POLICY BRIEF

Access to assistive technology in education systems

ATscale
GLOBAL PARTNERSHIP FOR ASSISTIVE TECHNOLOGY

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ATscale, the Global Partnership for Assistive Technology, is a cross-sector global partnership with a mission to transform people's lives through assistive technology. It catalyses action to ensure that, by 2030, an additional 500 million people in low- and middle-income countries get the life-changing AT they need.

UNICEF, the United Nations agency for children, works to protect the rights of every child, everywhere, especially the most disadvantaged children and in the toughest places to reach. Across more than 190 countries and territories, we do whatever it takes to help children survive, thrive and fulfil their potential.

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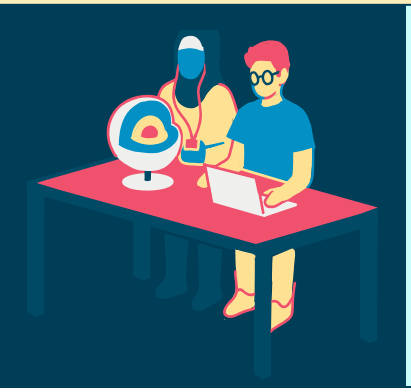

Abbreviations

5Ps	people, policy, product, personnel, provision
AAC	augmentative and alternative communication
AI	artificial intelligence
AT	assistive technology
CRPD	Convention on the Rights of Persons with Disabilities
ICT	information and communications technology
LMICs	low- and middle-income countries
NGO	non-governmental organization
OPDs	organizations of persons with disabilities
SDG	Sustainable Development Goal
UDL	Universal Design for Learning
WHO	World Health Organization

Executive Summary

Why assistive technology matters

Access to assistive technology is essential for realizing the right to inclusive, equitable and good-quality education. Globally, more than 2.5 billion people need at least one assistive product, yet nearly 1 billion lack access. In low- and middle-income countries (LMICs), children with functional limitations are among the most excluded from education, facing lower enrolment, poorer learning outcomes, and higher dropout rates. Without assistive technology (e.g., spectacles, hearing aids, wheelchairs, screen readers, communication devices), many learners cannot attend school, participate in lessons or complete their education. Assistive technology is not only a tool, but a critical enabler that allows children with disabilities to fully exercise their broader rights to education, participation and equality.

International obligations

Global frameworks provide a strong foundation for assistive technology in education:

- The Convention on the Rights of Persons with Disabilities (CRPD, Article 24) guarantees the right to inclusive education, and requires states to promote the availability and use of assistive technology (Article 4)
- The Sustainable Development Goals (SDG 4 in particular) commit governments to inclusive and equitable quality education and lifelong learning for all
- The Marrakesh Treaty (2013) requires states to remove copyright barriers and ensure access to published works in accessible formats such as braille, audio and large print – directly addressing the ‘book famine’ faced by learners with print disabilities.

Together, these frameworks establish that access to assistive technology in education is a critical component of fulfilling human rights.

Impact of assistive technology

Providing assistive technology is part of education systems-strengthening. It strengthens equity and inclusion by enabling the removal of systemic barriers to access and participation for learners with functional difficulties through:

- Enhancing access: mobility aids and hearing devices enable learners to enter and participate in schools and classrooms[1]
- Enhancing participation: screen readers, braille displays, and augmentative and alternative communication tools provide alternative ways to access and express knowledge[2]
- Supporting teachers: assistive technology enables differentiated instruction, helping teachers manage diverse classrooms effectively[3]
- Promoting inclusion: assistive technology supports social participation, friendships and peer learning, and reduces isolation[4]
- Breaking poverty cycles: assistive technology reduces caregiver burden and enables educational participation – this may boost educational attainment and lifetime income potential.[5]

Barriers to accessing assistive technology

Despite its proven benefits, access to assistive technology remains limited as a result of systemic barriers.

1 United Nations Children's Fund and World Health Organization, *Assistive Technology for Children with Disabilities: Creating Opportunities for Education, Inclusion and Participation – A discussion paper*, UNICEF and WHO, New York and Geneva, 2015, <https://www.unicef.org/media/126246/file/Assistive-Tech-Web.pdf>, accessed 14 April 2025.

2 United Nations Children's Fund and World Health Organization, *Global Report on Assistive Technology*, WHO, UNICEF and ATscale, Geneva, 2022, <www.who.int/publications/i/item/9789240049451>, accessed 24 October 2025.

3 Rohwerder, Brigitte, *Assistive Technologies in Developing Countries*, Helpdesk Report, Department for International Development, London, 2018, <https://assets.publishing.service.gov.uk/media/5af976ab40f0b622d4e9810f/Assistive_technologies_in_developing-countries.pdf>, accessed 21 October 2025.

4 *Assistive Technology for Children with Disabilities – A discussion paper.*

5 *Global Report on Assistive Technology.*

- People: Families face high out-of-pocket costs for devices, travel and repairs, making assistive technology unaffordable even when available. Information on the benefits of assistive technology, available options and services is scarce, especially in rural or low-literacy settings. Stigma and gender discrimination further limit access and can lead to limited acceptance of assistive technology. Persons with disabilities are excluded from assistive technology design, development and provision processes.
- Policy: Governance is fragmented across health, education and social protection sectors, with unclear mandates and limited accountability. Inclusive education policies often refer to assistive technology but lack specific measures or budget allocation. In LMICs, public financing on assistive technology is negligible, with charities often filling the gap to a minimal degree. Data systems to track needs and provision are largely absent, weakening evidence-based planning.
- Products: Many devices are inappropriate for young assistive technology users, poorly adapted to local environments, or of insufficient quality. Procurement systems often prioritize low cost over durability or suitability, leading to abandonment. Digital and communication technologies essential for learning are often excluded from national product lists.
- Personnel: There are severe shortages of trained professionals such as audiologists, speech therapists and rehabilitation workers. Teachers rarely receive training on integrating assistive technology in the classroom. This leads to underuse, misuse and rejection of devices. Policymakers and procurement officers often lack support and resources to develop comprehensive assistive technology ecosystems in education.
- Provision: Assistive technology is too often delivered as a one-off product rather than as part of a service. Assessment, fitting, user-training, repair and follow-up are rare, especially outside of urban centres. Families may receive devices with no guidance, while schools lack systems to integrate them into teaching and learning. In humanitarian settings, provision is even more fragmented and ad hoc.

These barriers are interconnected: weak policies result in fragmented provision; lack of training reduces effective use; high costs and stigma discourage uptake. Without addressing all five dimensions, investments in and access to assistive technology will remain piecemeal and unsustainable.

What needs to change?

Governments should establish a clear national strategy for assistive technology, backed by legislation, costed implementation plans, financing and coordination. Policies must define roles across ministries, ensure regulation and quality standards, and integrate assistive technology into health, education and social protection systems. Investment in infrastructure, digital connectivity and emergency preparedness is essential. Coordination bodies that include government, civil society and users should oversee implementation, monitor progress and secure accountability.

Ministries of education have specific responsibilities in ensuring access to and use of assistive technology in education. They should embed assistive technology in inclusive education policies, strategies and budgets. Teacher roles and responsibilities must be clarified, with practical training on identification, referral and classroom use included in pre- and in-service programmes. Schools should apply universal design, adapt digital platforms and materials, and establish focal points for assistive technology at national and district levels. Education Management Information Systems should track access and needs, while resource centres and model schools can support innovation. Close collaboration with health and social sectors ensures referral and continuity of support.

Development partners should integrate assistive technology into education financing and programmes, ensuring accessibility in digital learning, teacher development and infrastructure. Support is needed for national policy development, sustainable financing and capacity-building in ministries, training institutions and procurement systems. Donors should fund research, pilot innovations and promote platforms for sharing evidence and good practice. Programmes must involve organizations of persons with disabilities (OPDs) and prioritize locally appropriate solutions.

Civil society and communities play a key role in awareness-raising, combating stigma and supporting families. Non-governmental organizations (NGOs) and OPDs can strengthen local capacity by training teachers, caregivers and service providers, and by creating peer-led groups for parents and youth. They should help identify learners with functional difficulties, connect them to services, and advocate for accountability in policy implementation. User

involvement in design and decision-making ensures solutions reflect real needs and strengthen inclusive education at the local level.

Conclusion

Assistive technology is a key enabler for inclusive education and a prerequisite for achieving global commitments to equity, rights and sustainable development. Despite strong evidence and binding obligations, millions of learners remain excluded due to persistent systemic barriers. Investing in assistive technology is not an optional add-on, it is a cost-effective strategy to unlock human potential, reduce poverty and build more inclusive societies.

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1 Introduction

Access to assistive technology is essential for realizing the right to inclusive education. Despite global obligations and commitments such as the Convention on the Rights of Persons with Disabilities (CRPD) and Sustainable Development Goals (SDGs), the unmet needs for assistive technology remain very high. Limited access to assistive technology can compound existing barriers to education systems for learners with functional limitations, contributing to lower completion rates and constrained long-term opportunities.

