way to support the learning of some children with vision loss. Computers make it easier for schools to produce large-print books themselves if an electronic version of the text is available. Where an electronic text is not available, a computer equipped with a document camera and image-enlarging software can scan and display enlarged images of text and graphics on a computer monitor. Such software can also adjust the colour and contrast of text to maximize legibility for students with vision loss. Where document cameras are not available but computers are, volunteers can re-type the book content to create an editable electronic version. Handheld magnifiers can also provide a low-tech solution where it is difficult to produce large-print materials in the absence of computers.

Similarly, the availability of a document camera and image-enlarging software will greatly enhance accessibility for others. Supplying books and written information in formats that children with visual or print disabilities can use freely by themselves is a key element of inclusive education. When implementing alternate formats, consider:

- In today's world, computers are playing a key role in production and dissemination of information in accessible formats. Whenever it is available, use computer technology. Where computers may be scarce, many smart-phone applications may be used. Where the cost for the creation of large-print alternatives is not manageable or equipment is not yet available, handheld magnifiers can also be used.
- Accessible materials should be available to children with disabilities at the same time that information is available to other students as printed documents.
- Accessible materials should be available to students at no extra cost to that of the printed documents.

e-text Readers

E-text readers read text aloud from electronic documents or websites displayed on a computer, tablet, mobile phone or other electronic device. An e-text reader can read electronic text, but it cannot read a photograph, illustration or other graphic material. In an accessible document, any graphics will have a

written description linked to them. This is referred to as an alternate text or 'alt text'. If a website or electronic document includes alternate text descriptions for the graphic contents, the e-text reader will read aloud the alternate text.

The easiest and most cost-effective way of providing accessible information to students with vision loss is with e-text reading software. However, written materials must first exist in an electronic format that is recognized by an e-text reader and the school must have access to computers, tablets, mobile phones or other electronic devices for this solution to work.

Students with other types of disabilities, such as dyslexia, can also benefit from e-text reading software. Used appropriately, it can enhance reading, spelling and grammar skills for any student.

It should also be noted that not all electronic documents are able to be read by e-text readers. For example, one of the most commonly used file formats is a pdf (portable document file), which can sometimes be problematic if the author does not plan for accessibility. The format of documents should be compatible with the available e-text reading devices.

Electronic Documents

As technology continues its rapid evolution, children are increasingly creating and using electronic documents in their learning activities at school. Electronic documents are an excellent resource for children with vision loss and other types of disabilities as they can be created to be read using an e-text reader, as well as checked for spelling and grammar errors. The usability of such electronic documents can be greatly enhanced if they are created as accessible electronic files rather than simply plain text.

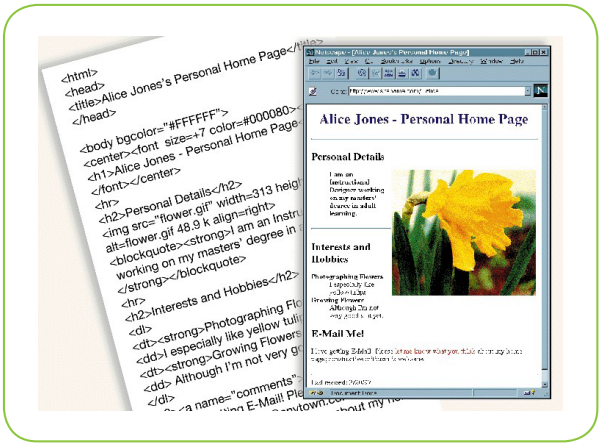

Figure 31: Website accessibility is dependent on appropriate coding (*Source: Novell*)

In addition to the written content of the document, accessible electronic files incorporate hidden information about how the document is organized, words that are emphasized, titles and headers, etc. E-text readers and screen-reading software use this hidden information to make electronic documents easier to read, navigate and understand. Commonly used word processing programmes can easily create accessible electronic files if the author uses the document style features typically provided.

When information is provided in an accessible electronic file it is easy to convert the information into other accessible formats, including: high-contrast print; large print; Braille; other languages; other electronic formats; spoken word; and sign language. As such, schools should teach their teachers and students how to create accessible electronic files, so materials can be easily converted and shared with children with disabilities.

Websites and Other Online Teaching Resources

The information resources available through the internet are increasingly being used within classrooms as a key curriculum component. Children with disabilities should be able to access these online resources,

along with their classmates. Screen-reading and e-text software provide a relatively inexpensive and readily available method for children with disabilities to participate in these online learning activities.

