ICTs In Special Education: A Review

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ABSTRACT

Recent development in special education includes The use of Information and Communication Technologies (ICTs) to help students during their lifetime. ICT is now Also recognized as a tool which ensures access to knowledge And learning resources. In this paper we present an over- View of the most representative studies of the last decade (2003-2010) which deal with the two important things in the Field of special education, diagnosis and intervention. And another side we examined how to utilized of ICT tools for special Child education. One Important advantage of these tools is that they can be Employed by teachers and parents as well, to adapt education to the needs and abilities of pupils. The studies chosen Will be classified according to the areas of needs they serve.

Keywords: ICT, special education, sensory and physical impairments, learning Difficulties, assessment, intervention**.**

INTRODUCTION :

ICT has risen in importance in recent years and is now a part of practically every aspect of contemporary life. However, from the standpoint of inclusion, school is the place where every student should have an equal opportunity to succeed academically. The development of new technology has led to changes at all societal levels and had a significant impact on the programmes implemented in schools, particularly those that deal with the inclusion and education of people with disabilities. Some sources claim that Jim Domsic of Michigan first used the term "information technology" in November 1981. ICT stands for INFROMATION, COMMUNICATION, and TECHNOLOGY combined. ICT can be defined as "a combination of Technological tools and resources that are used to manipulate and communicate the Information" from these three words. Technical tools in this context refer to electronic and digital equipment like computers, the Internet, and broadcasting technologies, etc. Although there isn't a single, universally agreed-upon definition for this term, ICTs that support adults and children with disabilities are sometimes referred to as assistive technology (AT). ICTs are bringing about sweeping changes in society. They have an impact on every element of life. Schools are starting to notice the effects more and more. Schools are being forced to adapt to this technological advancement as a result of ICTs' increased ability to tailor learning and instruction to individual requirements for both students and teachers. According to Tinio (2002), ICTs have the ability to increase access to education in underdeveloped nations while also enhancing its relevance and quality. Information and communication technologies (ICTs) are a broad category of technologies that allow people to access and manipulate information. ICTs have been extensively investigated in a variety of sectors and are also a topic of study in and

of themselves.The use of technology in education is one of the many fields where there is growing evidence. Since the beginning of the 1970s, when educators first began to believe that ICTs could help students in formal education, the impact of ICT on education has been examined. ICT is viewed as a tool for bridging the divide between various groups of individuals, including those with special educational needs. ICTs and assistive technology more generally enable persons with special educational needs to live more satisfied lives, according to a growing body of research.

The practise of educating kids in a way that includes accommodations that address their unique characteristics, disabilities, and special needs is known as special education. It is also known as special-needs education, aided education, exceptional education, and special-needs education. This technique should ideally include the individually planned and meticulously observed arrangement of instructional strategies, modified tools and resources, and accessible environments. 'Special Educational Needs' is a catch-all phrase for all kinds of challenges that may interfere with learning. However, due to variances in culture, language, and ethnicity, different terminology have been recorded among nations. In terms of all specific educational needs Furthermore, there are variations in the approaches to the study. A person may have requirements from a medical, educational, or psychological perspective, according to some models. The following category was chosen for our scoping investigation based on national and international publications, research findings, and other factors. According to the 2001 SEN Code Of Practise, "the areas of needs" are:

