

Enabling Role of Technology for Women and Children with Special Needs

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Abstract - Disability of women and children is an important health problem, especially in developing countries such as India. Disabled women and children face many daily life problems in their lives, such as insecurity in public places, discrimination by people, emotional challenges, etc. Moreover, if a disabled child is female, she has to face the double-edged sword throughout her lifetime and the challenges become multi-fold in comparison to the people of the mainstream and have to undergo many harsh situations. In this modern era, technology is a blessing to the disabled people in many ways. This paper elaborates the role of technology and scientific innovations. That is helpful for special need women and children, such as, computer technology, learning, speech, hearing, technological devices cooking, gadgets, and applications that are helpful for health, safety, and execution of her routine tasks, e.g. shopping, etc. Further, this paper also tries to highlight the rehabilitation measures and that needs to be targeted according to the needs of the disabled. This paper emphasizes how technology strengthens health care and service delivery to disabled in the society and focuses on some barriers related to the implementation of these technologies with special context to Indian women and children.

keywords - Women, Children, Disability, Enabling, Technology, Assistive.

Introduction

As per Census 2016, in India, out of the 121 Crore population, about 2.68 Crore persons are 'disabled' which is 2.21 percent of the total population (Devendar, Panchanan & Sunitha, 2016). Unfortunately, it is not a fully appreciated fact that 10 percent of the Indian children below 14 years of age have some kind of an impairment or physical disability. Their absolute number is a staggering 30 million, which mandates a responsible and effective role of the society and its government (Devendar, Panchanan & Sunitha, 2016). Some of the common and well-recognized disabilities include deafness, blindness, and impairment of movement, obvious deformities, and mental retardation. However, there are several kinds of disabilities that don't seem to be that obvious from a distance (e.g.). Similarly, the lesser degrees of impairment sometimes is underestimated and causes profound adverse impact upon learning abilities required to lead a productive life (Renu, 2002). For the last few decades, the focus of disability has shifted from individual impairment to social development and skills. Thus, disability may be a complicated phenomenon, reflecting an interaction between parts of a person's body and features of the society in which he or she lives. With this view, persons with disabilities are seen as being restricted in carrying out their routine because of a complex set of interrelating complications pertaining to the person and his environment (Chandrashekar, Kumar, Prashanth & Kasthuri, 2010). These obstacles and challenges faced by disabled persons intensify in developing countries because of the lack of required resources, stigmatization, and discrimination. People may have preconceived notions about the disabled people that these people are lazy and dangerous. This kind of notions has important consequences on how a person comes to see him and lowering his/her own self-esteem (Self-stigmatization) which may worsen their disability (Chandrasekhar, Kumar, Prashanth & Kasthuri, 2010). Consequences of discrimination may increase vulnerability to disabled, magnifying the impact of disability, deprived care, and treatment. Disabled females have to face the double-edged sword throughout her lifetime and the obstacles and challenges become multi-fold in comparison with the people of the mainstream and has to undergo many harsh situations, and are thus subject to a higher risk of death than male children or girls without disabilities (Saikia, Bora, Jasilionis & Shkolnikov, 2016). In this modern era, India is undergoing a technology boom which sets as a blessing for disabled persons. Today, technology has lowered the burden and difficulties of disabled persons in many ways and it is true to say that technology has been a game-changer for persons with disabilities (Myriam, 2017). Assistive technologies developed throughout have built it easier for persons with disabilities to move and interact with the world in new ways that may overcome their difficulties and challenges (Myriam, 2017).

ROLE OF TECHNOLOGY HELPFUL FOR DISABLED CHILDREN

The society at large is often unaware of the potential of children with special needs. In the popular mind, special needs are usually identified with very low expectations. Today, technology has opened many educational doors for children with disabilities. Alternative solutions from the sphere of technology are accommodating physical, sensory, and cognitive impairments in many ways.

Assistive technology for learning reading and writing today has been proved to be very helpful for the special needs children who are suffering from learning disabilities like, Auditory Processing Disorder, Dyslexia, Language Processing Disorder etc. (Laskar, Gupta, Singh, Kumar & Ingle, 2009). Devices such as a reference *library*, *text to speech converters*, *speech recognition software*, *assistant instructor*, etc. (Laskar, Gupta, Singh, Kumar & Ingle, 2009) help disabled person in dealing the classroom