Access to assistive technology is a key enabler of participation, inclusion and the full realization of rights. Assistive technology is essential to fulfilling the right to a standard of living adequate for health and well-being, including through access to social services, as stated in Article 25 of the Universal Declaration of Human Rights. The Convention on the Rights of the Child reinforces this in Article 23, which recognizes that children with disabilities should have access to education and enjoy a full and decent life, in conditions which ensure dignity, promote self-reliance and facilitate the child's active participation in the community. SDG 4 commits governments to inclusive and equitable high-quality education and lifelong learning for all. Similarly, assistive technology is critical to fulfilling the promise of the Marrakesh Treaty (2013), which requires states to remove copyright barriers and ensure access to published works in accessible formats such as braille, audio and large print – directly addressing the 'book famine' faced by learners with print disabilities. Together, these frameworks make access to assistive technology in education a foundational imperative, not an optional service.

This policy brief, jointly developed by UNICEF and ATscale, highlights the critical role of assistive technology in improving access to education and learning for children, and explores how assistive technology can be equitably and systematically embedded in education systems. Drawing on global evidence and stakeholder consultations with assistive technology users, policymakers, non-governmental organization (NGO) representatives, development partners and technical experts in assistive technology and inclusive education, it outlines the range of frequently used and emerging assistive technology in education, discusses benefits of assistive technology, analyses systemic barriers that constrain access to and use of assistive technology, and presents policy and programmatic recommendations to strengthen assistive technology ecosystems.

1.1 What is assistive technology?

Assistive technology refers to assistive products and the systems and services that support their use. These products include physical items such as wheelchairs, seating support, pencil grips and hearing aids; digital tools such as apps and software; and environmental adaptations such as ramps and grab-rails. Beyond the products, assistive technology includes the broader ecosystem needed for provision and maintenance, services, infrastructure, policies, regulations, and trained users, providers, technicians and caregivers.

This policy brief considers inclusive products under the umbrella term of assistive technology as well. Inclusive products are designed to enable usability for different people and their specific needs, contributing to non-discrimination and inclusion. Although inclusive products are not specifically designed to support the needs of persons with functional limitations, they promote and enable inclusion. Increasingly, inclusive technologies are embedded in mainstream products.[6] For example, closed captioning and transcripts are available in video call apps, such as Teams or Zoom, text-to-speech and speech-to-text software is embedded in most smartphones, tablets and computers, and audio books have become mainstream. The distinction between assistive and mainstream technology has become blurred.[7]

1.2 Who are assistive technology users?

Anyone may need assistive technology at some point in life. This policy brief aims to facilitate access to inclusive education by identifying the challenges and barriers affecting the provision and use of assistive technology for school-aged children, and by outlining actions needed to overcome them.

6 Araujo, Thalita Carline de Oliveira Soares Campos, Juliana Fonseca de Quieroz Marceline and Laura Bezerra Martins, 'Inclusive Design and the Use of Assistive Technology in the Classroom: A systematic review', in *Occupational and Environmental Safety and Health V*, edited by Pedro M. Arezes et al., Springer, Cham, 2023, pp. 733–744, <https://doi.org/10.1007/978-3-031-38277-2>.

7 *Global Report on Assistive Technology.*

The CRPD defines persons with disabilities as "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".[8]

While many assistive technology users are children with disabilities, many others experience functional difficulties – such as vision, hearing, mobility or learning difficulties – without being formally recognized as having a disability. The term 'functional difficulties' is increasingly used to capture this broader group. In this brief, the term 'assistive technology users' is used to include all learners who need assistive technology to participate in education. Where relevant, the term 'learner with functional difficulties' is used.

Globally, about 2.5 billion people of all ages need at least one assistive product, yet nearly 1 billion lack access, with access rates in the poorest countries as low as 3 per cent. Vision impairments are the most common, comprising about 20 per cent of people who could benefit from assistive technology, followed by mobility, hearing, communication and cognitive support needs.[9]

1.3 Assistive technology and inclusive education

Inclusive education is a rights-based concept that ensures all learners, are welcomed and supported in mainstream education systems. It is grounded in the principles of equity, participation and respect for diversity. Article 24 of the CRPD obligates states that have ratified the convention to implement inclusive education systems that provide learning without discrimination and on the basis of equal opportunity. General Comment No. 4 on the Right to Inclusive Education further elaborates on states' obligations to ensure inclusive and good-quality education at all levels for all learners, including those with disabilities. These frameworks reinforce the global commitment to achieving SDG 4 and ensuring inclusive and equitable quality education and the promotion of lifelong learning opportunities for all.

8 United Nations, Convention on the Rights of Persons with Disabilities, United Nations, New York, 2006.

9 World Health Organization, *Policy Brief: Access to Assistive Technology*, WHO, Geneva, 2020, <www.who.int/publications/i/item/978-92-4-000504-4>, accessed 21 October 2025.

Alongside the CRPD and SDGs, the Marrakesh Treaty provides a legal framework to improve access to knowledge and learning for persons with print disabilities. By requiring states to enable the production and sharing of works in accessible formats, the Treaty directly supports inclusive education by reducing barriers to textbooks and learning resources for learners who are blind, visually impaired or with a print disability.[10]

Gaps in education access and outcomes

Despite strong global commitments to inclusive education, access and participation remain limited for learners with disabilities. In low- and middle-income countries (LMICs), children with disabilities are 49 per cent more likely to have never attended school.[11] A UNICEF report indicates that across all education levels, learners with disabilities consistently face lower enrolment and participation rates.[12] Within the 43 countries included in the study, only 19 per cent of children with disabilities attended early childhood education, compared with 27 per cent of all children. At primary level, 21 per cent of children with disabilities are out of school, compared with 13 per cent of their peers. At lower secondary level, 21 per cent are not enrolled, and at upper secondary, this rises to 35 per cent.[13] In technical and vocational education, participation among students with disabilities is below 5 per cent, while general rates range from 10 to 40 per cent.[14] In tertiary education, enrolment for students with disabilities remains under 2 per cent in most LMICs.[15]

Even when enrolled, learners with disabilities often achieve lower literacy and numeracy outcomes. They are 42 per cent less likely to have foundational skills compared with their peers without disabilities[16] as a result of multiple barriers, including inaccessible materials, lack of assistive technology, and untrained teachers. Their completion rates are lower, and dropout rates higher, especially during transitions to secondary education.

10 World Intellectual Property Organisation, 'Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled', WIPO, Geneva, 2013, <https://www.wipo.int/wipolex/en/text/301016>, accessed 31 October 2025.

11 United Nations Educational, Scientific and Cultural Organization, *Global Education Monitoring Report: Inclusion and Education – All means all*, UNESCO, Paris, 2020, <https://www.unesco.org/gem-report/en/publication/inclusion-and-education>, accessed 31 October 2025.

12 United Nations Children's Fund, *Seen, Counted, Included. Using Data to Shed Light on the Well-Being of Children with Disabilities*, UNICEF, New York, 2021, <https://data.unicef.org/resources/children-with-disabilities-report-2021/>, accessed 31 October 2025.

13 Ibid.

14 World Bank, United Nations Educational, Scientific and Cultural Organization and International Labour Organization, *Building Better Formal TVET Systems: Principles and practices in low- and middle-income countries*, World Bank, UNESCO and ILO, Washington, D.C, Paris and Geneva, 2023, <https://www.worldbank.org/en/topic/skillsdevelopment/publication/better-technical-vocational-education-training-TVET>, accessed 31 October 2025.

15 United Nations Children's Fund, Database on Education for Children with Disabilities, UNICEF, 2021, <https://data.unicef.org/resources/education-for-children-with-disabilities/>, accessed 25 August 2025.

16 *Seen, Counted, Included.*

Girls with disabilities face even greater exclusion because of gender norms and caregiving responsibilities. Within the countries included in a 2021 UNICEF study, 18 per cent of girls with disabilities attended early childhood education, compared with 20 per cent of boys with disabilities and 28 per cent of girls without disabilities. Of primary-school-age children, 20 per cent of girls with disabilities are not attending, compared with 18 per cent of boys with disabilities and 13 per cent of girls without disabilities.[17]

In humanitarian and emergency contexts, learners with disabilities are often excluded from education responses and are the least likely to return to school after disruptions, due to compounded barriers such as displacement, trauma, lack of assistive technology and accessible learning spaces or specialized support.[18] During the coronavirus disease (COVID-19) pandemic, 40 per cent of LMICs failed to support at-risk learners, including children with disabilities.[19]

These gaps are driven by multiple, interconnected barriers. One key barrier is the lack of access to assistive technology. Without it, children struggle to reach school, engage with learning, and interact with peers and teachers. The absence of assistive technology not only limits initial access but also hinders learning and development once enrolled.[20] The next subsection explores how assistive technology can improve learning outcomes.

Impact of assistive technology in education

Providing assistive technologies has been shown to improve school participation and achievement for learners with specific functional difficulties.

- **Vision:** In many LMIC regions, a large share of students struggle to see the board or read books. Yet spectacles use is very low. For example, a study in rural China found 13.4 per cent of children had poor vision but only 2.3 per cent of those children owned spectacles.[21] Studies found that providing spectacles to children with visual impairment leads to measurable improvements in academic performance and school retention.[22]

17 Ibid.
18 Ibid.
19 Ibid.
20 *Global Report on Assistive Technology.*
21 Glewwe, Paul, Albert Park and Meng Zhao, 'A Better Vision for Development: Eyeglasses and academic performance in rural primary schools in China', HKUST IEMS Working Paper No. 2015-37, Institute for Emerging Market Studies, Kowloon, Hong Kong, June 2016, <www.povertyactionlab.org/sites/default/files/research-paper/424_542_A%20better%20vision%20for%20development_PaulGlewwe_May2016.pdf>, accessed 21 October 2025.
22 Ibid.