• Communication Interaction

• Sensory and/or Physical, Cognition and Learning

• Behaviour

• Emotional and Social Development

Students with disabilities such as learning disabilities (like dyslexia), communication disorders, emotional and behavioral disorders (like ADHD), physical disabilities (like osteogenesis imperfecta, cerebral palsy, muscular dystrophy, spina bifida, and Friedreich's ataxia), and developmental disabilities (like autistic spectrum disorders, including autism and Asperger syndrome and intellectual disabilities) are the focus of special education, which aims to provide accommodations for education. Additional educational services including new teaching methods, the use of technology, a specially adapted teaching space, a resource room, or a separate classroom are likely to be beneficial for students with these types of disabilities.Aiding disabled children in learning is the main goal of special education. However, it doesn't entail keeping them in a specialised classroom all day. In fact, special education students are required by federal law to spend as much time as possible in regular classes. The least restricted environment, or LRE, is what this is. One student's services and supports may be quite different from another students in a variety of ways. Everything revolves around the particular child and providing them with the tools they require to advance in their academics. Some students might, for instance, spend the majority of the day in a general education class. Others might only work with an expert for an hour or two in a resource room. Others might have to enrol in a different school that focuses on instructing students with learning difficulties.Several concerns, including assistive or enabling technology, Internet applications, augmentative communication systems, and adaptive devices are dealt with by the integration of ICTs in special education. This essay will concentrate on some of the most notable research that introduce software programmes for diagnostic and international purposes of particular problems. Most of the time, these procedures are difficult, demand a lot of work, attention, and patience, and most importantly, call for people who are qualified and responsible. In the past ten years, much of the research on learning with ICTs has focused on various diagnostic and intervention tools that may be utilised by teachers, parents, and special educators in addition to professionals like doctors.

OBJECTIVES OF THE STUDY:

The following objective are :-

1. To understand the intervention of ICT on physical impairment and learning difficulty.

2. To know about the use of ICT tools for Special child in Present Era.

METHODOLOGY OF THE STUDY:

This paper is based on descriptive and analytical in nature. In this paper an attempt has been taken to analyse the ICTs in special education. The methodology consists of studying, discussion and extortion from Article, Journal, Books, Thesis, Website etc. This study is purely from secondary sources according to the needs.

LIMITATION OF THE STUDY:

Although the investigator tried to precede this study to the best of his effort Sincerely but there are certain limitations as the study was conducted within the Restricted scope and facilities. The achievement of different subjects could be assessed to get more specific Results; it was not possible due to short time.

ANALYSIS OF THE OBJECTIVES:

In order for these applications to be presented we created a framework which Consists of two main categories. The first one includes diagnostic and intervention Tools regarding people with physical impairments & learning difficulty and other is use of ICT tools for special child.

* ❖ ☐ **Physical Impairment:** Students with physical and sensory impairments have varying demands and capacities. For this particular category of learners, the usage of assistive technologies like touch screens, trackballs, joysticks, keyboards, and mouse substitutes is frequently necessary. It is best to talk before implementing any changes to practise in order for an ICT intervention tool to be effective.

a. **Visually Impaired Learners: -** The World Health Organisation estimates that there are 314 million blind people in the world. People with visual impairments are adopting technology to obtain information in greater numbers. Many ICTs have been developed to aid visually impaired students in their daily lives and the learning process.

For newly blind users who struggle with Braille or print, Fujiyoshi et al. (2010) devised a testing system using a digital audio player and document structure diagrams. They have the option to take The National Centre Test to be admitted to universities thanks to the system. The findings of the audio tests were almost identical to those of the braille and regular print formats, according to this study.

b. **Deaf and Hearing Impaired Learners:-** A portion of the population with special educational requirements is also affected by hearing issues.The signs of hearing loss can vary and sometimes develop gradually, making them imperceptible to students. The discipline of computer-based audiometry has been the subject of growing research. Due to their equal access to information and educational resources, students with hearing impairments need ICT intervention and support more than ever.

The Speech Perception Assessment and Training System (SPATS) was created by Miller et al. in 2008. The SPATS application is made to enhance one's understanding of typical, everyday speech. The SPATS system teaches English phonetics and the relationship between production and perception while also implicitly training users' attentional concentration.

c. **Learners with Motor Impairments:-**Many studies on the use of ICT have focused on providing opportunities for children with physical limitations to participate in classroom or home settings. It is frequently necessary for this set of learners to use assistive devices including touch screens, tracker balls, joysticks, keyboards, and mouse substitutes in order to access utility software. The talents and needs of students with motor difficulties vary. ICT may be a crucial instrument for inclusion in the classroom. It is always preferable to consider any practise changes before putting them into place in order for an ICT intervention tool to be effective.

