

Information and Communication Technologies and the Visually Impaired Students – A Discussion

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Article History

Received: 12.10.2018

Accepted: 25.10.2018

Published: 30.10.2018



Abstract: The last decade of the twentieth century projected the Information and Communication Technologies (ICTs) to be the solution for the existing developmental issues and considerations. The next decade witnessed the success stories, the failures and the challenges that had evolved while taking the technologies to the indigenous communities. Now, the researches and the policies both in the developed and developing nations point how the Information and Communication Technologies could compliment and supplement to the various nuances of existing situations. One such is the application of Information and Communication Technologies in the education sector. Many studies have proved the efficacy of Information and Communication Technologies in education and the same has extended and proved right in its role among the differently-abled students. This paper discusses the potential of Information and Communication Technologies in complementing to the learning process of differently abled learners with detailed review on visually impaired students.

Keywords: Information and Communication Technologies; Education; Differently-abled; Visually-impaired; Accessibility; Effectiveness.

INTRODUCTION

Evolution of Education

The prehistoric era has seen education to be closely associated with subsistence. Both the parents have taken their roles to teach their children with life skills from plantation to hunting.

The acquired skills have had enabled them to meet the basic needs of life. There was not an organized system of teaching and learning, eventually, there would not be a disparity among the people. In 2000 BC, Mesopotamia introduced first of the school system in the entire world. The students have been taught more than life skills. Unfortunately, people all sectors of life could not avail the benefits of education due to various socio-political and economic reasons [1]. The current century has been witnessing increased number of discussions and policies to achieve inclusive education globally.

ICT for Education

The Information and Communication Technologies (ICTs) are believed to play an important role in the universal implication of inclusive education. ICTs have taken the front seat in addressing the today's concern surrounding globalization and competitiveness in all frontiers and the field of education is no exception in that scenario. Governments allocate millions for the development of Information and Communication Technologies in par with the development they promise. Both the developed and developing nations have

adopted ICT in their learning environment and many researchers have proved that Information and Communication Technologies play a vital role and is also very effective than any other teaching technique as its highly learner centric. ICTs promise self learning, to shift pedagogies, to redesign curriculum and assessment tools [2].

In the higher education sector, Information and Communication Technologies increases and promote equal opportunities to achieve education and information. ICTs provide the primary resources for today's learners and enable anyone with the access to ICT tools to obtain degree as well as acquire knowledge [3]. Information and Communication Technologies are the change agents of conventional learning systems. They are indispensable in the current scenario to increase the literacy of any region. Many developing nations including India have experienced the potential of Information and Communication Technologies in educating the rural masses. The nations gauged the effects in a shorter period comparing to any other strategy in all parts of the world.

Scholars claim that if technology is integrated into the traditional pedagogy methods, the outcome would be more promising for the future generation and the prospects they project would never be compared with the past. Students have started considering the information and communication technologies as any other educational and learning tools realizing the prospective scope the technology promises. They could not perceive it as a matter of choice as the technology alone seems to be the important requirement for participating in the technological society. ICT does not stand alone in the teaching and learning process, but incorporate “training, information, debate” and breaks the challenges of traditional classroom teaching [4].

Many researchers have proved that the incorporation of information and communication technologies in the education has improved the quality and outcome of the students beyond measure. ICTs promise an ample space for ‘knowledge acquisition, knowledge incubation, knowledge amplification and knowledge dissemination’. The approach and attitude of the society towards the information and communication technologies decide the course of its impact on the education system [5]. Using ICTs in education and training has become a top priority for many of the developing countries in the last decade. It is also revealed that the institutions which are either in the initial phase of adopting or have decided not to adopt information and communication technologies at all in their educational framework are trailing behind in the growth scenario especially in terms of efficiency and placements of the students [6]. At present, the Information and Communication Technologies have become irresistible to achieve higher learning goals with innumerable ventures to access the resources and information

ICT and Disability

Researches and experiments around the world have demonstrated that the Information and Communication Technologies have the potential to progress the lives of the people with disabilities. United Nations’ Educational, Scientific and Cultural Organization (UNESCO) realized and is working towards capacitating the people with disabilities to gain information and knowledge which in turn would affect their lives positively. UNESCO has realized that the access to Information and Communication Technologies can complement to acquire information and knowledge than any other mode of achieving development. Hence UNESCO encourages all the countries to ‘develop innovative solutions, build capacities, mobilize partners and design appropriate policy frameworks and tools’ to enable the persons with disabilities to access Information and Communication Technologies [7].