- **Hearing:** Only 3 per cent of those who need hearing aids in LMICs have them. In LMICs, learners with serious hearing loss rarely receive any form of schooling.[23] Early access to hearing aids reduces gaps in listening and learning between learners with and without hearing impairments.[24]
- **Mobility:** Mobility assistive devices such as wheelchairs, crutches, braces and prosthetic limbs enable students to access school and navigate the environment. Their availability in LMICs is, however, limited. For example, only about 34–35 per cent of the need for basic wheelchairs is met.[25] In many LMICs, fewer than 1 in 4 schools have any disability-accessible facilities.[26] When mobility aids are provided alongside accessible transport or infrastructure, school attendance improves.
- **Communication:** Picture symbol charts, speech-generating devices, and other augmentative and alternative communication (AAC) tools increase classroom participation and social interaction for students with complex communication needs. In addition, accessible information and communications technology (ICT) improves access to learning materials and remote education.[27] However, availability of such educational assistive technologies in LMICs is low. Access to screen readers is only about 25 per cent of the estimated need, less than 5 per cent of published books worldwide are available in formats such as Braille or audio,[28] and close to zero are amenable to communication software and devices. [29]

23 Bolajoko, Olusanya O., Lindan M. Luxon and Sheila L. Wirz, 'Childhood Deafness Poses Problems in Developing Countries', *British Medical Journal*, vol. 330, 2005, pp. 480–481.

24 Kennedy, Colin R., et al., 'Language Ability after Early Detection of Permanent Childhood Hearing Impairment', *The New England Journal of Medicine*, vol. 354, no. 20, 2006, pp. 2131–2141, <https://doi.org/10.1056/NEJMoa054915>.

25 *Global Report on Assistive Technology.*

26 United Nations Children's Fund and World Health Organization, *Progress on Drinking Water, Sanitation and Hygiene in Schools: Special focus on COVID-19*, UNICEF, New York, 2020.

27 *Global Report on Assistive Technology.*

28 Their World, 'Education for the Most Marginalized Children', Their World, London and New York, n.d., <https://theirworld.org/resources/children-with-disabilities/#:~:text=>, accessed 21 October 2025.

29 Ibid.

Overall, assistive technology plays a foundational role in enabling inclusive education, with benefits towards access, learning, teaching, social participation and completion of education:

- **Enhancing access to education:** Assistive technology is often the first step towards inclusion for learners with functional difficulties. For example, wheelchairs and mobility aids enable children to physically access school environments, while hearing aids and captioning tools support auditory access to instruction.[30] Without such tools, many children are excluded from education altogether.
- **Improving learning outcomes:** Assistive technology supports diverse learning needs by providing alternative ways to access information, express knowledge and engage with content. For instance, screen readers and Braille displays enable students with visual impairments to read and write, while AAC devices help non-verbal students communicate effectively.[31]
- **Supporting teacher effectiveness:** Assistive technology enables differentiated instruction and classroom management strategies that accommodate various learning styles and needs. For example, visual schedules and text-to-speech software help students with cognitive impairments follow lessons and complete assignments independently.[32] However, the effectiveness of assistive technology depends on adequate teacher training and ongoing support, which remains a significant gap in many LMICs.[33]
- **Promoting social inclusion and participation:** Assistive technology fosters social inclusion by enabling communication and interaction with peers. Children who use augmentative and alternative communication devices or mobility aids are, for example, more likely to participate in group activities, build friendships and develop social skills.[34]

30 *Assistive Technology for Children with Disabilities – A discussion paper.*
31 *Global Report on Assistive Technology.*
32 *Assistive Technology for Children with Disabilities – A discussion paper.*
33 Rohwerder, *Assistive Technologies in Developing Countries.*
34 *Assistive Technology for Children with Disabilities – A discussion paper.*

2 Assistive technology in education

2.1 Frequently used assistive technology

Learners around the world with functional difficulties use a wide range of assistive technologies to support their education, and the available options are changing rapidly. Many assistive technologies support all learners, not just those with disabilities. Items such as visual schedules, timers and emotion cards can aid classroom management and benefit diverse student needs. The selection of the

most appropriate assistive technology depends on the actual needs, context and personal preferences. Different learners with the same functional difficulties might therefore not need the same assistive technology.

Some products are needed for everyday activities, such as wheelchairs, spectacles or hearing aids. These products are not education-specific but do shape access to education. Mobility aids such as walking frames, orthoses and wheelchairs enable learners to reach classrooms, move around the campus and participate in activities. Spectacles enable learners to read books and other learning resources, and hearing aids support learners' communication with teachers and students.

Other forms of assistive technology are more specifically purchased and used to support learning and participation in education. Items such as pencil grips, visual schedules, magnifiers, picture boards, screen readers and closed captioning tools help students with a variety of functional difficulties to access teaching and learning resources, organize their learning, follow instructions and communicate in the classroom.

Digital tools such as screen readers and apps are increasingly used to support learning of persons with various functional limitations. These apps are meaningless unless learners have access to physical devices that can run them. Therefore, items such as smartphones, tablets and computers are considered as essential items for assistive technology users.

High-cost or high-tech assistive technology is not always better. Low-tech solutions can be highly effective depending on context and user needs. For example, electric wheelchairs may not suit areas with unreliable electricity or rough terrain. Similarly, hearing aids needing frequent battery changes are impractical where batteries are scarce. In many low-resource settings, low-tech solutions such as basic white canes, pencil grips and visual schedules can be easier to maintain and just as transformative for learners. Ensuring the availability of assistive technology is often the most realistic way to improve participation at scale.[35]

35 *Inclusion and Education: All Means All.*

Many assistive technology products, such as wheelchairs and hearing aids, are typically procured through ministries of health or social protection. Ministries of education have, however, an important role in providing education-specific assistive technology and in developing inclusive education policies that enable the provision and use of all types of assistive technology in schools. Ministries should ensure that school buildings are accessible to assistive technology users, that education staff are trained in assistive technology, and that teachers receive capacity-building and support to integrate assistive technology into daily learning. Cross-sectoral collaboration, combined with clear responsibilities for each ministry, is therefore essential to ensure assistive technology is available in education and meaningfully integrated to support access and participation.

2.2 Emerging assistive technology

Emerging technologies are expanding the possibilities of inclusive education. Artificial intelligence (AI) offers predictive communication devices, real-time transcription, speech-to-text and text-to-speech applications, and sign language recognition, while personalized platforms can adapt pace and content to individual needs.[36] Augmented reality and virtual reality create immersive environments, helping learners with autism or sensory sensitivities to practise in safe settings, or making abstract concepts easier to grasp.[37] Interactive and adaptive learning platforms increasingly use data analytics to adjust lessons and provide real-time feedback, supporting diverse learning styles.[38]

For these opportunities to translate into real benefits, policymakers need to focus on strengthening both the availability and the appropriate use of assistive technology in education. This includes developing future-ready policies that explicitly cover both existing and emerging assistive technologies, ensuring they are affordable, equitable and integrated into inclusive education strategies.

36 Gibson, Rob, 'The Impact of AI in Advancing Accessibility for Learners with Disabilities', EDUCAUSE Review, 10 September 2024, <https://er.educause.edu/articles/2024/9/the-impact-of-ai-in-advancing-accessibility-for-learners-with-disabilities>, accessed 21 October 2025.

37 Dick, Ellysse, *The Promise of Immersive Learning: Augmented and virtual reality's potential in education*, Information Technology & Innovation Foundation, n.p., August 2021, <https://itif.org/publications/2021/08/30/promise-immersive-learning-augmented-and-virtual-reality-potential/>, accessed 21 October 2025.

38 United Nations Educational, Scientific and Cultural Organization, *Global Education Monitoring Report: Technology in Education – A tool on whose terms?*, UNESCO, Paris, 2023.

Education ministries should actively involve students, families and teachers in identifying needs and evaluating solutions, to ensure relevance and usability. Governments should establish accountability mechanisms that clarify responsibilities of developers, schools and ministries, and require transparency in how AI-driven tools make decisions. Regular reviews and quality checks are essential to ensure technologies perform fairly and inclusively.[39]

Policymakers should also invest in capacity-building, equipping educators with the skills to integrate emerging assistive technology effectively and train learners to use it safely. Ensuring that schools are connected, resourced and supported to adopt both low- and high-tech assistive technology is critical.[40] By focusing on these actions, governments can maximize the potential of both current and emerging assistive technologies in a safe manner to make education more inclusive.

The experiences of a young assistive technology user with a visual impairment from Bulgaria show the potential of emerging assistive technology. They also emphasize the need to build the capacity of teachers and other support professionals to understand these technologies and support learners.

"I rely on a screen reader – it's faster and more portable than Braille. With synced devices I can access everything from my phone or computer, and AI tools like *Be My Eyes* make life easier by describing my surroundings. Policymakers should embrace these tools, not fear them.