difficulties. Technology is an excellent equalizer for people with disabilities that may prevent full participation in school, work, and also the society. This is often most evident in the case of people with mobility, hearing, or vision impairments, but is also true for people with limitations in cognition and perception. With the advanced technology, an individual unable to speak and express will communicate with the applications of *Spoken Language*. Using a *portable voice synthesizer*, a student can ask and respond to questions in the "regular" classroom, overcoming a physical obstacle that may have forced his placement in a special segregated classroom or would have required a full-time instructional aide or an interpreter to substitute his voice (Rocco & Sopko, 2016). *Sensor controls* enable motor movements of the physically disabled into control mobility devices, such as electric wheelchairs, providing independent movement through the school and community. *Text and graphics enhancement software* and *digitized voice* help to monitor enough to be seen by individuals with vision impairments. For persons with hearing impairments, amplification devices can filter extraneous noise from the background or pick up an FM signal from a microphone on a teacher's lapel (Rocco & Sopko, 2016). *Word processing, editing, spell checking, and grammatical tools* commonly found in high-end software helps students with learning disabilities in regular classrooms. Not inconsequentially, the children often feel better about themselves as active learners. Technology is providing more powerful and efficient tools for teachers who work with children with disabilities. **These tools enable**

1. Teachers to offer new and more effective means of learning while individualizing instruction to the wider spectrum of disabled students' learning needs.
2. Educators are using computers as tools to deliver and facilitate learning beyond drill and practice, to provide environments that accommodate learning, and to ensure enhanced and equitable learning environments for all students.
3. Disabled's access to the World Wide Web, email, and other electronic learning environments is common in many classrooms. In these environments, students around the world can interact in real time via on-screen messaging or video and audio transmissions.
4. All these technological assistance in learning situations, a disability brings disabled at par with cabled in many ways (Rocco & Sopko, 2016). *The deaf comb* is the company that has launched an application that can help deaf and mute people across the country to access famous monuments through their smartphones (Srivedant, 2017). Such scientific and innovative world with the help of technology, a special need person can even enjoy historical sites (Rocco & Sopko, 2016). Screens may serve as a user interface for children with autism, who may find a face-to-face communication challenge. Likewise, *Eye-tracking technology* has been used with children with severe Cerebral Palsy, who are paralyzed, in communication.
5. Some parents of children with disabilities find personal trackers useful as a way of keeping an eye on their child with disabilities while they are out and about by themselves, this gives the child a degree of independence with their safety. The *Be My Eyes* applications, for example, connects persons with visual impairment with another known person: the person with visual loss holds up their phone camera, and the partner describes the surroundings, helping the former to navigate a new place *'Eye Sign'* is a mobile application that helps those who don't know how to sign to communicate in sign language. Such initiatives show how technology can integrate persons with disabilities into the society, overcoming barriers (Laskar, Gupta, Singh, Kumar & Ingle, 2009).

ROLE OF TECHNOLOGY HELPEFUL FOR DISABLED WOMEN

orsening of the age-old discrimination disabled women have always suffered, more severe but harder to fight. Disabled women find themselves up against a double discrimination, as well as various barriers which make accomplishing objectives essential in everyday life very difficult. It is often assumed that women with disabilities find it difficult to marry, have a poorer bargain, perceived as a bigger burden and a liability in the family (and parents and in-laws) They are assumed to be 'asexual'; an assumption which represses their sexual identity. On normal gender dynamics reflect that the families and parents invest more willingly in education, training, and comfortable life for their male members in comparison with females, and when it comes to the disabled population these prejudices and biases intensify (Namrata, 2016). As, a result disabled men with disabilities being perceived better educated and are more likely to be accepted, and married and later go on to become breadwinners of their families though, disabled women may be similar in their disabilities and abilities (Namrata, 2016). Women have to face the double stigma (being female and disabled) are exposed to less challenging and stimulating empowering environments. They are considered to be a bigger curse on family and are usually neglected in their physical, psychological and social upbringing. They are usually not sent to special schools, involved in minimal works, are sexually assaulted, their nutrition, appearance and grooming, etc. personality factors are reduced due to the injustice of society (Namrata, 2016). Women go through a very difficult time adjusting to society as they are easily marginalized from the social circle because of their disabilities. Since not all women are literate enough to question the injustice, it becomes even more difficult to lead a normal life (Goldsmith & Goldsmith, 2005). This social exclusion makes disabled women feel helpless disempowered not just mentally, emotionally, but financially as well. To be able to take care of oneself becomes a necessity and independence becomes an important survival instinct. This reality is especially true of women with disabilities in cultures where the role of wife, mother, and sister is considered to be the basic role of a woman. In twenty years of disability discrimination legislation, the biggest change has been that what was once impossible or unreasonably difficult is now entirely possible - because of technology" these are the lines said by Bela Gour is the Legal Director at Business Disability Forum (Goldsmith & Goldsmith, 2005). Today, technology has provided disabled women's to stand against their social stigma, discriminations and the double burden that they face in the society. There are many user friendly devices and tools that may help women in daily life and technology that could help disabled women's to do things independently such as cooking, mobility, communication, shopping, health applications, safety devices, etc. preparing food becomes difficult because of a disability, assistive technology step in, giving back an individual's or a woman's ability. Cooking devices such as *induction, gas, pivot knife for cutting, pan holder, one touch jar open*, etc. are few cooking technologies that help women who lack coordination, strength and gripping ability in their hands. One of the most common devices is an *enlarged grip*. This is used to increase the diameter of the handle of several commonly used things such as utensils, toothbrushes, combs, etc. (Floyd, 2014). Mobility is one of the very important tasks for an individual without mobility no work can be done, Mobility is an essential requirement for personal independence and social participation. For persons with an ambulatory disability, a lack of mobility creates barriers to the realization of the goals, especially when it comes to disabled women for her physical environment is diverse, at times unpredictable, and environmental barriers are commonly encountered. It is very difficult to perform self-care

