



सत्यमेव जयते

National Education Policy 2020

Ministry of Human
Resource Development

Government of India

Digital Technology for CWSN

विद्यया ऽ मृतमश्नुते



एन सी ई आर टी
NCERT

Inclusive Education and Digital Technology

at

CIET, NCERT
SUMIN PRAKASH

Associate Professor
DEGSN, NCERT, New Delhi

How an Inclusive class looks like?







SEDGs as outlined in the NEP-2020

Identities of SEDG's	Coverage area/ Scope
Gender Identity	Women & Transgender
Social Backwardness Identity	SC's (16.63%) & ST's (8.63%) – Census, 2011
Educational and Economic Backward Identity	Non-Creamy Layer among the OBC's (OBC's-44%, NSSO, 2011-12) EWS, Students from the vernacular medium Schools First Generation Learners
Minority Identity	Religious Minorities (Muslims-17.22 %, Christians-2.3 %, Sikhs-1.72%, Buddhists- 0.7 %, Jains-0.37%) Linguistic Minorities
Persons with Disabilities and Benchmark Disabilities	A person with long-term physical, mental, intellectual, speech or sensory impairment (2.2%) A person with not less than 40% of a specified disabilities as certified by the certifying authority
Vulnerable & Low Socio-economic conditions	Migrant communities, Low-income households/BPL, Child beggars & Children in vulnerable situations, Victims of or children of victims of trafficking, Children with no parents, Any other groups with low socio-economic conditions
Less-developed, poor-access and Disadvantaged locations	Villages and towns, Tribal Areas/ Scheduled areas (V & VI), Slums, Aspirational districts, North-Eastern states, Islands, Conflict Prone areas, Disaster-prone areas (flood, drought, earthquakes), Border areas

Types of Disabilities as per Rights of Persons with Disabilities Act 2016 – Country Context



Blindness



Low-vision



Hearing Impairment
(deaf and hard of hearing)



Speech and Language Disability



Intellectual Disability



Autism Spectrum Disorder



Multiple Disabilities
including deafblindness



Leprosy Cured Persons



Locomotor Disability



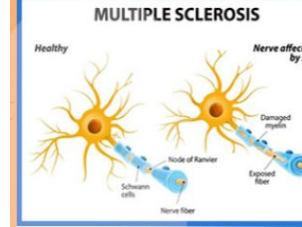
Dwarfism



Cerebral Palsy



Muscular Dystrophy



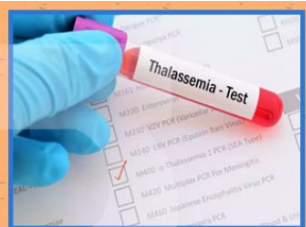
Multiple Sclerosis



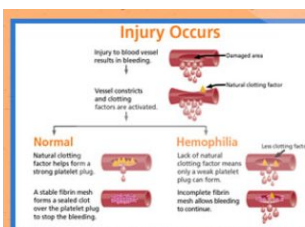
Acid Attack Survivors



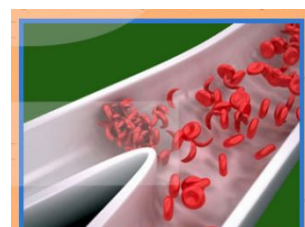
Specific Learning Disabilities



Thalassemia



Hemophilia



Sickle Cell Disease



Chronic Neurological Conditions



Mental Illness



Parkinson's Disease

What is Assistive technology?

Assistive products and technology are any product, instrument, equipment or technology adapted or specially designed for improving the functioning of a person with a disability.

[International Classification of Functioning, Disability and Health (ICF)]

Assistive products more broadly are any product, especially produced or generally available, that is used by or for persons with disability: for participation; to protect, support, train, measure or substitute for body functions/structures and activities; or to prevent impairments, activity limitations or participation restrictions.

[International Organization for Standardization (ISO)]

- Assistive technology is used as an umbrella term for both assistive products and related services.
- Assistive products are also known as assistive devices.
- This includes devices, equipment, instruments and software
- Services related to assistive products include referral, assessment of the child, prescription, funding, ordering, product preparation, fitting/adjusting of the product to the child, training of the child or family members, follow-up, and maintenance and repairs.

Examples of assistive technology

Category	Product examples
Mobility	Walking stick, crutch, walking frame, manual and powered wheelchair, tricycle Artificial leg or hand, leg or hand splint, clubfoot brace Corner chair, supportive seat, standing frame Adapted cutlery and cooking utensils, dressing stick, shower seat, toilet seat, toilet frame, feeding robot
Vision	Eyeglasses, magnifier, magnifying software for computer White cane, GPS-based navigation device Braille systems for reading and writing, screen reader for computer, talking book player, audio recorder and player, Braille chess, balls that emit sound
Hearing	Headphone, hearing aid Amplified telephone, hearing loop
Communication	Communication cards with texts, communication board with letters, symbols or pictures Electronic communication device with recorded or synthetic speech
Cognition	Task lists, picture schedule and calendar, picture based instructions Timer, manual or automatic reminder, smartphone with adapted task lists, schedules, calendars and audio recorder Adapted toys and games

What is Digital technology?