"I taught myself how to use screen readers as a child, helped by a mentor who also had a functional limitation. At school, teachers weren't trained to use them, and during exams they read questions aloud instead of letting me use assistive technology. Even at university, support was limited – the office that provided funds and materials wasn't itself accessible, and students received little guidance on what technology to buy."

– Young assistive technology user[41]

39 UNICEF Innocenti, *A Global Review of Selected Digital Inclusion Policies: Key findings and policy requirements for greater digital equality of children*, UNICEF Innocenti – Global Office of Research and Foresight, Florence, 2023.

40 Ibid.

41 Young AT user, Interview with Young AT user group 1, on 27 May 25.

3 Benefits of assistive technology in education

3.1 Access to learning and achievement

Assistive technology improves access to school and enhances learning outcomes. *Assistive technologies for daily use* – such as wheelchairs, crutches, walkers, prosthetic limbs, as well as visual and hearing supports such as white canes and Braille displays – help students navigate the school environment and participate fully in daily activities.

Education-specific assistive technologies for learning – such as text-to-speech and speech-to-text tools, AAC devices, hearing aids (which also support access and navigation), and sensory learning materials – enable students to access information, develop literacy, numeracy and communication skills, and achieve better educational outcomes.

Assistive technology removes barriers related to mobility, communication, cognition and sensory processing. By providing alternative ways to access information and express knowledge, it can improve literacy, numeracy and communication skills, contributing to better learning outcomes, reduced dropout rates, and higher educational attainment. Assistive technology also supports higher completion rates at primary and secondary levels, better transition to tertiary education, and reduced need for remedial or specialized services.[42]

3.2 Independence and social inclusion

Assistive technology increases independence, confidence and peer interaction for learners. By reducing reliance on assistance, it fosters a sense of dignity and belonging. Participation in class discussions, group work and social activities enhances inclusion not just for assistive technology users but for the whole class.[43] At community level, assistive technology reduces barriers to cultural, political and social participation, helping to build stronger and more inclusive societies.[44]

3.3 Teaching efficiency

Assistive technology strengthens inclusive teaching capacity by enabling teachers to deliver differentiated instruction. Tools such as screen readers, communication boards and visual timetables help present content in multiple formats and manage classrooms more effectively. It also increases student participation and engagement

42 *Assistive Technology for Children with Disabilities – A discussion paper.*
43 Ibid.
44 *Global Report on Assistive Technology.*

by enabling students to access content and communicate more independently. Assistive technology supports independent learning, reducing reliance on one-on-one support and helping teachers balance whole-class, group and individual instruction. This improves both teaching quality and classroom management.[45]

3.4 Economic and social benefits

Assistive technology is linked to higher levels of education and greater opportunities for employment. In LMICs, the availability of appropriate assistive technology can add up to US$100,000 in lifetime income for an individual.[46] Caregivers also benefit as children's independence reduces caregiving needs, enabling caregivers, especially women, to participate more in employment and community life, promoting gender equity. At the household level, assistive technology lowers costs for transport, personal assistance and specialized services. Collectively, these benefits support economic participation and social inclusion.[47]

3.5 Stronger and more inclusive societies

Beyond individual and family benefits, the wider community gains when assistive technology is available in education. With fewer barriers, assistive technology users and their caregivers can contribute more actively to civic, cultural and political life. This participation strengthens social cohesion, promotes inclusive growth, and supports progress towards the SDGs. Wider availability of assistive technology and inclusive education also reduces costs for society by lowering demand for remedial and segregated services and decreasing long-term social protection expenditures.[48]

45 *Assistive Technology for Children with Disabilities – A discussion paper.*
46 *Global Report on Assistive Technology.*
47 Ibid.
48 *Assistive Technology for Children with Disabilities – A discussion paper.*

4 Barriers to accessing assistive technology

This chapter explores the barriers that limit access to assistive technology in education systems. These barriers are organized around the 5Ps framework, which forms the foundation of a comprehensive assistive technology ecosystem.[49,50]

49 MacLachlan, Malcolm, and Maria J. Scherer, 'Systems Thinking for Assistive Technology: A commentary of the GREAT summit', *Disability and Rehabilitation: Assistive Technology*, vol. 13, no. 5, 2018, pp. 492–496.

50 Rohwerder, *Assistive Technologies in Developing Countries*.

- **People:** Learners, families, educators and service providers must be involved in design and implementation. Targeted interventions support increased knowledge and demand, and reduced stigma around assistive technology.
- **Policy:** Assistive-technology policies should align with international frameworks (e.g., CRPD, SDGs), and be integrated into national education, health and social protection strategies. Governance must be cross-sectoral, with clear roles and accountability.
- **Products:** Assistive technology must be age-, gender- and context-appropriate. The 'products' level includes measures to ensure that the provided assistive technology can be used effectively in schools, homes and the surrounding community. Procurement should be transparent and equitable, with support for local production and digital accessibility.
- **Personnel:** Policies must define and support roles for specialists, educators and community health workers. Training standards and capacity-building initiatives are essential.
- **Provision:** Assistive-technology services must include assessment, customization, training, maintenance and follow-up. Policies should enable timely and equitable access to these services.

4.1 People

Expectations

Access to assistive technology depends on what families, learners and communities know, can afford and are willing to accept. Lack of information often leaves caregivers unaware of available options, where to access them, or how devices can support learning. High costs mean that even when families know what they need, many cannot afford the devices or related services. Stigma and discrimination further discourage the use of assistive technology, especially for girls and children with less-visible needs. Governments must foster social and behaviour change by providing accurate information through schools, health systems and community structures; building public understanding of disability and assistive technology; and promoting inclusive attitudes and practices. They should also reduce financial barriers through subsidies and social protection measures, and address stigma and harmful norms

through coordinated, evidence-based communication and engagement strategies. At this level, policies must empower families, caregivers and learners to make informed choices, participate actively in decisions, and use assistive technology with dignity and confidence.

Barriers

Lack of information

Limited access to accurate, timely information is a major barrier to assistive technology, especially in LMICs, where low literacy and limited internet access add challenges.[51]

Families often do not know what options exist or where to seek help. Misconceptions, such as believing children who cannot walk, hear or see cannot attend school, further discourage exploration. Information is scattered across health, education and social sectors, with no centralized source, especially in humanitarian settings where services are complex and families may be displaced.[52]

Photo credit. © UNICEF/ UNI767178/Kiliç

51 Sulaiman, S.K., 'How Can we Promote Access to Assistive Technology for Individuals with Disabilities in Low- and Middle-Income Settings', Disability Evidence Portal Evidence Brief, Disability Evidence Portal, n.p., 2011, <www.disabilityevidence.org/questions-evidence/how-can-we-promote-access-assistive-technology-individuals-disabilities-low-and>, accessed 21 October 2025.

52 NGO representative, interview, CHAI Rwanda, on 7 May 2025.

As a result, the burden of navigating assistive technology often falls on learners and families. Young users report having to search for devices such as hearing aids and wheelchairs, and learn to use screen readers on their own, slowing their educational progress.[53] In addition, due to a lack of institutional collaboration – between education levels, from education into employment and between education and health – assistive technology users and caregivers carry the burden of repeated processes time and again to qualify or register for assistive technology.

Promising practice

Sightsavers establishes parent support groups within its inclusive education programmes to help families exchange information on how and where to obtain assistive technology. These groups require guidance and expert input to address misconceptions – for example, the belief that all children with low vision must use Braille, while options like magnifiers or screen readers may be more appropriate. Once established, the groups become valuable resources not only for sharing information but also for supporting schools to become more accessible for all learners.[54]

High costs for users

The cost of assistive devices and related services is a major barrier for learners with functional limitations, especially in low-income settings where poverty and disability often intersect. Despite policies for subsidies, about two-thirds of users and caregivers still pay out-of-pocket. Costs include not just the devices, but also travel for assessments, fittings, training and repairs, often expensive and physically demanding, particularly for children with mobility impairments. Services are often fragmented and urban-based, increasing the financial burden on families. Limited national budgets and poor integration of assistive technology into education and health systems mean families bear most of the cost.[55]

Cash transfer programmes exist in some areas to help, but their impact is limited when supply chains are weak or families lack guidance. Without support, families may buy low-quality or unsuitable devices, wasting resources and risking harm.[56]

53 *Global Report on Assistive Technology.*
54 NGO representative, interview Sight Savers, on 20 May 2025.
55 World Health Organization, 'Improving Access to Assistive Technology', Report by the Director-General, Seventy-First World Health Assembly, WHO, Geneva, 2018.
56 UNICEF representative, interview UNICEF Supply Division, on 12 May 2025.