The disabled community with access to information and communication technologies is

relatively freed from ‘physical barriers’ and achieved social & economical integration [8]. Persons with disabilities are often discriminated and socially excluded from the mainstream. They lack access to carry out the tasks of their day to day requirements and are deprived of skills to make themselves financially stable. The information and communication technologies bridge the gap and enable the persons with disabilities to venture and expose themselves to achieve greater heights than ever in the past.

Information and Communication Technologies have become the powerful tool towards inclusive education. The digitalized texts and the other relevant content enable the persons with disabilities to access them in their own space and time. The technologies allow the students with disability to actively participate in the teaching-learning process overcoming the hurdles of physical and environmental conditions. The ICTs have given hope for the persons with disabilities to go for higher education and the rate is steadily increasing [9]. Many countries have come forward to integrate technology to facilitate a better learning environment for the persons with disabilities. There are various types of disabilities – visual impairment, hearing impairment, physical/ mobility impairment, mental health conditions, intellectual disability and autism spectrum disorder. Among these various categories, physical disability, hearing impairment and visual impairment are found common. For more than three decades, persons with the mentioned disabilities are incorporated into the mainstream educational system with or without prior schooling in their respective special schools. Hence this article is aimed to discuss the potential of information and communication technologies in supporting the persons with visual disabilities to accomplish greater heights in education by analyzing various studies in different contexts.

ICT and Visually Impaired

The discussion on the potential of ICT in providing equal opportunities to all the people lead to the inclusion of visually impaired in the access of information and communication technologies. It is not a utopian experience anymore that the visually impaired could not access the technology as a normal sighted does. The softwares and applications developers have made the access easier by providing many open source softwares and applications which enable the visually impaired to read any text or a webpage like anyone else. Reading a pictorial representation has been an issue for the learners. But the research and innovations in artificial intelligence allow the visually impaired to visualize what is in front of them and even the expressions and responsiveness of the people whom they are in dialogue with.

The access to Information and Communication Technologies by the visually impaired students has enabled them to achieve their dreams like never before.

There are evidences that the ICTs have promoted 'innovative, independent, participatory and collaborative learning' among the visually impaired students [10]. The ICTs have changed the pattern of approaching learning resources, teaching and learning itself. Most of the higher educational institutions throughout the world have provided exclusive facilities for the visually impaired students with computer, connectivity and access to millions of e-resources for learning. The development and innovations in the information and communication technologies have facilitated the visually impaired to achieve milestones in learning like they could not do it in the earlier decades.

As it is evident that, the level of visual impairment is different in every individual, the technology meets the needs of different accessibility issues. The Italian law in force has depicted a model to establish the accessibility and usability features. The technology helps the visually impaired students to use ICT in their learning process in an effective, efficient and satisfying manner [11]. A study on developing ICT skills of the visually impaired students clearly depict that if the students have proper assistance to access the technologies, it would leave them with adequate skills to compete in the industry [12].

Information and Communication Technologies help the visually impaired learners to compete with their normal sighted peers with much ease. All the reading softwares and recording devices have eased up their process of learning. This gives them the confidence to be in a normal environment. They promise equal opportunities to the visually impaired learners. As the visually impaired learners access the assistive learning technologies, the ICTs have become the facilitator for the students by making the learning process effective, interesting and impressive [13].

As the prospects increase, so do the challenges arise. Many of the visual disabled students do not have material access to the computer or laptop. The disabled students neither have assistance to access its full benefits nor the fundamental training to use the technology. Though the usage of ICT has recently increased, the lack of ICT skills and training still exists [12]. Both the visually impaired learners and their teachers have to learn along side to make use of the best of information and communication technologies [13].

While comparing to a normal sighted person, the visually impaired find it more difficult to access the technology physically. The learners expect that they would be assisted by the teachers to learn accessing the technology but the truth is that majority of the teaching fraternity are not aware of the availability of assistive technologies for the learners [12].