However, e-text and screen-reading software is of limited use if the websites accessed are not designed to be accessible. Accessible websites are sites that have been designed to meet a set of guidelines (Web Content Accessibility Guidelines [WCAG]).[8] When ministries of education, regional and local school administrations, school principals and teachers are creating web-based learning resources, they should ensure that WCAG guidelines have been met.

Film, Video and Broadcast Resources

Films and other audio-visual materials are frequently used by teachers within the classroom as a learning resource. The use of traditional film media is rapidly being overtaken by DVDs as well as online streaming services such as YouTube.

Figure 32: Captioning of film (*Source: Unknown*)

Children who are deaf, deafened or hard-of-hearing will benefit from having captions (sub-titles) to supplement the audio components of the film or video. Such captioning must be synchronized with the action. Where media is used in the classroom which is not captioned, one strategy would be to provide a written transcript for students with hearing loss. Alternatively, if the child knows sign language, provide an interpreter to sign the audio content of the film/video.

Children with vision loss will benefit from having described video content. Described video is additional audio information which describes the context of the film/video and the information which is not obvious from simply listening to the soundtrack. When choosing film and other audio-visual resources for use in the classroom, every effort should be made to use media that incorporates captioning and described content. If captioning and described content are not available, support for children with disabilities should be provided.

Figure 33: Boys using Braille typewriters at school in Saudi Arabia (*Source: GAATES*)

Software and Hardware Considerations

Including children with disabilities into classroom learning activities may require providing assistive technologies specific to the needs of the child. The array of such technologies is vast but can be generally categorized in six areas.

Alternate Access Hardware

Alternate access hardware is a tool that offers students access to a computer using a variety of devices. These tools include alternate keyboards, key guards, alternate mice, touch screens, switches, switch interfaces and more. Hardware may also include simple low-tech devices, such as a pencil-holder grip that allows a student with limited fine motor skills to use a pencil to tap the keys of a keyboard.

Alternate Access Software

Alternate access software offers students access to curriculum materials using a variety of methods. These tools can include supports for reading, written output, organization, computer control, text-to-speech conversion and speech-to-text conversion. While software products typically have to be purchased, there are many excellent open-source products available for free (see references below).

Communication Hardware

Communication hardware allows students to participate and communicate in the classroom during lessons. These tools can include low-tech equipment such as symbol/picture boards, eye-gaze or eye-pointing systems, head-pointing devices, keyboards, touch screens and high-tech equipment such as portable and/or handheld computers equipped with Augmentative and Alternative Communication (AAC) software.

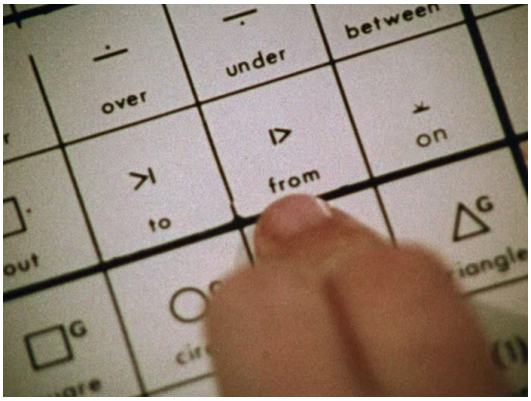

Figure 34: Symbol/picture board being used for communication (*Source: idsgn Blog*)

Communication Software

Communication software allows students with communication disabilities to participate in classroom discussions using alternate methods. These tools include support for reading, written output, organization, computer control and more. Some examples include Boardmaker, Tobii Communicator, The Grid 2 and Prologue2Go.

Vision Hardware

Vision hardware allows students with low vision or blindness to access written material in the classroom and on the internet. These tools include: Braille Writers for the creation of Braille documents; enlarged keyboards for their easily read keys; portable note-takers for zooming in on a chalkboard and recording a teacher; and various magnifiers. Low-tech solutions that can be used to enhance access to curriculum materials for children with low vision include: Braille slate and stylus for writing Braille; Taylor frame for teaching maths; writing guide and regular Dictaphone for recording lessons; and models of different objects, tactile maps, globes, cardboard and thread for making tactile learning materials from scratch.

