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ICT & ASSISTIVE DEVICES FOR CHILDREN WITH SPECIAL NEEDS

Papai Mondal

**Asst. Professor (Contractual) , Department of Education ,
Raniganj Girls' College Raniganj, West Bengal, India.**

ABSTRACT:

At present, Information and Communication Technology (ICT) and Assistive Technology for specialized students are helping immensely in their education and daily living. The use of information and communication technologies (ICTs) in a special educational needs (SEN) environment has gathered accumulative evidence around it during the last decade (2008-2018). The optimum use of ICT and others technologies in special education system can propel the country to become a knowledge superpower. In many settings' ICT has become an important element of the learning and teaching process. This paper looks into the effectiveness of assistive technology for students with special needs in classroom setting and the setting of various situations. The objective of this study and other resources of the same characteristics is to promote knowledge, understanding, memory, language skills, logical reasoning and problem solving in everyday life. In this paper, I have found in analyzing the various types of secondary information (such as- textbooks, reference books, websites, journals etc.) that, different types of assistive technology are helping special students in many ways. So that ordinary students as well as special students are getting equal education. So that, they (special students) do not feel burdened with society in any way.



KEYWORDS: *ICT, Assistive Technology, SEN, Secondary, Burdened.*

INTRODUCTION

Information and Communication Technology is an extensional term for Information Technology (IT) that stresses the role of unified communications and the integration of telecommunications (Telephone Lines and Wireless Signals) and computers, as well as necessary systems, that enable users to access, store, transmit and manipulate

information.

On the other hand, various assistive technical devices refer to the devices that are used for the daily life of special needs students. Specifically, with special needs learner's ICT and various assistive devices is used to support the development of reading and writing skills, but also as a tool to develop social relation skills. ICT supports children who find it difficult to access curriculum, perhaps due to physical, mental or just concentration problems. ICT

can help, sometimes by using modified equipment but sometimes simply by the motivation it offers. But the benefits of ICT so much further than this and extend all the way to providing complete access for children who would otherwise be denied an education altogether.

Need of the study:

Every child is an individual and children with special educational needs are as different from each other as any other children,

perhaps even more so. Even if a child has had a 'label' attached to his particular special need, this does not mean that his needs will be exactly the same as others with the same condition. In all types of disability, the difficulties can range from mild to severe and many children will have problems in more than one area of learning. When you are looking for information to help a particular child you should consider all the areas in which he might have difficulty. Finally, this study plays an important role in the field of special education including disability. Through this study, special students will be able to adapt to their workplace and various fields through the use of different technical devices.

OBJECTIVES OF THE STUDY:

This analytical study follows the so many objectives. Those are following:

1. To study the importance of ICT in Special Education.
2. To study the uses of various aids and assistive devices for children with special needs.
3. To study the various types of disability and how technological devices can help them.
4. To study the ICTs for E-learning.
5. To study the benefit of ICT use in education for people with SEN.

IMPORTANCE OF ICT IN SPECIAL EDUCATION:

Today, from the time we wake up the morning to the time we sleep, we are surrounded by media, such as newspapers, radio, television, computers etc. Sometimes, we are not even aware that we are surrounded by these media. Knowing and using information and communication technology (ICT) tools is important in today's fast changing society. In recent times, viewers have been overwhelming progress of technologies, it has influenced virtually every area of society. Its effects have also reached the world of Education, generally and special education, particularly. Now, technologies of information and communication (ICT) give us the ability to support and facilitate the learning of children with special educational needs to achieve the skills set out in the curriculum.

Keep in mind that, in education, ICTs are not an end, but an instrument that is used with the intention of building a teaching which takes full advantage of the facilities that these technologies offer. Children with special needs, are hardly able to read and write, however, daily make use of technology without being aware of it: Phones, Digital Cameras, T.V, Electronics Games. Thus, with the aid of the NN.TT., these children learn to develop their emotional abilities, cognitive and physical as well as promoting personal autonomy and social integration possible.