Studies clearly reflect that neither the teacher nor the technology can stand alone while assisting the

visually impaired students. They have to complement to each other to bridge the gap between the visually impaired students and the sighted students [14].

Propositions for Effective Usage of ICT

It is undeniably proved that Information and Communication Technologies have greater potential to act as a catalyst to achieve inclusiveness in education. As most of the nations have stepped on to formulate pro-technology policies to survive in the digital era, the implication of ICT tools in the education sector is unquestionable. Human resource is considered to be a threat to attain inclusive education. ICTs serve the role of facilitator and enable all the excluded communities to learn irrespective of time and space. There are evidences that students with disabilities often find the ICT tools supplementing to what a teacher does.

Our country has been following the same educational system for more than half a century. Though there were changes in the curriculum, it is true that our syllabi do not meet the industry standards. The market has emphasized how it is totally dependent on the technology. So the emphasis now falls on the academicians to design a new system by incorporating technology as a major source. If the system adopts technology, the teachers in no way could not be unaware of the assistive technologies available for the disabled students.

Finally, India is a country with diverse economic background. Not all the students especially the visually impaired are affordable to own technological devices. Government institutions do lack the infrastructure to facilitate the information and communication technologies to its learners. Hence it has become the responsibility of the Government to draft policies to improve the technological infrastructure in the higher education institutions and also to allocate financial resources to train the teachers about the accessibility and usability of assistive technologies which are available for the disabled community. The usability could not be measured from the end of its users alone, it is highly multidirectional and in the case of disabled learners, it has to involve all the multiple stakeholders – government, academicians, institutions and the learners.

REFERENCES

1. Roeder PL, Emslie R. Olivine-liquid equilibrium. *Contributions to mineralogy and petrology*. 1970 Dec 1;29(4):275-89.
2. Meenakshi. Importance of ICT in Education. *Journal of Research & Method in Education*, 2013; 1 (4), 3 - 8.
3. Desai S. Role of Information Communication Technologies in Education. *Computing for Nation Development*. New Delhi: Bharati Vidyapeeth's Institute of Computer Applications and Management, 2010.

4. Hernandez RM. (2017). Impact of ICT on Education: Prospects and Challenges. *Propósitos y Representaciones*, 2017; 5 (1), 338-347.
5. Olaore IB. The Impacts of ICT on Education in Nigeria. *Developing Country Studies*, 2014; 4 (23), 154-156.
6. Aristovnik A. The Impact of Ict on Educational Performance And Its Efficiency In Selected Eu And Oecd Countries: A Non-Parametric Analysis. *The Turkish Online Journal of Educational Technology*, 2012; 11 (3), 144-152.
7. Renblad K. *Empowerment: A question about democracy and ethics in everyday life: ICT and empowering relationship as support for persons with intellectual disabilities* (Doctoral dissertation, Stockholm Institute of Education Press (HLS förl.), 2003.
8. Khetarpal A. Information and Communication Technology (ICT) and Disability. Review of Market Integration, 2015.
9. Martinez RS. Disability and the Use of ICT in Education: Do students with Special Needs Recognise the Support Given by Teachers When using Technology. *Problems of Education in the 21st Century*, 2011; 149-159.
10. Eligi I, Mwantimwa K. ICT accessibility and usability to support learning of visually-impaired students in Tanzania. *International Journal of Education and Development using ICT*. 2017 Aug 30;13(2).
11. Bocconi S, Dini S, Ferlino L, Martinoli C, Ott M. ICT educational tools and visually impaired students: different answers to different accessibility needs. In *International Conference on Universal Access in Human-Computer Interaction 2007* Jul 22 (pp. 491-500). Springer, Berlin, Heidelberg.
12. Şimşek Ö, Altun E, Ateş A. Developing ICT skills of visually impaired learners. *Procedia-Social and Behavioral Sciences*. 2010 Jan 1;2(2):4655-61.
13. Rony MR. *Information Communication Technology to support and include Blind students in a school for all An Interview study of teachers and students' experiences with inclusion and ICT support to blind students* (Master's thesis); 2017.
14. Carriere V. ICT and cooperation in learning/teaching in visually handicapped situation. *Procedia-Social and Behavioral Sciences*. 2012 Jan 1;46:701-5.