Figure 35: Using text-enlarging technology (*Source: Unknown*)

Vision Software

Vision software is a class of high-tech tools that can allow a student access to the curriculum. These tools include screen readers, scan-and-read systems and digital book readers. Access to this software can be made in conjunction with the learning assistance teacher, special education technology consultants and the recommendations provided by the educational psychological assessment. The appropriate software can be determined through trials to determine the right fit for each student and what type of support is available.

UNICEF is putting together a database of assistive technologies which are useful for children with disabilities.

In an inclusive classroom, decisions regarding alternate-access hardware and software for students are best made in conjunction with occupational therapists, physiotherapists and ophthalmologists, etc. who are familiar with the student's abilities and needs. Through a functional skills assessment, teachers can request from the administration the hardware supports required for their students with disabilities. Where such support is not available for teachers, the experts/resource organizations referenced below may provide guidance.

Evolving computer and smart-phone technology and applications are making it easier and more cost-effective to provide appropriate learning resources for children with disabilities, allowing them the same opportunities to succeed in their education as their peers. Non-technology solutions continue to also be important such as pencil grips, word cards, photo albums, magnifiers and stencils.

Notes

IV. Inclusive Communication Strategies

Key Points

- *Effective communication within classrooms is critical for learning.*
- *Children with disabilities often use alternate methods for communication.*
- *Schools should be capable of providing effectively communication supports to allow children with disabilities to communicate with their teacher, as well as with other children.*

At the simplest of levels, inclusion of children with disabilities involves them being welcomed and supported within their local school. *Source: Send All My Friends to School, Global Campaign for Education, 2014.*

Interactions between children and their teacher, as well as between children themselves, are key components in the process of learning. Such interactions are critical for learning, as well as for the social and emotional development of the child. Children with disabilities may face challenges with such communication due to limitations in their ability to speak, hear or comprehend. However, strategies are available to help children with disabilities, their teachers and their peers communicate with each other, while working together in an inclusive classroom.

Face-to-Face Communication

Children who are deaf, deafened, hard of hearing or have cognitive disabilities use a variety of ways to communicate. Some will use speech only; some will use a combination of sign language, finger-spelling and speech; some will write; and some will use body language and facial expressions to supplement their interactions.

Where a child can communicate using sign language, providing a sign-language interpreter in a classroom is an excellent way to involve the child in learning activities. The interpreter will translate the words of the teacher and classmates into hand signs which are understood by the child. Similarly, the child will speak using hand signs, which can be understood by the interpreter and spoken to the teacher or classmate.

Figure 36: Sign-language communication in the classroom (*Source: iStock*)

Some children with hearing loss can hear some sounds such as only high-frequency sounds or only low-frequency sounds. A quiet environment is therefore critical for maximizing the effectiveness of children with limited hearing ability. Classrooms used by children with hearing loss should be located away from noisy areas and have as little background noise as possible from fans and other mechanical equipment. Maintaining the acoustics of the classroom is important and low-cost indigenous material like wood, cow dung and local grass products (khus) on the walls will help.

Other children with hearing loss will lip read to communicate. Effective lip reading requires good lighting on the face and mouth of the person talking. Teachers should avoid sitting with their backs to a window or facing the blackboard while speaking as this will cast their face in shadow. Classroom lighting should also be designed to provide even illumination and minimal shadow-casting. Male teachers should trim moustaches regularly.

Many children with low vision will benefit from sitting close to the blackboard, as will children who lip read benefit from sitting closer to the teacher. These children also benefit from receiving visual information audibly. For example, a teacher writing on the blackboard should also say aloud what she or he is writing. Similarly, if a picture or other graphic is being used in the classroom the teacher should describe the image as well as show it to the children. Providing the same information in multiple formats is not only of benefit to children with disabilities, but also helps children with different learning styles.

Remote Communication

Technology has changed significantly since the advent of computers and mobile telephones as means of remote discussion. In distant and rural areas, education activities can be delivered remotely using such technologies. Where available, teachers may use web cameras, video telephones, Voice over Internet Protocol (VoIP) programmes such as Skype as well as personal communication devices such as smart phones in their classroom learning activities. Although not common, there are now multiple means of communicating which can help or hinder children with communication disabilities.