AIDS AND ASSISTIVE DEVICES FOR CHILDREN WITH SPECIAL NEEDS:

Aids and assistive devices are the supporting devices used by persons with disabilities in improving their quality of life in terms of mobility, communication and for performing their daily activities. There is a wide range of assistive devices available to meet the needs of persons with disabilities. By use of these aids and assistive Devices, people with disabilities becomes independent and their participation in the society increases.

Following are some examples of aids and assistive devices given below:

Aids for Daily Living:

Which covers self-help aids for use in activities such as eating, bathing, cooking, dressing, toileting, home maintenance etc. These include modified eating utensils, adapted books, pencil holders, page turners, dressing aids, adapted personal hygiene aids.

Mobility Aids:

Devices that help people move within their environment, electric or manual wheelchairs, modifications of vehicles for travel, scooters, crutches, canes and walkers.

Home/Workplace Modifications:

Structural adaptations that remove or reduce physical barriers such as ramps, lifts, modification in the bathroom to make it accessible, automatic door openers and expanded doorways etc.

Seating and Positioning:

Adapted seating, cushions, standing tables, positioning belts, braces and wedges to maintain posture, and devices that provide body support to help people perform a range of daily tasks.

Alternative and Augmentative Communication Devices (AAC):

These devices help people with speech impairments or person having low vocal volume to communicate such as speech generating devices, voice amplification aids and communication software. For visually impaired person, devices as magnifier, Braille or Speech output devices, large print screens, closed circuit television for magnifying documents, etc.

Prosthetics and Orthotics:

Replacement or augmentation of body parts with artificial limbs or other aids such as splints or braces. There are also prosthetics to assist with cognitive limitations or defects. Including audio tapes or pagers (that function as or reminders).

Computer Access Aids:

Headsticks, light pointers, modified or alternate keyboards, switches activated by pressure, sound or voice, touch screens, special software, voice to text software that enable persons with disabilities to use a computer. This category includes speech recognition software.

Recreational aids to enable participation in social/cultural events and sports:

Devices to enable participation in sports, social, cultural events with includes audio Deion for movies, adaptive controls for video games etc.

Environmental Controls:

Electronic systems that help people control various appliances, switches for telephone, T.V, or other appliances which are activated by pressure, eyebrows or breath.

The National Trust has already established a National Resource Centre for display of available assistive devices called 'Sambhav' at AADI (a registered organisation of the National Trust), New Delhi to demonstrate the possibility of independent or assisted living for persons with developmental disabilities through the use of aids & assistive devices and technologies.

Useful Technological Devices for the particular types of Disabilities:

There are so many useful devices are present in the special education systems. Such as:

Devices for Blindness: Many assistive tools are now available on the internet. Assistive tools that support kids with visually impaired include:

Braille Note Touch Plus: Braille note taker tablet is the most powerful and up-to-date note taker in the assistive technology industry packed with educational tools. Designed to be used in the classroom, at home or at work, the revolutionary Braille Note Touch Plus will be your guide through your life journey.

Bluetooth Braille Displays: These devices provide braille input and output for anyone who uses a screen reader. These braille displays can connect to a pc, mac, iPad and or an iPhone. Some of the screen readers these braille displays work with include JAWS, NVDA, Window-Eyes, Zoom Text Fusion, System Access and Voiceover.

Brilliant BI40: Brilliant, is smarter balanced approved, making it great for schools and students to use for standardized testing.

EIBraille 40(IV) Portable Notetaker: It uses JAWS to provide speech and braille output and the JAWS' brailleIn feature to allow complete control of EIBraille from the Perkins-style, braille keyboard.

Juliet Braille Embosser with Duxbury: The Juliet double-sided braille embosser with Duxbury combination of hardware and software enables you to produce hard copy braille.

Eye Pal Solo: This device is small, portable and simple to use. Eye pal solo has only a few buttons and can read almost any text that you place under its camera. It uses a camera to take a picture of the text you place under it and then reads/speaks out loud the print on the page, etc.