Promising practices

Integrated social protection models, such as the UNICEF 'cash plus' approach in humanitarian settings, combine financial assistance with disability registration, referrals to services and ongoing support. This ensures that caregivers can use provided cash transfers efficiently.[57]

In Zambia, collaboration with the national disability federation helped families to apply for disability cards, which provided them with access to social protection schemes. These financial allowances helped families to purchase assistive technology. Livelihood initiatives, such as community gardens, were also introduced to increase household purchasing power, enabling parents to afford basic educational tools such as pencil grips.[58]

Stigma and discrimination

Stigma and discrimination – rooted in cultural beliefs, gender norms and misconceptions – can discourage families from seeking assistive technology and prevent learners from using it openly. Visible devices such as wheelchairs or communication aids may lead to ridicule or exclusion, prompting families to avoid them to protect their children from being labelled.[59]

Gender adds another layer of inequality. Girls with functional limitations often face greater barriers due to societal expectations. In some countries, men are twice as likely to access assistive technology as women. Families may prioritize boys for education and devices, especially in rural areas with limited awareness and infrastructure.[60]

Access also varies by type of functional difficulty. Cheaper, locally made products such as crutches and spectacles are more available than expensive, imported ones. Awareness is generally higher for mobility, vision and hearing aids, but lower for tools supporting communication, cognition or self-care.[61] Changing attitudes requires more than awareness, it needs systemic action. National campaigns, inclusive school policies, and community dialogue are key to shifting perceptions.

57 UNICEF representative, interview UNICEF Disability Inclusion in Humanitarian Settings, on 23 May 2025.
58 NGO representative, interview Sight Savers, on 20 May 2025.
59 NGO representative, interview, CHAI Rwanda, on 7 May 2025; Ministry of Health Representative, interview policymaker, on 20 May 2025.
60 *Global Report on Assistive Technology.*
61 Ibid.

Promising practices

In Kenya, community health workers are tasked with conducting home visits and talking with families who have children and young people with disabilities – about taboos around assistive technology and available services and support. While this helps to motivate families to seek support, it is a time-consuming effort, which needs to be integrated in the overall task package of community health workers.[62]

4.2 Policy

Expectations

Strong governance is essential to ensure that assistive technology in education is delivered effectively and equitably. Policies should recognize assistive technology as a right and assign clear responsibilities across ministries, with education working alongside health, social welfare, ICT and labour. Coordination bodies that include government, civil society and organizations of persons with disabilities (OPDs) should oversee implementation, track progress and ensure accountability.

Education ministries are expected to build capacity, collect and share data, and monitor access, quality and equity. Policies should set clear indicators, align with broader national strategies, and establish mechanisms for feedback and redress. With coherent governance and shared responsibility, assistive technology can become a reliable part of inclusive education systems.

Barriers

Inefficient governance

Assistive technology spans multiple sectors – education, health, social protection, ICT and employment – yet governance is often fragmented, poorly coordinated, and lacks clear leadership. In many countries, assistive technology policies are housed within health or social welfare ministries, with limited involvement from education and inconsistent compliance with the CRPD. This siloed approach creates a disconnect

62 NGO representative, interview CHAI Kenya, on 22 May 2025.

between provision and integration into inclusive education, leaving teachers without guidance, resources or the capacity to identify and support learners who need assistive technology.

While assistive technology for daily use, such as mobility aids (wheelchairs, crutches, walkers, prosthetic limbs), visual aids (spectacles, Braille displays) and hearing aids, is often partially covered by ministries of health, ensuring that every learner who needs these devices receives them requires clear coordination between the education and health sectors. Ministries of education should have clear mandates to contribute to planning, training and provision of assistive technology, by maintaining an approved list of education-specific assistive technologies, similar to the Approved Product Lists (APLs) used by ministries of health, and ensure their availability. Inclusive education policies could serve as entry-points, but they often lack specific provisions, budget lines and accountability mechanisms for assistive technology.[63]

Governance inefficiencies are compounded by the absence of integrated data systems, making it difficult to track provision, monitor outcomes, coordinate services and ensure that provided

Photo credit. © UNICEF/ UNI561147/Khatri

63 Ministry of Health Representative, interview policymaker, on 20 May 2025; NGO representatives, interview Sight Savers, on 20 May 2025; UNICEF representative, interview UNICEF Supply Division, 12 May 2025.

assistive technologies meet actual needs.[64,65,66] Tools such as the World Health Organization's (WHO) rapid Assistive Technology Assessment tool (rATA)[67] and Assistive technology capacity assessment (ATA-C)[68] help governments understand unmet needs and system readiness, guiding targeted interventions and strategic decisions. This ensures that selected technologies are both educationally effective and financially sustainable.

At the national level, the lack of formal coordination platforms or technical working groups hinders strategic planning and data sharing. Locally, unclear roles and poor communication between sectors result in gaps. For example, community health workers may support learners, but schools are often unaware of the assistance provided.[69] An added complication is that in many countries, civil society organizations and private entities are key providers of assistive technology services. Without adequate oversight, however, there is a risk of inconsistent quality and inequitable access.[70]

Photo credit. © UNICEF/ UNI788752/Ashawi

64 *Global Report on Assistive Technology.*
65 *Policy Brief: Access to Assistive Technology.*
66 Ministry of Health Representative, interview policymaker, on 20 May 2025; NGO representatives, interviews CHAI Rwanda, on 7 May 2025, and CHAI Kenya, on 22 May 2025; AT user, interview IDA, 20 May 2025.
67 World Health Organization, 'Rapid Assistive Technology Assessment Tool', WHO, Geneva, 14 June 2021, <www.who.int/publications/i/item/WHO-MHP-HPS-ATM-2021.1>, accessed 21 October 2025.
68 World Health Organization, 'Assistive Technology Capacity Assessment (ATA-C) Instruction Manual', WHO, Geneva, 5 August 2021, <www.who.int/publications/i/item/9789240019065>, accessed 21 October 2025.
69 NGO representatives, interviews, on 7 May 2025 and 22 May 2025.
70 *Policy Brief: Access to Assistive Technology.*

In humanitarian settings, governance challenges are intensified by disrupted systems and limited preparedness. Education is coordinated through clusters, but assistive technology is rarely integrated into emergency responses. Standard frameworks often fail in crises, where flexible, context-specific models are needed. Without clear leadership and coordination, learners with disabilities are frequently excluded from education in emergencies efforts.[71]

Promising practice

The Gabay Project in the Philippines demonstrated good practice in cross-sector collaboration with a specific role for the education sector in providing assistive technology for inclusive education. Inclusive Education Community Resource Centres were set up in central schools and equipped with assistive technology to support learners with disabilities in mainstream classrooms. Community health workers were trained to assess functional difficulties and refer children for diagnosis. The centres worked with schools to help teachers adapt learning environments, use assistive technology, and prepare accessible materials. The Department of Education was engaged from the start, ensuring products and resources aligned with national curriculum and language policies. In total, 178 schools and thousands of learners benefited, with improvements in early identification and in creating inclusive classrooms through effective use of assistive technology.[72]

Funding gaps

"We have very beautiful policies, but then most of the time those policies are not implemented. For example, the Disability Act says that persons with disability should have free health care, free rehabilitation services and also assistive devices. But then the question is, who's paying for it?"[73]

– Policymaker

Funding gaps are one of the most persistent barriers to assistive technology in education. While many countries recognize the importance of assistive technology in education, policies are often underfunded or lack financial planning. Assistive technology is

71 UNICEF representative, interview UNICEF Disability Inclusion in Humanitarian Settings, on 23 May 2025.

72 World Bank, *Use of Assistive Education Technologies to Support Children with Visual and Hearing Difficulties in the East Asia and Pacific Region*, International Bank for Reconstruction and Development/The World Bank, Washington, D.C., 2023.

73 Ministry of Health representative, interview policymaker, on 20 May 2025.

frequently treated as an add-on, resulting in limited budgets and fragmented services. Funding is needed not only for procurement, but also for training, staffing and maintenance.[74]

Global funding cuts have worsened the situation. As an NGO representative stated, "[there is] always fighting for a percentage of the budget for children with disabilities … in a competitive world where you're trying to support ministries and policies … what it boils down to is that there are other things that are deemed to be more important."[75] The lack of dedicated funding stems from limited understanding of assistive technology's role in enabling access to education. When inclusive education is funded, assistive technology is often overlooked without specific budget lines.[76]

Unsustainable funding can lead to discontinuity of assistive technology programmes, leaving learners without access to essential tools once their devices break down or are outgrown by the user. This has significant ethical implications: learners may experience the benefits of assistive technology only temporarily and then face the emotional and educational consequences of losing access.[77]

Promising practices

Global partnerships help governments lower costs and improve access to assistive technology. ATscale works to shape markets and expand access, while WHO's Global Cooperation on Assistive Technology (GATE) initiative promotes integration of assistive technology into health systems and provides a global priority list of essential products.[78,79]

UNICEF's supply catalogue lists over 2,000 commodities, including assistive technologies, and enables governments to purchase high-quality products at reduced prices. Through collective bargaining and long-term agreements, UNICEF has significantly lowered costs (e.g., of hearing aids) while ensuring quality. These platforms also provide technical specifications and procurement support to guide effective purchasing.[80]

74 *Global Report on Assistive Technology.*
75 NGO representative, interview Sight Savers, on 20 May 2025.
76 UNICEF representative, interview UNICEF Supply Division, on 12 May 2025.
77 NGO representative, interview Sight Savers, on 20 May 2025; UNICEF representative, interview UNICEF assistive technology specialist, on 17 May 2025.
78 ATscale, 'Global Partnership for Assistive Technology', ATscale, n.p., n.d., <https://atscalepartnership.org/>, accessed 21 October 2025.
79 World Health Organization, 'Global Cooperation on Assistive Technology (GATE)', WHO, Geneva, n.d., <www.who.int/initiatives/global-cooperation-on-assistive-technology-(gate)>, accessed 21 October 2025.
80 UNICEF representative, interview UNICEF Supply Division, on 12 May 2025; UNICEF representative, interview UNICEF Disability Inclusion in Humanitarian Settings, on 23 May 2025 .