When considering the use of remote communication within the classroom, the accessibility of such systems should be considered. For example, if a voice-communication system is used, is there a text option that will allow a child with limited hearing or speech abilities to participate? If a discussion forum is used, can a screen-reading programme be used to read the posting aloud for a child with low vision? Can the text messaging function on mobile telephones be used to communicate with a child who has hearing loss? Can the video function on mobile phones be used to provide sign-language interpretation remotely to a classroom?

The availability and cost effectiveness of many new and emerging technologies provide opportunities for teachers to bring learning content into their classrooms remotely. Many of these new technologies have accessibility features which can support the needs of children with disabilities in the classroom.

V. Conclusions

Access to education is a fundamental right for all children, including children with disabilities. Providing all children with an education will not only benefit the children, but also the entire communities in which they live. Education provides the means for children to grow to become independent and meaningful citizens of their communities.

The integration of accessibility and universal design concepts into the development of schools will enable all children to attend school within their own communities. Such concepts apply equally to the design of the school curriculum and learning resources, as well as to the school infrastructure itself. For a school to be truly inclusive, it requires commitment and involvement from many levels, including ministries of education, regional school administrations, local school administrators, community leaders, teachers, parents and children, including children with disabilities and their families.

If accessibility is considered from the start of a project, the cost of incorporating accessibility and universal design into school development is minimal and a one-time cost, while the benefits for individual children and the community as a whole are significant and ongoing.

Notes

Additional Resources

For additional resources on inclusive education visit UNICEF's comprehensive database at: www.inclusive-education.org.

Additional online knowledge communities and web platforms covering inclusive education include, but are not limited to:

General

- **CEE/CIS Regional Office's inclusive education website**, UNICEF, http://www.unicef.org/ceecis/education_18613.html
- **Education**, UNICEF, http://www.unicef.org/disabilities/index_65316.html
- **Enabling Education Network** (EENET) - http://www.eenet.org.uk/resources/index.php
- **Factsheet on Children with Disabilities**, UNICEF, 2013, http://www.unicef.org/disabilities/files/Factsheet_A5__Web_NEW.pdf
- **Guideline on Inclusive Disaster Risk Reduction: Disabilities and Disaster**, Global Alliance on Accessible Technologies and Environments (GAATES), 2014.
- **Innovations in Education**, UNICEF, http://www.unicef.org/education/bege_73537.html
- **It's About Ability**, UNICEF, 2008, http://www.unicef.org/publications/files/Its_About_Ability_final_.pdf
- **Post-2015 issue brief: The Rights on Children with Disabilities**, UNICEF, 2014, http://www.unicef.org/post2015/files/Disabilities_2pager_FINAL_web.pdf
- **Take Us Seriously- Making sure children with disabilities have a big say**, UNICEF, 2013, http://www.unicef.org/disabilities/files/Take_Us_Seriously.pdf
- **The Right of Children with Disabilities to Education**, Position Paper, UNICEF, 2012, http://www.unicef.org/disabilities/files/UNICEF_Right_to_Education_Children_Disabilities_En_Web.pdf
- **UNESCO ICT in Education Database** - http://www.unescobkk.org/education/ict/online-resources/databases/ict-in-education-database/article/?tx_ttnews%5Btt_news%5D=1335&cHash=726370c57d
- **UNICEF activate talks: Youth with Disabilities and Innovation; Making the World Inclusive for All** - http://talk.unicef.org/events/achieving-inclusive-society-youth-approach-disabilities/#.VL5q4CzNCO5
- **UNICEF The State of the World's Children 2015: Reimagine the future: Accessible e-books for equal opportunity** By Jim Fruchterman | Benetech - http://sowc2015.unicef.org/stories/accessible-e-books-providing-equal-opportunity-for-all-children/

Inclusive Environments

- **Accessibility and Development: environmental accessibility and its implications for inclusive, sustainable and equitable development for all**, Department of Economic and Social Affairs (DESA) of the United Nations Secretariat, 2013, http://www.un.org/disabilities/documents/accessibility_and_development_june2013.pdf
- **Accessibility: How to design and promote an environment accessible to all?**, Handicap International, 2009, http://www.hiproweb.org/uploads/tx_hidrtdocs/AccessibilityBD_01.pdf