Technology for Hearing Impairments: Many useful devices for hearing impairments are as under:

Personal Amplifiers:

A personal amplifier is basically a small box with a mic and a listening cord attached to it, most useful for one-on-one, in person conversations. It allows the person you are speaking with to attach the mic to their clothing so you can plug it into your personal amplifier and hear more clearly.

FM Systems:

An FM system uses radio broadcast technology to bring the sound you want to hear directly to your ears. With this wireless system, the user wears a portable receiver that allows them to hear the speaker. The speaker, in turn, wears a microphone transmitter that allows the listener to hear from up to 150 feet away.

Infrared Systems:

A high-tech option affords maximum privacy, infrared systems are like FM systems except that instead of radio waves they transmit sounds using light waves.

Induction Loop Systems:

An induction loop system, which uses an electromagnetic field to carry the sound to the user's ears. In this system a loop of insulated wire, which can range from a small loop worn around the neck to a loop that encircles an entire room, is connected to a power source, an amplifier and a microphone.

Bluetooth:

This device is the latest innovation to take off among hearing aid users. Although Bluetooth hearing aids are not yet available, the technology allows two devices such as a cell phone or computer, etc.

Technology for Speech and Communication Disorders: Such as- High-tech AAC (Augmentative and alternative Communication Devices):

Any aid that requires electricity or batteries. This includes specialized devices, software, smartphone applications, electronic communication boards, and keyboards. Many high-tech AAC devices are speech generating devices, which means they can produce digitized speech when the user either types a message or presses on images, words, or letters.

Electronic Fluency Devices: There are two types of electronic fluency devices, Such as:

1. Delayed Auditory Feedback (DAF):

This device plays the user's voice back delayed by a fraction of a second. DAF devices may resemble hearing aids or headphones with a microphone. There are also apps that can use DAF on phone calls.

2. Frequency Altered Feedback (FAF):

This device is similar to DAF but rather than delaying the user hearing their own voice, they change the pitch at which the user hears their own voice.

Mobile Applications: There are so many mobile applications for speech and communication disorders are discussed below:

- **Dragon Dictation App:**

Dragon Dictation app can be used to turn speech into text, as well as text to speech. This app is only available for iOS.

- **TTS Reader:**

This app is available through Google Play. It instantly reads out loud any text with natural sounding voices. You can either enter text or provide a website address that you want it to read.

- **DAF Professional:**

Delayed Auditory Feedback (DAF) app for iPhone or Android.

- **Speech4 Good:**

Speech therapy app that includes DAF, audio recordings, and speech visualizations.

- **Smarty Ears Apps:**

A variety of apps for assistance with several different speech disorders.

ICTs for Learning Disabilities:

The term 'Assistive Technology' has for the most part been connected to PC equipment and programming and electronic gadgets. In any case, numerous AT apparatuses are currently accessible on the Internet. AT instruments that help kids with LD include:

Abbreviation Expanders:

Utilized with word preparing, these product projects enable a client to make, store, and re-use shortenings for regularly utilized words or expressions. This can spare the client keystrokes and guarantee legitimate spelling of words and expressions he has coded as shortened forms.

Alternative Keyboards:

These programmable consoles have uncommon overlays that redo the appearance and capacity of a standard console. Understudies who have LD or experience difficulty composing may profit by customization that decreases input decisions, bunches keys by shading/area, and adds designs to help perception.

Audio Books and Publication:

Recorded books enable clients to tune in to content and are accessible in an assortment of configurations, for example, audiocassettes, CDs, and MP3 downloads.

Electronic Math Work Sheets:

Electronic math worksheets are programming programs that can enable a client to arrange, adjust, and work through math issues on a PC screen. Numbers that show up onscreen can likewise be perused resoundingly by means of a discourse synthesizer. This might be useful to individuals who experience difficulty adjusting math issues to pencil and paper.