4.3 Product

Expectations

Governments must ensure that assistive technology is of good quality, appropriate and available in sufficient range to meet the needs of all learners. Policies should establish clear standards and certification processes so that devices are safe, durable and fit for purpose. Procurement must move beyond lowest-cost approaches to include user consultation, proper sizing and child-specific design, with regular refitting as children grow. Products should be adapted to local environments and cultures.

Barriers

Product gaps: quality, range and appropriateness

In many LMICs, access to assistive technology is limited by gaps in product quality, range and appropriateness. These issues stem not only from technical shortcomings but also from systemic challenges in procurement, regulation and contextual understanding. Learners often receive devices that are ineffective or unsafe.[81]

The experiences from a young assistive technology user with a mobility impairment from Pakistan indicate that assistive technology can be useless if school environments are not accessible.

"I began using a manual wheelchair when I was 12, later needing a customized electric one. Finding the right device took time and resources, and schools were rarely accessible. I often had to advocate for classes on the ground floor, since elevators were broken or restricted. I had to ask classmates to carry me up to the 4th or 5th floor. The biggest challenge for me was the lack of accessible washrooms. I couldn't use the washrooms at school, which led to serious health problems. Teachers and school leaders eventually listened, but only after repeated explanations. I've now graduated, and while access remains a struggle, I see progress, more schools and universities are starting to improve."[82]

81 *Global Report on Assistive Technology.*
82 Young AT user, interview with Young AT user group 1, on 27 May 2025.

Procurement processes often prioritize cost over quality, especially in the absence of national standards and user consultation. This leads to bulk purchases of ill-fitting or unsuitable products, such as wheelchairs without proper sizing or magnifiers that worsen vision. Poor-quality devices are frequently abandoned, with up to 75 per cent of users discontinuing use because of mismatch or ineffectiveness. Abandonment or misuse of assistive technology increases risks of social isolation, poorer health outcomes, and exclusion. Low-quality assistive technology also lacks durability and results in an increase in the cost in the long term, due to the need for more frequent replacement.[83,84]

Appropriateness goes beyond technical specifications, it includes fit to the user's needs, environment and culture. Contextualization is critical. Products designed for high-income or urban settings may fail in rural areas. For example, electric wheelchairs or hearing aids needing frequent charging are impractical in regions with unreliable electricity or rough terrain. Without context-aware planning, even high-quality products may fail to deliver meaningful support.[85,86]

Photo credit. © UNICEF/ UNI577898/Naftalin

83 *Policy Brief: Access to Assistive Technology.*

84 International Disability Alliance, 'Reflections on Barriers to Accessing Assistive Technology in Low- and Middle-Income Countries', IDA, Geneva, 26 January 2024, <https://www.internationaldisabilityalliance.org/blog/reflection-barriers-accessing-assistive-technology-low-and-middle-income-countries>, accessed 21 October 2025.

85 NGO representative, interview CHAI Rwanda, on 7 May 2025.

86 *Global Report on Assistive Technology.*

In an education context, appropriateness of assistive products is often limited due to a lack of suitability of products for children. Very often, donated products are designed for adults and are not useable by children. When child-specific assistive products are provided, these are often not refitted as children grow. A lack of planning and refitting services can lead to abandonment of assistive technology.

Promising practice

The Vietnamese Ministry of Education collaborated with the World Bank, UNICEF and ATscale to develop a locally relevant range of digital learning tools for inclusive classrooms. These tools were co-designed with educational institutions and trained therapists to ensure cultural relevance and responsiveness to actual needs. The tools include a screen reader, text-to-speech software in the Southern Vietnamese dialect, a digital library with books in Vietnamese and eight ethnic minority languages, sign language resources, a reading app for students with hearing and visual impairments, and virtual-reality game-based learning modules for children with attention deficit hyperactivity disorder (ADHD). The digital tools are available in Vietnamese and at least eight ethnic minority languages, which further increases accessibility and contextualization. Over 5,000 students, including those with disabilities and from ethnic minority families, have benefited from these tools.[87,88]

Many countries struggle to offer a wide range of assistive products. Available items often focus on basic needs – vision, mobility and hearing – while neglecting learners with sensory, cognitive and communication limitations. For instance, spectacles and hearing aids may be accessible, but tools such as communication boards, screen readers and tactile materials are often missing, especially in rural areas. This limited availability is pronounced in rural areas, sometimes forcing families to migrate to urban centres to access appropriate support.

Priority approved product lists for education-specific assistive technology can help by guiding procurement and ensuring essential products are suitable. However, they must be inclusive, regularly updated, and developed with input from users and OPDs. Digital tools, laptops, screen readers and AI apps are vital for education

87 World Bank, *Use of Assistive Education Technologies to Support Children with Visual and Hearing Difficulties in the East Asia and Pacific Region.*

88 UNICEF Viet Nam, 'Bridging Digital Divide for Children with Disabilities in Viet Nam', UNICEF Viet Nam, n.p., 21 April 2025, <www.unicef.org/vietnam/press-releases/bridging-digital-divide-children-disabilities-viet-nam>, accessed 21 October 2025.

but often excluded due to cost or lack of awareness. These are not luxuries but essential for learning and participation.[89] Even when products are listed in national or emergency supply plans, they are rarely stocked adequately or distributed fairly. In humanitarian contexts, supplies may include basic assistive tech, but these are often generic and not tailored to individual needs.[90,91,92]

Donations are common but problematic. Donated items may be outdated, used or surplus, with users having no say in type or size. Without proper screening, they may be unsafe or unsuitable for education. Even functional products are ineffective without training, maintenance and integration into service systems. Donations can also bypass national procurement, undermining government accountability and sustainable provision.[93]

Promising practice

Countries such as Kenya and Sierra Leone have focused on identifying essential products rather than compiling exhaustive wish lists. This prioritization helps ensure procurement is feasible and that the most critical needs are met. Both governments treat the Priority Assistive Product Lists as a dynamic process, allowing the list to evolve with changing needs and technologies. The Government of Kenya plans to use its Priority Assistive Product List alongside the Essential Medicines List to streamline procurement and ensure products meet established standards for quality and certification.[94]

89 UNICEF representative, interview UNICEF assistive technology specialist, on 7 May 2025; young assistive technology user, interview young assistive technology users group 1 and 2, on 27 May 2025.

90 UNICEF representative, interview UNICEF Supply Division, on 12 May 2025; UNICEF representative, interview UNICEF Disability Inclusion in Humanitarian Settings, on 23 May 2025.

91 *Global Report on Assistive Technology.*

92 'Reflection in Barriers to Accessing Assistive Technology in Low- and Middle-Income Countries'.

93 *Global Report on Assistive Technology.*

94 NGO representative, interview CHAI Kenya, on 22 May 2025.

4.4 Personnel

Expectations

A strong assistive technology system depends on a skilled, well-distributed workforce across education, health and social sectors. Professionals are needed for assessment, fitting, training and maintenance, while teachers must be prepared to recognize needs and integrate assistive technology into everyday learning. Governments are expected to invest in long-term specialist training, support task-shifting with adequate supervision, and ensure that assistive technology is embedded in both pre-service and in-service teacher education. Administrators and policymakers also need training to coordinate systems, understand supply chains, and create enabling environments.

Barriers

Limited trained workforce in the assistive technology ecosystem

Many countries lack trained professionals such as audiologists, speech therapists, and technicians, affecting all stages of provision, from assessment to maintenance.[95]

To address shortages, task-shifting and cross-training are common. For example, physiotherapists may assess basic needs, and nurses may learn speech therapy basics. However, community health workers and teachers, often already overloaded, are expected to take on extra roles without adequate training, support or awareness. Task-shifting must be supported by supervision, capacity-building, policy updates and long-term investment in specialist training.[96]

NGOs offer short-term training to fill gaps, but often lack resources for nationwide, sustainable systems. Establishing national-level and multisectoral assistive technology coordination structures can support sustainable policy and programme development, using available resources from different stakeholders while avoiding overlap and gaps in assistive technology provision and service delivery.[97,98,99] Assistive-technology users, their caregivers and

95 *Global Report on Assistive Technology.*
96 NGO representative, interview CHAI Kenya, on 22 May 2025.
97 Rohwerder, *Assistive Technologies in Developing Countries.*
98 *Global Report on Assistive Technology.*
99 *Policy Brief: Access to Assistive Technology.*

organizations should be involved in every step as key resources for mapping, planning and training delivery.[100]

Capacity gaps also exist among policymakers, many of whom lack understanding of assistive technology's role in inclusive education. Training is needed to develop integrated policies that ensure cost-effective provision and maintenance. Procurement officers also need support to understand supply chains, standards and user needs. Without this, efforts remain fragmented.[101]