- **Child Friendly Schools Infrastructure Standards and Guidelines**, Primary and Tronc Commun schools, Rwanda Ministry of Education, 2009, http://www.unicef.org/french/education/files/Rwanda_CFS_guidelines.pdf
- **Compendium on Construction Works** Undertaken by UNICEF, Global Supply Meeting 2014, Construction Unit, Supply Divisions, UNICEF, 2014.
- **Equity of Access to WASH in Schools**, Emory University and UNICEF, 2011, http://www.unicef.org/wash/schools/files/Equity_of_Access_to_WASH_in_Schools%281%29.pdf
- **Goals of Universal Design**, Edward Steinfeld, Center for Inclusive Design and Environmental Access, 2012, http://udeworld.com/presentations/oslo/Steinfeld.Goals of UD-Oslo_Final_web.pdf
- **How to Build an Accessible Environment in Developing Countries based on the Cambodia Program's Experience**, Manuals 1-4, Handicapped International, 2008.
- **INNE Good Practice Guide: Shelter and School Construction, Inter-Agency Network for Education in Emergencies (INNE)**, undated, http://www.handicap-international.org.uk/Resources/Handicap%20International/PDF%20Documents/HI%20Associations/AccessibleEnvironmentDev3_2008.pdf
- **International Best Practices in Universal Design: A Global Review**, Global Alliance on Accessible Technologies and Environments (GAATES), 2006.
- **ISO/FDIS 21542:2011(E), Building construction – Accessibility and usability of the built environment**, http://www.iso.org/iso/catalogue_detail?csnumber=50498
- **Principles of Universal Design**, Center for Universal Design, NC State University, http://www.ncsu.edu/ncsu/design/cud/about_ud/udprinciples.htm
- **Promoting Access to the Built Environment - Guidelines**, CBM, 2008, http://www.cbm.org/article/downloads/54741/CBM_Accessibility_Manual.pdf
- **School Design and Construction**, UNICEF, http://www.unicef.org/education/index_56204.html#resources
- **The Illustrated Technical Guide to the Accessibility Standard for the Design of Public Spaces**, Global Alliance on Accessible Technologies and Environments (GAATES), 2014, http://gaates.org/wp-content/uploads/2014/pdf/DOPS_Illustrated_Guide_140527_FINAL.pdf
- **UNICEF Manual for Child Friendly Schools**, UNICEF, 2009, http://www.unicef.org/publications/files/Child_Friendly_Schools_Manual_EN_040809.pdf
- **Water, Sanitation and Hygiene (WASH) in Schools**, A Companion to the Child Friendly Schools Manual, UNICEF, 2012, www.unicef.org/publications/files/CFS_WASH_E_web.pdf

Inclusive Information and Communication

- **AbleData** (almost 40,000 product listings in 20 categories), http://abledata.com/
- **Accessible Information and Communication – A Guide for Small Business**, Global Alliance on Accessible Technologies and Environments (GAATES), 2013, http://www.gaates.org/aic/AIC_Guide_130806.pdf
- **Creating Accessible Electronic Documents**, Global Alliance on Accessible Technologies and Environments (GAATES), 2013, http://www.gaates.org/documents/ICT/TipSheet-ElectronicDocuments.pdf

- **Creating Accessible Print Documents**, Global Alliance on Accessible Technologies and Environments (GAATES), 2013, http://www.gaates.org/documents/ICT/TipSheet-PrintDocuments.pdf
- **DAISY** (Digital Accessible Information System), http://www.daisy.org/education
- **Family Center on Technology and Disability**: Hundreds of assistive and instructional technology resources, http://www.fctd.info/resources
- **International Digital Publishing Forum: EPUB 3.0**, http://idpf.org/epub/30
- **Outsourcing Web Development: A Guide for Hiring Contractors to Develop Accessible Websites and Web Content**, Global Alliance on Accessible Technologies and Environments (GAATES), 2013, http://www.gaates.org/alCout/Outsourcing_2013-07-31.pdf
- **Providing accessible information to people with disabilities**, Global Alliance on Accessible Technologies and Environments (GAATES), 2013, http://www.gaates.org/documents/ICT/GAATES_Acc_Info.pdf
- **TechMatrix**: Assistive and educational technology tools and resources to support learning for students with disabilities and their classmates, http://techmatrix.org/
- **UNICEF database on assistive technology** (in development).
- **Unicode Consortium**, http://unicode.org/
- **WCAG 2.0 - Web Content Accessibility Guidelines: An Introductory Guide for Web Developers**, Global Alliance on Accessible Technologies and Environments (GAATES), 2013, http://www.gaates.org/alCwebdev/WebDev_2013-08-09.pdf
- **WCAG 2.0** (Web Content Accessibility Guidelines), World Wide Web Consortium - http://www.w3.org/WAI/
- Add here your own resources:

Glossary of Terms

Accessibility is a broad concept that encompasses the usability of environments, amenities and resources by persons with disabilities.