Freeform Database Software:

Utilized related to word preparing or other programming, this device enables the client to make and store electronic notes by 'writing down' applicable data of any length and regarding any matter.

Graphic Organizers and Outlining:

Realistic coordinators and laying out projects help clients who experience difficulty sorting out and delineating data as they start a composition venture. This kind of program gives a client 'a chance to dump' data in an unstructured way and later encourages him sort out the data into proper classifications and request.

Information/Data Managers:

This kind of hardware enables an individual to design, sort out, store, and recover his schedule, task list, contact information, and other data in electronic structure.

Optical Character Recognition:

This innovation enables a client to output printed material into a PC or handheld unit. The examined content is then perused so anyone might hear by means of a discourse combination/screen perusing framework.

Personal FM Listening Systems:

An individual FM listening framework transmits a speaker's voice straightforwardly to the client's ear. This may enable the audience to concentrate on what the speaker is stating. The unit comprises of a remote transmitter (with mouthpiece) worn by the speaker and a collector (with headphone) worn by the audience.

Portable Word Processors:

A versatile word processor is lightweight gadget that is anything but difficult to ship (e.g., from homeroom to home). It tends to be useful to kids who may experience difficulty composing by hand and want to utilize a console. Word preparing enables the client to alter and address his composed work more proficiently than doing as such by hand.

Speech synthesizers/screen readers:

These frameworks can show and peruse out loud message on a PC screen, including content that has been composed by the client, examined in from printed pages (e.g., books, letters), or content showing up on the web.

Talking Calculators:

A talking adding machine has a worked in discourse synthesizer that peruses so anyone might hear each number, image, or activity key a client squeezes; it additionally vocalizes the response to the issue.

Talking Spell Checkers and Electronic Dictionaries:

This gadget can enable a poor speller to choose or distinguish fitting words and right spelling blunders during the way toward composing and editing.

Variable-Speed Tape Recorders:

Recording devices/players enable a client to tune in to pre-recorded content or to catch spoken data (e.g., a study hall talk) and play it back later.

Word Prediction Programs:

Word forecast programming can help a client during word handling by "foreseeing" a word the client means to type. Expectations depend on spelling, sentence structure, and regular/ongoing use. This prompts kids who battle with writing to utilize legitimate spelling, language, and word decisions, with less keystrokes, and so forth.

Technology for Emotional and Behavioural Disorders:

Social handicaps can be trying for instructors in light of the fact that there appear to be not many guides accessible. The battling understudies can be troublesome to the study hall experience, making it difficult for others to learn. As EdTech assumes a progressively conspicuous job in our school locale, educators might need to think about that assistive innovation could help. The correct apparatuses may help understudies with regards to better arranging their assignments and adapting to

the requests of the homeroom setting. In the accompanying gadgets are useful for enthusiastic and conduct issue. For example,

Text-to-speech Software:

Practices will in general be progressively noticeable when a youngster is looked with an excess of stress. For a considerable lot of these understudies, the genuine work expected of them in the study hall setting can be a trigger for more practices. This product, for example, that found inside the Microsoft Programs could be a perfect arrangement.

Reminder Devices:

Understudies with social incapacities will in general be effectively occupied, and their brain may meander during exercises. An update gadget, for example, a vibrating watch may be a decent method to stand out enough to be noticed back.

Voice Recognition Software:

Numerous PCs or tablets have voice acknowledgment programming incorporated with their stage. On the off chance that an understudy battles with the Physical demonstration of composing or interpreting their considerations onto paper, educators may need to consider enabling them to utilize this product.

Talk Light:

This gives teachers an unmistakable method to acknowledge when volumes are arriving at unsuitable levels for touchy understudies. By counteracting this circumstance, you may most likely avoid a portion of the negative practices.

Technology for Multiple Disabilities: (Adaptive Equipment to Promote Literacy)

Get familiar with choices for expanding openness for understudies with different handicaps. Understudies with different incapacities have one of a kind and extreme instructive difficulties. How about we take a gander at how assistive innovation can enable them to increase better access in the homeroom.