In humanitarian settings, the lack of trained staff is even more severe. Front-line workers often have no exposure to assistive technology, excluding learners with functional limitations. For example, in Cox's Bazar, Bangladesh, despite investments in accessibility, many children did not use services due to a lack of assistive technology and low awareness among providers and users.[102]

Promising practices

In Sierra Leone, the shortage of audiologists and other specialists limits assistive technology services for people with hearing and visual impairments. The Government is addressing this through in-service training and task-shifting, such as training physiotherapists in basic assessments and prescriptions, but demand for specialists remains high, especially in speech and language therapy.[103]

The Kenyan Government introduced a comprehensive training plan for health workers, including short courses at levels 3–5 facilities and a Kenyan Sign Language module in pre- and in-service training. Community health workers are trained for early identification, awareness-raising, and in some cases basic screening and dispensing of simple devices such as reading spectacles. Partnerships with educational institutions are expanding courses in audiology, speech therapy, and occupational therapy, with bonding schemes to retain trained professionals in underserved areas.[104]

In Rwanda, the Government plans to expand assistive technology provider training once the national priority product list is approved, ensuring health-care workers can assess, prescribe and support assistive technology within the primary health system.[105]

100 Ibid.
101 Ibid.
102 UNICEF Disability Inclusion in Humanitarian Settings, on 23 May 2025.
103 Ministry of Health representative, interview policymaker, on 20 May 2025.
104 NGO representative, interview CHAI Kenya, on 22 May 2025.
105 NGO representative, interview, CHAI Rwanda, on 7 May 2025.

Limited capacities in the education sector

Teachers are central to effective use of assistive technology in the classroom, but many lack the training to identify, implement and support its use. Without formal instruction, devices are often underused or misused, and there is a misconception that technology alone solves learning barriers.[106] Teachers are not expected to conduct clinical assessments but should be able to recognize when a student may benefit from assistive technology and refer them to services. They are often the first to notice learning challenges, including those not typically identified in medical settings, such as dyslexia.[107]

Teachers must adapt lessons, support device use, and integrate assistive technology into daily learning. However, lack of training and support limits their ability to do so. Even when tools are available, teachers may not know how to use them effectively. Supporting teachers requires basic training in inclusive education, familiarity with assistive technology, clear referral pathways, and creating time to take on these roles.[108]

School leaders and administrators also need training. Without institutional support, teachers may lack time, resources and confidence. Assistive technology is rarely included in pre-service education, and in-service training is often limited. Teachers need hands-on training in four areas: recognizing student needs, referring to services, integrating technology into teaching, and addressing misconceptions, such as the belief that assistive technology gives unfair advantages or eliminates all barriers. In contexts where formal training is limited, peer support networks, school-based focal points and community volunteers can provide ongoing guidance. School clusters (groups of schools in the same area) can facilitate experience sharing and collaborative problem-solving.[109,110,111,112]

106 UNICEF representative, interview UNICEF Supply Division, on 12 May 2025; NGO representative, interview Sight Savers, on 20 May 2025; NGO representative, interview, CHAI Rwanda, on 7 May 2025.

107 UNICEF representative, interview UNICEF Supply Division, on 12 May 2025; NGO representative, interview Sight Savers, on 20 May 2025; NGO representative, interview, CHAI Rwanda, on 7 May 2025.

108 UNICEF representative, interview UNICEF Supply Division, on 12 May 2025; NGO representatives, interviews Sight Savers, on 20 May 2025, and CHAI Rwanda, on 7 May 2025; AT user, interview IDA, on 20 May 2025.

109 United Nations Educational, Scientific and Cultural Organization, *Learners with Disabilities and Technology: Advocacy Brief*, UNESCO Global Education Monitoring Report, UNESCO, Paris, 2024.

110 Zwarych, Faith, 'Inclusive Education with Assistive Technology', in *Technology and the Curriculum: Summer 2023*, edited by Rob Power, Pressbooks/Power Learning Solutions, n.p., 2023, <https://pressbooks.pub/techcurr2023/chapter/inclusive-education-with-assistive-technology/>, accessed 24 October 2025.

111 United Nations Children's Fund, *The Use of Assistive Technology in Education: A guide for teachers and schools*, UNICEF Office for Europe and Central Asia, Geneva, 2022.

112 Hitchcock, Chuck, et al., 'Providing New Access to the General Curriculum: Universal design for learning', *Teaching Exceptional Children*, vol. 35, no. 2, 2002, pp. 8–17.

In humanitarian contexts, challenges are greater due to high staff turnover and limited infrastructure. For example, in the Syrian Arab Republic, assistive items from 'school in a box' kits were not used because teachers did not know how to apply them in class.[113]

The experience of a student with hearing impairment in the Philippines shows the importance of awareness-raising and training among teachers.

"I grew up in a rural area where assistive technology was rare and Government support absent. When I needed a hearing aid, I had to travel far for tests, pay out of pocket, and teach myself how to use it.

"Schools and universities were not inclusive. Teachers spoke while facing the board, used videos without captions, and online classes had distorted audio. Every semester, I had to explain my needs to each professor because there was no disclosure system, it was exhausting. Teachers are gatekeepers of inclusion. Teachers should not wait for students to ask for accommodations, they should ask students what they need and see accommodations as rights, not favours.

"For me, a hearing aid is more than a device, it's a bridge to understanding, dialogue and belonging. In my political science studies, it lets me join debates with confidence. Assistive technology turns silence into speech, confusion into clarity, and distance into connection. It's not just an opportunity for me, it's for every learner navigating an inaccessible world."[114]

– Young assistive technology user

113 UNICEF representative, interview UNICEF Disability Inclusion in Humanitarian Settings, on 23 May 2025.
114 Young AT user, interview with Young AT user group 1, on 27 May 2025.

Promising practices

In Sierra Leone, the Government formalized teachers' roles in identifying and referring learners with disabilities, providing in-service training on assessment tools and referral forms aligned with the health system. However, challenges remain in the referral process from school to assistive technology services, as these services are not consistently available in the country.[115]

In Croatia, Montenegro and Serbia, inclusive preschool programmes engaged families to support teachers in applying UDL and using assistive products,[116] such as communication boards, hearing aids, adapted toys and digital devices. Families were involved in design and implementation, while community campaigns reduced stigma and promoted inclusion.[117]

4.5 Provision

Expectations

Assistive technology must be delivered as part of a complete service – not just a product – within an equitable and inclusive education system. This means planning for assessment, fitting, training, repair and follow-up, and ensuring that these services are available close to where learners live and go to school. Procurement and delivery should be coordinated across ministries to reduce fragmentation, strengthen supply chains, and build user trust. Education systems in particular must be able to identify learners' needs, link with health and social services, and make sure that devices are supported in the classroom. Provision is not only about efficiency, it is about creating a reliable system that allows learners to use assistive technology effectively and continuously throughout their education journey.

115 Ministry of Health representative, interview policymaker, on 20 May 2025.

116 NGO representative, interview Sight Savers, on 20 May 2025.

117 United Nations Children's Fund, 'Case Studies on Disability and Inclusion: Summary', UNICEF Europe and Central Asia, n.p., n.d., <www.unicef.org/eca/case-studies-disability-and-inclusion>, accessed 21 October 2025.

Barriers

Inefficient procurement and delivery of assistive technology

Limited knowledge of procurement processes often causes delays, inconsistent product availability, inflated costs, and poor-quality purchases. Many countries lack understanding of the assistive technology market, available options, and quality standards. Contracts usually focus on delivery, overlooking vital services like training, maintenance, upgrades and spare parts, thereby reducing product lifespan and usability.[118] Assistive-technology procurement is more complex than that for other medical or educational items. Many products need fitting, customization and training. Governments and agencies often lack the technical capacity to manage this, leading to bulk purchases of generic items that do not meet users' needs, especially for hearing aids, wheelchairs and prostheses, which must be tailored to age, size and function.[119]

Procurement officers, often working with tight budgets, may choose the cheapest options, excluding necessary services. User consultation is rare, and lack of data on needs and context weakens demand-driven procurement. Fragmentation across ministries and stakeholders reduces buyer power, causes supply gaps, and makes it hard for users to find products.[120]

Delivery inefficiencies worsen the problem. Services are centralized in urban hospitals, making access difficult for rural families. In countries such as Rwanda and Sierra Leone, entire regions lack services, and referral systems are unclear.[121] Poor stock tracking, lack of trained staff, and inadequate facilities further hinder delivery. Community centres often lack space, equipment and skills for fitting, repairs and training.[122]

118 *Global Report on Assistive Technology.*
119 NGO representative, interview CHAI Rwanda, on 7 May 2025.
120 *Global Report on Assistive Technology.*
121 Ministry of Health Representative, interview policymaker, on 20 May 2025; NGO representative, interview CHAI Rwanda, on 7 May 2025.
122 World Health Organization, *Assistive Technology Procurement Study: Technical Report*, WHO Regional Office for the Western Pacific, Manila, 2020.