Assistive Devices are devices that enable persons with disabilities to perform their daily activities. A wheelchair is an example of an assistive device that enhances mobility. A hearing aid is an assistive device that amplifies sound and helps persons who are deafened or hard-of-hearing. A white cane is an assistive device that helps persons who are blind or have low vision to navigate their environments.

Assistive Listening Systems are used in assembly spaces such as cinemas or lecture halls to help persons who are deafened or hard-of-hearing to hear the movie or presentation. Assistive listening systems typically project sound to a headset using infrared or FM signals. An audio loop system may also be used, which sends signals directly to a person's hearing aid.

Braille is a tactile language based on variations of an array of six dots, which is read by touching the dots with fingertips.

Closed Captioning is text information that is added to a video source (such as a television show, movie or DVD), which can be read by persons who cannot hear the audio information.

Colour/Tonal Contrast is a distinct change in the tonal values of adjacent surfaces, to make it clear that they are different surfaces. Colour/tonal contrast can assist persons with low vision to identify elements such as doors, handrails and obstacles.

Convention on the Rights of Persons with Disabilities and its Optional Protocol is a United Nations convention adopted in December 2006 to specifically protect persons with disabilities from discrimination. For more information visit: http://www.un.org/disabilities/

Convention on the Rights of the Child is an international human rights treaty that entered into force in 1990 to protect the rights of children. For more information visit: http://www.ohchr.org/EN/ProfessionalInterest/Pages/CRC.aspx

Disability is defined as the result of the interaction between long-term physical, mental, intellectual or sensory impairments and various barriers in the environment that may hinder an individuals' full and effective participation in society on an equal basis with others.

Inclusion is where there is recognition of a need to transform the cultures, policies and practices in school to accommodate the differing needs of individual students, and an obligation to remove the barriers that impede that possibility.

Inclusive Design is the design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible – without the need for special adaptation or specialised design.

Inclusive Education is 'a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education. It involves changes and modifications in content, approaches, structures and strategies, with a common vision which covers all children of the appropriate age range and a conviction that it is the responsibility of the state to educate all children.' [9]

Learning Resources are texts, videos, software and other materials that teachers use to assist students to meet the expectations for learning, as defined by the school curriculum.

Mobility Aids are devices that help people with limited mobility to move through their environment. Examples of mobility aids include crutches, wheelchairs and walkers.

Pictograms are symbols which represent words or ideas. Pictograms are typically more inclusive than text-based signs as they are cross-cultural and do not require the reader to have language skills.

Reasonable Accommodation is a human-rights-based concept that requires organizations such as school administrations to accommodate the needs of individual students – up to the point where providing such accommodation would cause undue hardship to the school administration.

Sign Language is a language that uses a system of manual, facial and other body movements as the means of communication, especially among people who are deaf, deafened or hard-of-hearing.

Sustainable Development Goals were one of the main outcomes of the Rio+20 Conference, where member States agreed to launch a process to develop a set of goals, which will build upon the Millennium Development Goals and converge with the post-2015 development agenda.[10] For more information visit: http://sustainabledevelopment.un.org.

Tactile Information is information provided to the user through their sense of touch. Examples include signs with raised lettering and Braille, and detectable warning surfaces at kerb ramps and other potential hazards.

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.