- Digital technology encompasses the electronic systems, devices, and tools that utilize binary code (0s and 1s) to process, store, and transmit information. It's the foundation of modern life, powering everything from computers and smartphones to the internet and emerging technologies like AI and blockchain. Digital technology enables efficient data handling, communication, automation, and innovation across various sectors.

What is Digital assistive technology?

Digital assistive technology encompasses software and hardware tools that help people with disabilities access and interact with digital content and devices. It includes a wide range of technologies, from screen readers and speech recognition software to specialized keyboards and alternative input devices. These tools enhance accessibility and functionality for individuals with various disabilities, enabling them to participate more fully in education, employment, and daily life.

Digital assistive technology for children with V.I.

- **Screen readers** (windows accessibility features, Thorium reader)
- **Camera scanners, OCR and text-to-speech**
- **Smartphone text detection**
- **Daisy player**
- **Braille display (Flash Braille), Note takers**
- **Screen magnifiers** (windows accessibility features)
- **Speech to text** (windows accessibility features)
- **Graphic analysers and Maths Technology** (Be my eyes)
- **Audio books and Accessible libraries** (Sugamya pustakalya, Book Share)
- **AI solutions, Mobile based apps**

Screen readers (NVDA, JAWS Thorium reader)

NVDA

Supports all
Indian languages

Open source

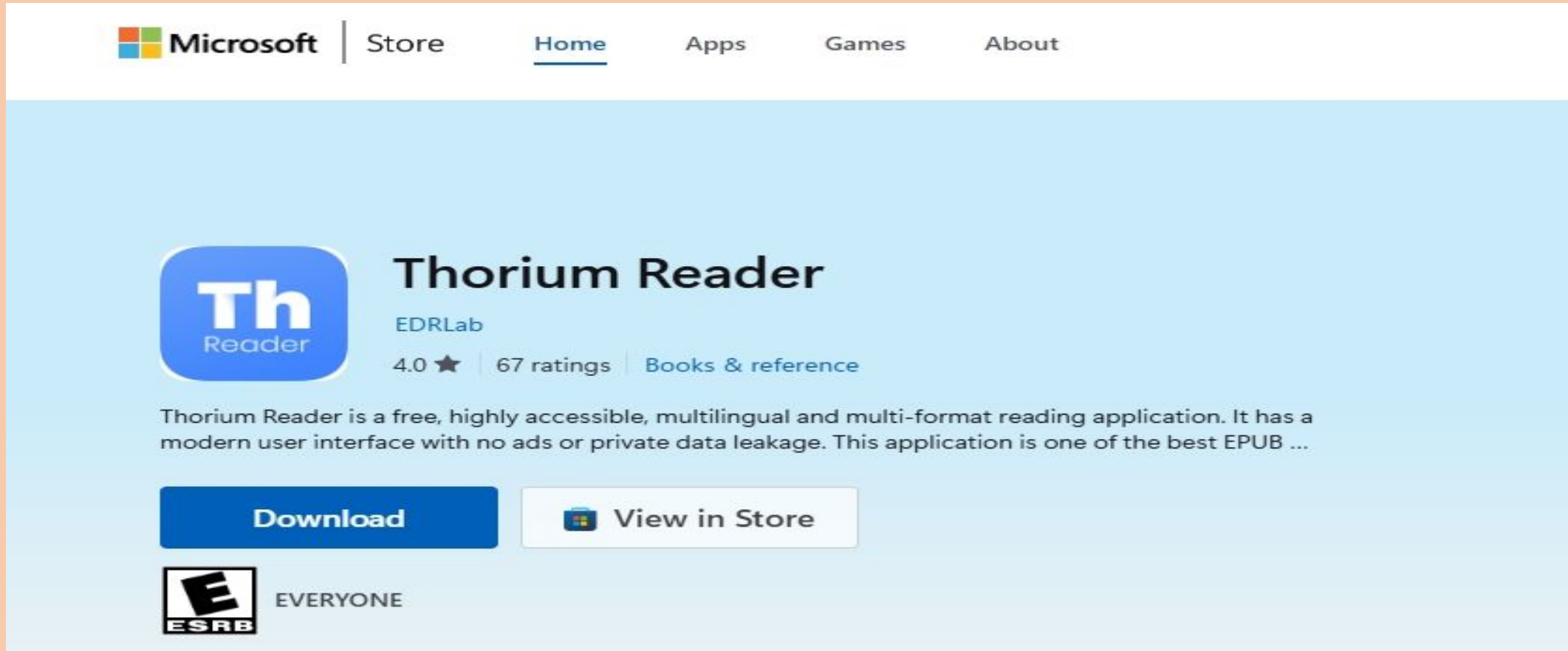
JAWS

Popular with
windows

Costly affair

Window key + H (windows accessibility features) in MS-Word for Text-Speech and Screen reading as well.