'EyeDraw' Software was introduced by Hornof and Cavender in 2005. With the use of this programme and an eye tracking gadget, people with severe motor disabilities may draw with their eyes. The effectiveness of this method has been evaluated on both disabled and non-disabled children and young people. The programme, however, could be challenging to use at first. EyeDraw becomes easier with practise if young learners receive a steady caregiver's attention at the beginning. Based on the observations and recommendations of the students, EyeDraw Version one was expanded into Version two.

❖ **Learning difficulties:**The phrase "learning difficulties" refers to a broad spectrum of conditions, including Down syndrome, ADHD, and dyslexia.People of all ages can experience learning issues, but young children who are beginning to read and write are particularly troubled by them.a few are covered below—

a. **Learners with Autistic Spectrum Disorders:-**Autistic Spectrum Disorders (ASD) are a subset of the term "Developmental Disorders." ASD is a collection of issues with development that impact social and communication abilities.

Ozonoff et al. (2004) created the Cambridge Neuropsychological Test Automated Battery (CANTAB), a computer-administered battery of neuropsychological tests designed to investigate specific aspects of cognition. These tests look at the integrity of frontal functions because various research suggest that the frontal Cortex is involved in autism. This method was evaluated on 79 participants with autism and 70 typical controls, and the results showed that the autism group struggled with planning efficiency and extradimensional shifting when compared to the controls. Based on the findings of this investigation, they concluded that autism involves the frontal cortex.

Vera et al. (2007) discussed the use of 'Real Time' visual applications as Intervention tools in the educational process for adults with learning disabilities.Their primary features are that they employ 3D visuals, that the user simply needs a computer (with a screen, keyboard, mouse, and joystick), and that they can readily interact with the tool.

b. **Learners with Reading-Writing Difficulties:-**Starcic et al., 2010 discuss the findings of the use of SEVERI, an e-learning environment for students with reading, writing, and perception impairments. It has resources including advice messages, a learning diary, a calendar, a library, tasks, materials, and group-specific discussions. The SEVERI initiative was tailored to the educational environments of five countries. This study backs up the idea that SEVERI aids students with their learning while also assisting teachers with their lesson preparation and organisation.

c. **Dyslexic Learners:-** One of the most prevalent and well-studied types of developmental disorders is dyslexia, or difficulty reading, spelling, and writing. The Code of Practise emphasises the importance of evidence-based diagnosis and provides a framework for all professionals to examine and identify students' needs using assessment instruments.

Gregor et al., (2003) created 'Seeword,' a word processing environment that helps dyslexic computer users produce and read text. The first prototype-Type was created in Microsoft Wordtm version 7 using 'word basic,' the built-in macro language. The programme was tested on dyslexic school kids aged 14-16 years, and the trial results showed that by using 'Seeword,' they were able to read standard texts from a screen more accurately.

d. **Learners with Difficulties in Memory:-** Professionals have been conducting extensive research on the memory skills of children with exceptional difficulties in recent years. There is evidence that poor memory skills characterise children who fail to progress normally in several areas of need.Alloway presented the Automated Working Memory Assessment (AWMA), a computerised tool, in 2007.

Van Molen et al. (2010) developed 'Odd Yellow' training, a computer-based Working memory aid for teenagers with mild to borderline intellectual disabilities. A sequence of three similar-looking images is shown on the computer screen in the 'Odd Yellow' approach. One of the three figures, known as the 'odd-one-out,' is slightly different, while the other two are identical.

e. **Attention Deficit Hyperactivity Disorder (ADHD) and Attention Deficit Disorder (ADD)Learners**:- Learners with ADHD or ADD are typically distinguished by a collection of behavioural issues (abnormal levels of inattention, hyperactivity, or their combination) that are remarkably constant across time.Diagnosis and intervention research has improved the methods and various tools that are presently used. Bolfer et al. (2010) made an attempt to A visual voluntary Attention psychophysical test (VVAPT) was used to investigate reaction time in a computer-based assessment test in individuals with ADHD and normal controls. This approach was tested on boys aged 9-12 with a DSM-IV ADHD diagnosis, no comorbidities, an IQ of 89, and who had never been treated with methylphenidate. The control group used the same gender, age, and IQ requirements. The findings revealed that the ADHD group had a faster reaction time than the control group.