activities such as bathing and toileting for a disabled woman. Nobody is willing to help her, even in her own family and this makes her life even worse (Sheryl, 2004). Mobile technology that has made disabled women achieve their goals and made them independent. Low technology, gadgets are often simple and cost-effective solutions that utilize skills to complete tasks, due to their disability, the person does not possess. *Canes* and *walkers* are examples of low technology gadgets that are commonly used to assist and help people whose mobility impairment inhibits their ability to walk normally. A *manual wheelchair*, utilizes an individual's ability to use their hands and arms to propel them forward out of necessity when mobility impairment prevents them from walking. Another type of low tech devices such as head pointers, mouth sticks and typing aids that can be used for everything from helping turns a page of a book, to pressing a button on a remote, to pressing keys on a computer (Sheryl, 2004). The advanced assistive technology of Power wheelchairs is traditionally operated by a joystick and one or more switches which change the function that is being controlled by the joystick. These functions include wheelchair movement, seat tilt, backrest recline, footrest elevation, and seat elevation (Sheryl, 2004). *Power wheelchairs* and *power assist wheelchairs* are considered high tech based on their power and control systems, which manual wheelchairs do not possess. Wheelchair usage can cause difficulty getting in and out of vehicles for long distance transportation. Vans, buses and other public transports can be equipped with *electronic wheelchair lifts* to help disabled people get in and out of these transportation modes successfully. *Hand controls and ECU technology women with a lower mobility impairment can* even drive a four-wheeler (Sheryl, 2004). These high tech devices make lower limb disabled people use transportation for mobility independently. *The environmental control unit (ECU)* is either stand-alone devices that are controlled by scrolling through a menu using a switch to select control options or computer-based devices controlled through voice control that helps in picking up phones, playing music, radio, television etc. (Sheryl, 2004). According to research by Women's Aid, (Rajan, 2016), One in four women experiences domestic violence. For women with a disability, this figure doubles. Be it at the hands of their partner, family, or career, almost one in two disabled women are abused in their lifetime, though some of their experiences fit within traditional definitions of domestic violence and some do not. For a disabled woman, domestic violence can take on complex forms, being physically assaulted and deliberately not assisted to go to the toilet. "A females impairment can be used in the abuse," there are cases where a female wheelchair was removed just as she was about to sit on it, or a hearing aid was thrown to the other side of the room leaving the victim unable to communicate (Rajan, 2016). Technology has been an angel/ savior for women in distress and difficult situations, technological applications such as *Abhaya* and *Raksha* mobile applications is a security application designed especially for women, ensuring their safety by providing various useful features. The user can enable/disable security alert SMS - One click to send an alert without opening the applications, the GPS feature provided for tracking purposes Gupta, (2016) and wearable devices like *Amrita Personal Safety System (APSS)* that will never make a woman feel all alone anywhere anymore. These devices will empower women to trigger communication with family and police when in distress. These devices remain inconspicuous to the offender and yet easily triggerable by the victim with multiple options to ensure stealthy and secure communication with the ability to record conversations, and communicate immediately with the press of a button or using SMS and voice calls to multiple destinations (Amritanandamayi, 2016). The advanced assistive safety device is designed to function even in rural areas where the speed of the communication is very minimal. Also, this device combines many location-aware technologies intelligently, to be able to work in indoor and outdoor environments with minimal power consumption (Amritanandamayi, 2016). With a growing society and government concern for the disabled people, countless intelligent solutions have surfaced. Successful information websites such as Enable Academy and Enabled in designed specifically for the disabled up to browse and get information on assistive products, education, schemes, jobs, and events (Sourav, 2016).

TECHNOLOGY REDEFINES LIVES OF EXTRAORDINARY

Many people with disabilities have contributed to society. These include scientists, actresses, celebrities, singers, world leaders, and many other famous people. There are also millions of people worldwide who may not be famous in the sense society deems famous, but still lives with, battle, and overcome their disabilities every single day of their lives. In this path of losing and winning the life, technology has always been like a best friend that has contributed and redefined the lives of these extraordinary people.