Annex 1: Accessibility Checklist

Checklist : Access to School and the Learning Environment		Y	N	NA
Universal Access to Facilities				
A	**Walking to school**			
A.1	Are the routes used to reach the school well-maintained and free of obstacles?			
A.2	Are the routes used to reach the school free of busy traffic and located along quieter roads?			
A.3	Are sidewalks or designated pathways provided along the entire route?			
B	**Entering the school**			
B.1	Where there is a main gate to access school grounds, is the entry route free of ditches, cow catchers, cattle traps or other obstacles?			
B.2	Is the path to the entrance wide enough for children using wheelchairs or assistive devices?			
B.3	Are drop curbs provided along sidewalks or designated pathways approaching the building?			
B.4	Is the main entrance the same for all children, including students with disabilities?			
B.5	Is the main entrance free of steps?			
B.6	Are alternative entrances/exits free of steps?			
B.7	Is the ground surface at the entrance and withn the school area firm, even, level and well maintained?			
C	**Moving through the school**			
C.1	Hallways and Walkways – Is the building free of collapsible gate channel strips?			
C.2	Hallways and Walkways – Are ground/floor surfaces firm and free from rocks, sand or mud?			
C.3	Hallways and Walkways – Are the hallways wide enough to allow a child using a wheelchair to pass another child or adult?			
C.4	Hallways and Walkways – Where wall-mounted objects are present, are they detectable by people who are blind or have a vision disability?			
C.5	Stairs – Are handrails provided?			
C.6	Stairs – Are the handrails easy to see (colour/tonally contrasted)?			
C.7	Stairs – Does each step have colour contrast on the top, along the front edge?			
C.8	Flooring – Is a ramp provided where there are changes in floor levels/heights?			
C.9	Ramps – Are the entry points to ramps free of parked cars or other obstacles?			
C.10	Ramps – Are the entry points to ramps free of locked gates?			

Checklist : Access to School and the Learning Environment		Y	N	NA
Universal Access to Facilities (Continued)				
C.11	Ramps – Is the slope of ramps shallow enough for wheelchair users to use them independently?			
C.12	Ramps – Are ramp surfaces firm, even and well maintained?			
C.13	Ramps – Do ramps have features to stop wheelchair users from falling off the edge?			
C.14	Lighting – Are all hallways, walkways and stairs well lit?			
D	**Entering and using classrooms, and other spaces**			
D.1	Are doors wide enough to allow a student using a wheelchair to enter?			
D.2	Are classrooms naturally lit and have adequate shading?			
D.3	Are classrooms well ventilated?			
D.4	Can classoom desks and tables in classrooms be moved if needed?			
D.5	Do some classoom desks and tables have knee-space clearance for children who use wheelchairs?			
D.6	Have signs been provided to identify rooms and amenities?			
D.7	Do signs have colour contrast and text provided in larger-sized fonts?			
D.8	Do room identification signs include the room name and number in both Braille and tactile characters?			
D.9	Are ground/floor surfaces a uniform colour with a firm, slip-resistant finish that is even and well maintained?			
D.10	Are black/whiteboards mounted and located at a height low enough to be reached by smaller children and children who use wheelchairs?			
D.11	Are all activity, reading and learning areas well lit to facilitate reading and other activities?			
D.12	Are window sills low enough for children to see out when seated?			
D.13	Are blinds or curtains provided to control glare?			
E	**Water, sanitation and hygiene facilities (WASH)**			
E.1	Are surfaces along routes to WASH facilities firm, level and well maintained?			
E.2	Are routes to WASH facilities free of barriers and obstacles?			
E.3	Are ramps provided where there are changes in floor levels/heights along routes to WASH facilities?			
E.4	Are routes to wash facilities wide enough to allow a child using a wheelchair to pass another child or adult?			
E.5	Are toilets well lit?			
E.6	Do toilet facilities have doors and roofs for safety and privacy?			

Checklist : Access to School and the Learning Environment		Y	N	NA
Universal Access to Facilities (Continued)				
E.7	Is there access to clean, running water?			
E.8	Are accessible toilets intergrated with regular toilets?			
E.9	Do accessible toilets have raised commode toilets with seats provided?			
E.10	Is the door to accessible toilet cubilcles wide enough for a wheelchair to enter and configured to allow the door to close with a wheelchair in the toilet cubicle?			
E.11	Are accessible toilet cubicles large enough for a wheelchair user to enter the toilet facility and turn around?			
E.12	Are L-shaped grab-bars provided on the wall next to the accessible toilet fixtures?			
E.13	Where provided, is at least one urinal accessible for a wheelchair user to approach and use?			
E.14	Are vertical grabs bars provided on both sides of accessible urinals?			
E.15	Are hand-washing facilities located close to toilet facilities?			
E.16	Can the drinking-water and hand-washing controls be activated by both hand and foot?			
E.17	Are WASH facilities identified with signage that is clearly visible?			
E.18	Do signs include both text and diagrams/pictograms?			
E.19	Do signs have bright colour-contrasted text provided in larger-sized fonts that are easy to see from a distance?			
F	**Playing**			
F.1	Are paths to play areas wide enough to allow a child using a wheelchair to pass another child or adult?			
F.2	Are ramps provide where there are changes in level or surface heights?			
F.3	Is there space for a sitting area with overhead protection that is connected to a wheelchair-accessible route?			
F.4	Is the surface of the play area firm?			
G	**Evacuating the school in an emergency**			
G.1	Does the emergency evacuation plan for the school include a plan to evacuate children with disabilities?			
G.2	Classrooms are not overcrowded and children are able to leave quickly?			
G.3	Are both visual and audio alarms provided?			