Intelli Tools:

Fuses media demonstrating, liveliness, and sound-related help to help understudies to create testing ideas.

Intellikeys:

It's offered a programmable console that permits understudies who can't utilize the conventional console and mouse to create education aptitudes through pictures and content on a PC.

Clicker5:

Is a composition bolster instrument that empowers understudy to compose sentences by choosing words, expressions and pictures. You can even hear words verbally expressed by reasonable programming discourse before you compose; and hear finished sentences spoken back to you.

Smart Boards:

Shrewd Boards, intelligent white sheets, are an introduction framework comprising of a whiteboard, PC, projector and devices. These incorporate free web assets, monetarily accessible programming and elective access gadgets for both a console and a mouse, and so forth.

ICTs for E-Learning:

Is a social development whose objective is to part of the arrangement, a term used to depict the way that the world can be isolated into individuals who do and individuals who don't approach and the capacity to utilize present day data innovation (IT). There are so many devices are useful for E-learning. For example:

Intel Reader:

It is a text-to-speech mobile device that reads printed text aloud. Student may make pauses and listen to the already read text again as the words are highlighted as soon as read.

Kurzweil 3000:

It's useful for literal difficulties. Like spell checker, magnification etc.

Jouse 3:

It's useful for controlling any device using your mouth, cheek, tongue, chin etc.

Ginger:

Students with dyslexia and other writing disorders would appreciate Ginger. It is a quality grammar checker.

Ghotit:

It is useful for those children, who challenges writing problems.

Math Talk:

It is an integrated braille translator.

Smart Nav 4:

A mouse for pc. When you turn your head, the device follows your motions and places the mouse pointer where you wish.

Braille Note Apex:

Is a kind of a pc for blind people. It does not have an LCD display, but there is a Braille display with raised buttons for readers to feel them.

Benefits of ICT use in Education for people with SEN:

According to the research of British Educational Communications and Technology Agency (BECTA, 2003), ICT usage in schools to support students with SEN can enable learners to communicate, participate in lessons, and learn more effectively. Key evidence is outlined below:

General ICT benefits:

- Enables greater learner autonomy;
- Unlocks hidden potential for those with communication difficulties;
- Enables students to demonstrate achievement in ways which might not be possible with traditional methods;
- Enables tasks to be tailored to suit individual skills and abilities.

ICT benefits for students:

- Computers can improve independent access for students to education;
- Students with special educational needs are able to accomplish tasks working at their own pace;
- Visually impaired children using the internet can access information alongside their sighted peers;
- Students with profound and multiple learning difficulties can communicate more easily;
- Students using voice communication aids gain confidence and social credibility at school and in their communities;
- Increased ICT confidence amongst students motivates them to use the internet at home for schoolwork and leisure interests.

ICT benefits for others:

- Reduces isolation for teachers working in special educational needs by enabling them to communicate electronically with colleagues;
- Supports reflection on professional practice via online communication;
- Improved skills for staff and a greater understanding of access technology used by students;
- Enhances professional development and the effectiveness of the use of ICTs with students through collaboration with peers;
- Use of voice communication aids encourages parents and cares to have higher expectations of children's sociability and potential level of participation, etc.

CONCLUSION:

In conclusion, we must stress that there exists a considerable potential in the educational use of ICTs alongside with many challenges and dangers. New technologies can provide the means to explore new forms of learning that break the traditional hierarchies of educational systems and develop genuine alternatives to rigid, passive approaches to learning of people with SEN. When properly chosen, assistive technology can benefit students with multiple disabilities tremendously. Although there are thousands of devices available. It can be a daunting task to figure out which device works best for each unique student. The advanced technology is something that has the potential to be underutilized if not researched and implemented appropriately and finally, special students will be able to adapt to their workplace and various fields through the use of different technologies.

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