Promising practice

Movement Australia worked to expand access to assistive technology in the Pacific Islands by addressing procurement barriers. A regional study, involving assistive technology users, identified fragmented supply chains, lack of standards, and limited market knowledge as key challenges. The study led to a blueprint and road map for action, including: a regional procurement framework to promote pooled purchasing, supply hubs and standard specifications; a Pacific Assistive Technology Resource Facility for technical support and capacity-building; and integration of assistive technology procurement into education policies.[123]

Limited and fragmented services

Assistive technology is more than a product, it is a system. For it to be effective, it must be part of a broader ecosystem including assessment, fitting, training, maintenance, follow-up and cross-sector coordination. In many settings, these services are missing or fragmented. For example, a learner may receive a device but lack training or lose support when changing schools or location.[124]

Assessment is critical but often unavailable in LMICs, especially in rural areas. It is not just a health sector responsibility, teachers, rehabilitation workers and community organizations must be trained to identify needs and refer learners.[125] User training is also essential but frequently absent. In low-resource settings, devices are distributed without instruction, leaving users to figure out complex tools alone. This is especially true for digital assistive technology, which requires expert support. Young users report spending years learning to use screen readers or adapt smartphones and laptops, often through independent research. This delays benefits and can lead to frustration or abandonment.[126]

Furthermore, without systems in place to maintain and repair devices, assistive technology quickly loses its value. Maintenance should not be treated as an afterthought; it must be considered from the outset of procurement and programme design. This includes selecting durable products, ensuring the availability of spare parts, and training users in basic upkeep.[127]

123 Ibid.
124 NGO representative, interview CHAI Rwanda, on 7 May 2025.
125 UNICEF Disability Inclusion in Humanitarian Settings, on 23 May 2025; NGO representative, interview CHAI Kenya, on 22 May 2025; NGO representative, interview Sight Savers, on 20 May 2025.
126 UNICEF representative, interview UNICEF assistive technology specialist, on 7 May 2025; young AT user, interview with Young AT user group 1, on 27 May 2025.
127 UNICEF representative, interview UNICEF assistive technology specialist, on 7 May 2025.

Promising practices

In Kenya and Rwanda, partners prioritize robust assistive products with minimal consumables and negotiate packages that include maintenance and staff training.[128]

In Ethiopia, the Ministry of Education and World Bank introduced the Inclusive Higher Education through Assistive Technology programme, aligned with national disability and digital strategies. Universities adopted screen readers, speech-to-text software, and accessible digital platforms, alongside physical upgrades such as ramps and elevators. Students helped design and test assistive technology, while faculties received training on inclusive pedagogy and Universal Design for Learning. Peer mentoring provided ongoing support. The programme reports improved enrolment, retention and performance of students with disabilities, as well as stronger institutional capacity for inclusive education.[129]

The experiences of a young assistive technology user with a visual impairment in Ghana illustrate how important user training is.

"In primary school, I had Braille books, but in secondary I relied on classmates to read printed materials for me, since no Braille textbooks were available. At university, I realized this wouldn't work, so I taught myself to use a screen reader over several months. It changed everything, but the lack of training in earlier years meant I lost valuable time. You can't just give someone an assistive device and expect them to use it. If they don't know how, it's useless. That's what happened to me in primary school, I had tools but no training. I can't say that enough: if I have a device and I don't know how to use it, it's meaningless to me.

"The university's disability office helped by converting printed materials into either Braille or digital content. Braille took too long, so I chose soft copies for my screen reader. I still did exams in Braille. That office made a huge difference. But they could've done more, like insisting lecturers provide soft copies from the start. If I had to pay, I would. But getting only printed copies meant extra work: buying, scanning, editing. The university had an inclusion policy, so the office should've enforced it more. Lecturers should've adapted to us, not the other way around."[130]

128 NGO representative, interview, CHAI Rwanda, on 7 May 2025, and CHAI Kenya, on 22 May 2025.
129 World Bank, *Unleashing the Power of Education Technology in TVET Systems*, World Bank, Washington, D.C., 2021.
130 Young AT user, interview with Young AT user group 1, on 27 May 2025.

5 Recommendations

5.1 For governments

- **Develop and finance a national assistive technology strategy:** Create a cross-sectoral policy and action plan covering education, health, social protection, ICT and procurement. Define clear roles, ensure coordination among ministries and stakeholders, and allocate sustainable funding.

- **Strengthen regulation, procurement and capacity:** Establish product standards, promote local production, and regulate markets to ensure affordable, good-quality assistive products. Equip coordination bodies and ministry staff with the skills to manage and monitor systems effectively.
- **Invest in inclusive infrastructure and integrated services:** Prioritize accessible infrastructure, electricity and internet – especially in rural areas – and embed assistive technology access within health, social protection and community-based programmes.
- **Include assistive technology in emergency preparedness:** Integrate assistive technology into humanitarian plans, pre-position essential products, and collect relevant data to ensure continuity of access in crises.

Ministries of education have specific responsibilities in ensuring the provision and use of assistive technology in education. The following recommendations apply specifically to ministries of education.

- **Embed assistive technology across education systems:** Integrate assistive technology into inclusive education policies, frameworks and teacher standards; ensure school-level implementation through dedicated focal points and resource centres. Include assistive technology in education budgets.
- **Ensure teacher capacity:** Embed practical competencies in both pre- and in-service teacher training to integrate assistive technology in classroom practices, supported by continuous professional development.
- **Create accessible and data-informed learning environments:** Apply universal design to school infrastructure and digital platforms, and include assistive technology indicators in Education Management Information Systems to guide planning and monitor equity.
- **Foster innovation and collaboration:** Promote school- and community-based innovation models, and strengthen cross-sectoral collaboration and referral systems between education, health and social protection.

5.2 For donors and development partners

- **Integrate assistive technology in education investments:** Fund assistive technology within wider education and digital inclusion programmes, supporting country-led strategies that operationalize the 5Ps (people, policy, product, personnel, provision) of the assistive technology framework.
- **Support country-led policy development and implementation:** Provide technical and financial support to governments developing or scaling national assistive technology strategies, including cross-sectoral coordination, regulatory reform and sustainable financing models.
- **Promote inclusion and accountability:** Ensure meaningful participation of persons with disabilities, including children and youth, and advocate for assistive technology within global education financing mechanisms.

5.3 For NGOs, OPDs and communities

- **Promote rights-based social and behavioural change:** Support governments in awareness and engagement initiatives to challenge stigma, promote inclusive attitudes, and advocate for assistive technology as a right and enabler of education.
- **Facilitate peer support and user participation:** Build parent and youth networks for shared learning and advocacy, and ensure children and caregivers are actively involved in the design and selection of assistive technology solutions.
- **Monitor progress and advocate for accountability:** Collect feedback, conduct community monitoring, and engage in dialogue to hold governments and partners accountable for equitable assistive technology access.

6 Conclusion

Access to assistive technology is a right, not a privilege. It is essential for inclusive, equitable and good-quality education. As shown in this policy brief, assistive technology enables participation, improves learning outcomes, supports teachers, and promotes broader social and economic inclusion. Despite its

transformative potential, access remains limited, especially in LMICs and humanitarian settings. Systemic barriers, ranging from underdeveloped policies and fragmented service delivery to workforce shortages and funding gaps, continue to prevent millions of children and youth from realizing their right to education.

To move forward, stakeholders must collaborate to build comprehensive assistive technology ecosystems based on the 5Ps framework: people, policy, product, personnel and provision. These systems should be supported by evidence-based planning, cross-sector governance, sustainable financing, and meaningful user involvement. Assistive technology must be embedded in national education strategies, supported by inclusive infrastructure, and integrated into teacher training and school practices. It must be available, affordable and tailored to diverse learner needs, with accompanying services including assessment, fitting, training and maintenance.

Ultimately, the right to assistive technology is inseparable from the right to education. Investing in inclusive assistive technology systems means investing in every learner's potential to thrive.

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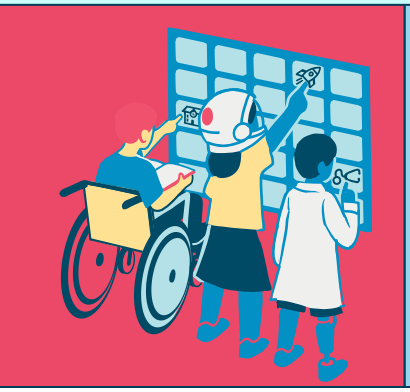

Annex: Methodology

This policy brief is informed by a mixed-methods data collection approach including a comprehensive desk review and qualitative data analysis. The desk review examined global and regional literature, peer-reviewed studies, policy documents, technical guidelines, and case studies related to assistive technology in education, with a specific focus on low- and middle-income countries and humanitarian settings. Documents were identified through structured searches of academic databases, institutional repositories (e.g., World Health Organization, UNICEF, United Nations Educational, Scientific and Cultural Organization), and expert recommendations.

To complement the literature, stakeholder consultations were conducted with 14 individuals representing diverse perspectives, including:

- Assistive-technology users
- Policymakers from ministries of health and education
- NGOs and development partners
- Technical experts in assistive technology and inclusive education.

Data collection included eight individual interviews and two focus-group discussions with young assistive technology users. Transcripts were reviewed and coded thematically using the 5Ps framework. The findings highlight both systemic barriers and promising practices in assistive technology provision and use in education. Together, the desk review and stakeholder consultations provide an evidence base for the recommendations presented in this brief, aimed at strengthening access to and use of assistive technology in education systems and advancing inclusive learning for all.

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