Use of various types of ICT tool for special child education :-

Whether it's a class assignment, a time-sensitive project for a company, or annual tax filings, technology has always been meant to make the user's responsibilities easier to do. The need for technological aid in education is even larger for students with developmental and learning difficulties.

Special education is designed for pupils who have a variety of disabilities, such as blindness, attention deficit/hyperactivity disorder (ADHD), Down syndrome, motor impairments, and autism.ICTs in special education can assist these disabled kids in keeping up with their peers as much as possible and preparing them for future success.

a. **Virtual Reality:** Students with autism may benefit from virtual reality surroundings when dealing with crowds in crowded places like cafeterias, school assemblies, and hallways. These kids can progressively acquire accustomed to these circumstances by experiencing them in a safe virtual environment, which will better equip them to react coolly and correctly in real-life situations. Students with motor difficulties can likewise operate objects in virtual reality that they are unable to in the real world.

b. **Tablets/Handheld Touchscreen Computers:** These gadgets are helpful for reading, watching videos, drawing, and visual learning. Through text-to-speech apps, they can aid those with reading challenges in understanding written material and pupils with motor impairments in improving their coordination. Furthermore, adopting these technologies for learning has a positive impact on autistic students. There are many apps made expressly for students with autism.

c. **NOVA Chat:** NOVA chat is a specialised voice generation device that, in conjunction with text-to-speech programmes, assists children with reading disabilities.

d. **Read 180:** The students who use this software have difficulties reading. It enables users to create learning programmes that are unique to each student, setting fluency targets for them and monitoring their development as they work through the programme.

e. **DynaVox xPress:** DynaVox xPress, a handheld augmentative communication device, assists pupils in developing increased reading fluency, natural speech patterns, and pronunciation. The device expresses language and expands the user's vocabulary by combining text and visuals.

f. **MangoMon:** This programme provides pupils with personalised attention and tailored education plans through interactive reading and maths classes. Furthermore, it allows students' parents to monitor their child's learning progress.

FINDINGS OF THE STUDY:

Based on the discussion thus far, we may conclude that ICT plays a significant role in special child education. This study focuses on special children with impairments who require specialised care and their interactions with information and communication technology (ICT).The study's findings indicate that there is a tremendous demand for education in the field of ICT, and that a lack of time and financial resources has an impact on schoolwork. Many ICT tools have been produced in comparison to the past, and when utilised properly, the tools can benefit the education of exceptional children.

CONCLUSION:

It has been argued that information and communication technology can act as a kind cognitive prosthesis to overcome or compensate for differences among learners, making it a fantastic equaliser for many children with special needs. This concept has significant implications for learners with disabilities and special educational needs because it argues that technology can help create conditions for equal learning opportunities and equal access to the curriculum for all. Given the variety of manifestations of special educational needs, the goal of this study was to investigate the most representative studies from the last decade that used ICT to contribute to independent child learning and curriculum.The use of ICT has also played a significant role in developing the knowledge and skills of school personnel, therapists, special educators, and others.Diagnostic tools enable them to use various ICT tactics, which may lead to a better understanding of children's learning peculiarities. The use of technology in special education helps to break down obstacles and give persons with disabilities with access to the most relevant educational programmes. Students with special needs can access current education and knowledge online thanks to well-designed software and hardware. For the effective delivery of technological services, changes must be done in the areas of equity, ethnicity, culture, and language. Understanding each child's rights and requirements, as well as delivering a high-quality education.

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