Checklist : Access to School and the Learning Environment		Y	N	NA
Universal Access to Information				
H	**Books and other printed documents**			
H.1	Can Braille-printed books and learning materials be provided if required?			
H.2	Can large-print books or enlarging hardware/software be provided if required?			
H.3	Can handheld magnifiers, word cards, ball holders or other assistive devices be provided if required?			
I	**Electronic documents**			
I.1	Can DAISY and/or digital audio books be provided if required?			
I.2	Can DAISY readers and/or e-text reader software be provided if required?			
I.3	Are computers available to help children check for spelling and grammar errors?			
I.4	Are eduction materials available as structured/tagged electronic files?			
J	**Websites and other on-line teaching resources**			
J.1	Can screen-reading and e-text software be provided if required?			
J.2	Have web accessibility guidelines (WCAG) been met for web-based learning resources used in the classoom?			
K	**Film, video and broadcast resources**			
K.1	Are captioning (subtitles) and described content available for films and other audio-visual materials used in the classroom?			
L	**Software and hardware considerations**			
L.1	Alternate Access Hardware – Can alternate keyboards, key guards, alternate mice, touch screens, switches and switch interfaces be provided if required?			
L.2	Alternate Access Software – Can supports for reading, written output, organization, computer control, text-to-speech conversion and speech-to-text conversion be provided if required?			
L.3	Communication Hardware – Can low-tech tools including equipment such as symbol/picture boards,mouth sticks, head-pointing devices or keyboards be provided if required?			
L.4	Communication Hardware – Can high-tech tools including equipment such as eye-gaze or eye-pointing systems, touch screens and portable and/or handheld computers equipped with Augmentative and Alternative Communication software be provided if required?			
L.5	Communication Software – Can alternate methods for communication that include supports for reading, written output, organization and computer control be provided if required?			

Checklist : Access to School and the Learning Environment		Y	N	NA
Universal Access to Information (Continued)				
L.6	Vision Hardware – Can Braille writers, enlarged keyboards, Closed Caption Television (CCTV), portable note takers and various magnifiers be provided if required?			
L.7	Vision Software – Can high-tech tools including screen readers, scan and read systems, and digital-book readers be provided if required?			
Inclusive Communication Strategies				
M	**Face-to-face communication**			
M.1	Is sign-language interpreting available if required?			
M.2	Does the classroom provide a quiet environment?			
M.3	Has background noise from fans and mechanical equipment been minimized?			
M.4	Has good lighting been provided to illuminate the face of the teacher and/or for the sign-language interpreter?			
N	**Remote communication**			
N.1	Where teachers are using technology solutions for their classroom learning activities, is accessibility a consideration when selecting the technologies?			
N.2	Is the accessibility of the technology being used considered?			
N.3	Where computers and mobile telephones are being used to provide access to education activities for students in distant and rural areas, are alternative communication strategies such as text and/or video options available?			

Endnotes

1. UNICEF, The UNICEF Strategic Plan, 2014-1017, p. 2.
2. UNICEF, Draft Executive Directive, CF/EXD/2013-00X, Accessibility in UNICEF's Programme-Related Construction.
3. World Health Organization (2011), World Report on Disability.
4. UNICEF (2013), The UNICEF Strategic Plan, 2014-2017: realizing the rights of every child, especially the most disadvantaged, page 7.
5. Ron Mace, Center for Universal Design, http://www.ncsu.edu/ncsu/design/cud/about_ud/about_ud.htm, [accessed on 12 November 2014].
6. UNICEF, Child Friendly Schools, Chapter 3, Location, design and construction, 2009 p. 1.
7. Centre of Inclusive Design and Environmental Access, 2012.
8. http://www.w3.org/WAI/intro/wcag
9. UNESCO (2005) Guidelines for Inclusion: ensuring access to education for all, Paris.
10. United Nations, http://sustainabledevelopment.un.org/?menu=1300 [accessed on 5 August 2014].

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