Indian actress and acclaimed classical dancer of the country need no introduction. *Mrs. Sudha Chandran* met with an accident and her leg got infected and there was no alternative left but to amputate her leg. She overcame her disability by getting a prosthetic "*Jaipur Foot*" (Dr. Pramod Karan Sethi the inventor of Jaipur foot) (Pareek, 2014).

Stephen Hawking is a name that is impossible to ignore, Stephen Hawking is a British cosmologist and physicist most famously known for his notable scientific works regarding the theoretical prediction of radiation emission from black holes (Hawking radiation), Penrose–Hawking theorems, the general theory of relativity and quantum mechanics. He has amyotrophic lateral sclerosis (ALS) also referred to as motor neuron disease, the disease involves the death of neurons in a patient's brain. As a result, muscle twitching and a slow deterioration of muscles that leads to difficulty in swallowing lost the ability to speak and eventually breathing (Victor, 2014). Therefore, He uses a number of *devices and gadgets* to give lectures and communicate with people. He uses technology that doesn't just let him talk, but also allows him to do many of other tasks as well, such as, checking email, browsing the Internet, making notes etc., (*Intel*) dedicated team of engineers that is working on improving his communication system even further and enhancing the number of tasks he can perform (Ashish, 2016).

President Franklin D. Roosevelt contracted polio in 39, losing the ability to walk on his own. He is the only person elected president of the United States more than twice—in fact, he was elected four times, and he did it all from a *wheelchair* he designed himself. He was president when the Japanese attacked Pearl Harbour and Hitler declared war on America, which prompted America's entry into World War II, and he helped lead the Allied forces to victory (Amsvans, 2013).

Helen Adams Keller was an American author, lecturer, and activist. Keller was the first deaf and blind person who completed her graduation. At 19 months of age that she came down with an illness called "scarlet fever/meningitis". Besides, this hard fact, Keller went on to become the world-famous speaker and author. She is also remembered as an advocate for people with disabilities. Keller used the *Braille system* to read and write (Ramesh, 2016).

Louis Braille was born on January 4, 1809, in Coupvray, France. At the age of three, **Louis** injured his eye on a sharp tool. Despite the best care available at the time, infection sets in and soon spread to the other eye, leaving him completely blind. None other than **Louis Braille**, work changed the world of reading and writing, forever for the blind people (Ramesh, 2016).

Thomas Alva Edison the great inventor of electric light (the bulb) and power utilities developed hearing problems at an early age. Around the age of twelve Edison lost all his hearing. Edison said that his “deafness was actually an asset, it allowed him to work with less distraction and to sleep deeply, undisturbed by outside sounds” (Ramesh, 2016).

Tom Cruise The Hollywood heartthrob star, who was severely dyslexic, has been nominated and won for three Academy Awards and Golden Globe Awards. Since school times he used Study Technology to read and write.

Likewise, **Abhishek Bachan** the famous Bollywood star suffered from Dyslexia in his childhood and attended a special school.

Prabha Shah is one of the great modern Indian painters. Her loss of hearing has been offset by the increase in her power of imagination. **Mr. Akashdeep Arora** Deputy Commissioner, Rajasthan Council of Elementary Education, Jaipur despite the fact that he lost vision; he did not give up the spirit of his life and defied all conceivable odds.

These famous people all have something in common, besides, determination, persistence, resilience, optimism, never tiring spirit, hard work and last but not the least, creative and appropriate use of technology to overcome their barriers. These personalities have imprinted their name in the world permanently.

CHALLENGES IN THE USE OF ASSISTIVE TECHNOLOGY

Technologies constitute a broad and varied array of devices, gadgets, applications that are directed toward a much diverse population of device users. Developing assistive technology faces some challenges and obstacles in the various ways:

It is a great concern how many universities, government and private firms are undertaking projects, initiating steps for researching in areas of disabilities. They need to come up and take sole representatives.

Lack of consumer awareness of technologies and product affordability is also an issue. Buying helpful aids for disabled people is perceived as a waste of money for some families (Field, Jette & America, 2003).

Disabled people also have trouble accepting their situation they may see some assistive technologies as stigmatizing (Field, Jette & America, 2003).

Effective technologies are found to have a weak point in the terms of maintaining, repairing, and replacing when necessary.

Expert assistance while buying a product is often required, especially for complex and expensive equipment, but dealers of these technical products lack knowledge. They are just interested in selling the products (Field, Jette & America, 2003).

Advertising and popularity of assistive technology are not done like, of other normal products and applications. Media and society, both lack in taking these kinds of initiatives for disabled people.

Conflict of Interest: The authors declare no conflict of interests.

Source of funding: Self

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