Thorium reader



The screenshot shows the Microsoft Store page for the Thorium Reader application. At the top, the Microsoft logo is on the left, and navigation links for 'Store', 'Home', 'Apps', 'Games', and 'About' are on the right. The 'Home' link is underlined. Below the navigation bar, the Thorium Reader app is featured. It has a blue square icon with 'Th' in white and 'Reader' in smaller white text below it. To the right of the icon, the app name 'Thorium Reader' is displayed in a large, bold, black font. Below the name, the developer 'EDRLab' is listed in a smaller blue font. Further down, the app's rating is shown as '4.0' with a star icon, followed by '67 ratings' and the category 'Books & reference'. A short description follows: 'Thorium Reader is a free, highly accessible, multilingual and multi-format reading application. It has a modern user interface with no ads or private data leakage. This application is one of the best EPUB ...'. Below the description are two buttons: a blue 'Download' button and a white 'View in Store' button with a small Windows Store icon. At the bottom left, the ESRB rating 'E' for 'EVERYONE' is shown in a black box.

One can also read PDF or DAISY files and listen to audio books

Braille display (Flash Braille), Note takers



- Can be connected to computers and social media devices like WhatsApp etc.





DAISY Player



- Audio recording
- Can read and playback text files
- Support for multiple Indian languages with rich navigation features
- Direct connectivity on online libraries through Wi-Fi

Speech to text (windows accessibility features)

Digital Technology

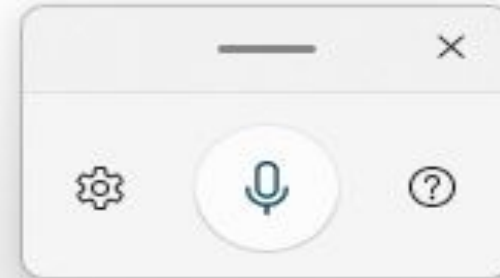


The Impact of Digital Technologies

<https://www.un.org/en/un75/impact-digital-technologies>

What is Digital Technology

The word "digital" comes from Latin—digitus, finger—and refers to one of the oldest tools for counting. When information is stored, transmitted or forwarded in digital format, it is converted into numbers—at the most basic machine-level as "zeroes and ones." In the context of this chapter, the term represents technology that relies on the use of microprocessors; hence, computers and applications that are dependent on computers such as the Internet, as well as other devices such as video cameras, and mobile devices such as phones and personal-digital assistants (PDAs).




(windows + H key)

Graphic analysers

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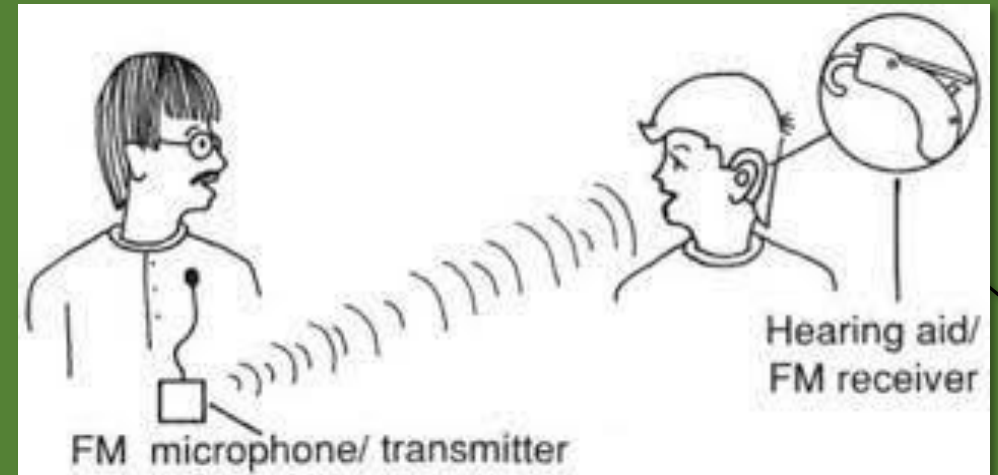
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Digital assistive technology for children with Hearing impairment

- Hearing loop (induction loop) system
- FM system
- Personal amplifiers
- Bluetooth devices



Digital assistive technology for children with Specific Learning Disability

- Smart pens, Hand reading pens
- Spell checkers
- Smartphones, Tablets
- Mind mapping (learning programme)



App based Communication on Smartphones and Tablets/ Computers

Communication

Calling,
Messaging,
WhatsApp

Social Media,
Email

Reading

Book Reading in
Indian
Languages-
Simply Reading,
Kibo etc.

Browser- for
webpages,
news,
documents etc.

Writing

Google Keep- Note
taking in Indian
Languages

Physical Keyboard
for fast writing and
navigation

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Thank You