

## **Issues, Challenges and Support in Accessing Distance Education Technologies for Individuals with Disabilities**

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### **Abstract**

The main objective of the study was to collect the information or data on issues, problems, challenges and support in accessing technologies for individual with disabilities. The second objective of the study was about the delivery of content, not approachable educational technology that is open source in open and distance education and instructional design. A survey was conducted in Allama Iqbal Open University (AIU) and formal universities where the disabled students were enrolled. The researcher developed a questionnaire to collect the information and then it was verified by the interviews. Questions in both tools were based on issues, problems, challenges and support in accessing educational technologies. The findings from the data of the formal universities were not encouraging; mostly reported that they are facing problems and having issues in accessing the educational technologies. Though they have problems and issues in distance education too but much support was available for them in distance education. The recommendations of study were for both formal and distance education institutions that they must consult or consider problems and issues of students with special needs in selecting educational technologies as well developing content for the subjects and programs.

**Keywords:** Special Need Students, Educational technologies, Accessibility and Usability

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## **Introduction**

Machines that process information and communication the results of that processing have been with us for a long time. However, there have been substantial gaps in progress towards realization of the practical potential of these 'thinking' machines with respect to people with special needs. The first mechanical computers were developed by Charles Babbage in 1835, he called one the 'difference engine' and the other the 'analytical engine'. These machines or technologies were not able to accommodate the special need of the people. The computer revolution of the eighties is like the sputnik revolution of the fifties, it has stimulated an unprecedented curriculum reform movement. The number of computers in schools has almost double every year. At that it was reported that 42% of the elementary schools owned at least microcomputer (Becker, 2014). These figures were up from 23% and 53% respectively in early eighties and from 10%. If this growth rate continues the vision of computers in every classroom, which has been described and debated by regular and special educators for more than 20 years, may be realized in 2020. By the year 2025, we will probably have trouble remembering how we taught without computers. There are number of studies which proved this 20 years back prediction that our students will much dependent on the computers and less memorization by them. A study conducted in 2012 proved that memorization ability is more in students using less computers or no computer as compared to students much dependent on computers for their studies. The same results were found in a study conducted on students with visual impairment that they were with 76% more memory as compared to normal vision students of level eight (Shabbir, 2015).

In this era of fast moving and changing technologies, the opportunities are available at large scale now and in future too. Numbers of open universities offering courses or entire degree programs to students with special need without discriminating their limitations and problems. This is possible because swift and fast-moving advancements as well as accessibility of information communication tools for them. Nearly all of the educational technologists agreed that educational technology or ICT is an agent of transformation all the way through every part of the areas of civilization, in which quality of life, employment and education are major areas. As an equalizer, it has great impact on the life of individuals with disabilities. Still it is not being realized its full potential use in education for the individuals with special needs. Incongruously, a reason this phenomenon is not like that each and every learner able to use and admittance the available equipments for

education and personal use. The issue of access is not only for the students with special needs it is same with other students too. Problems and conflicts regarding to educational equipments/tools admittance for special need learners in education can be a fresh equipments i.e. ubiquitous technology. This technology actually mediated the process of instruction and wisdom of every class level and settings without considering the abilities and disabilities, actually accommodating all. Teachers and staff in higher education institutions are unfortunately not trained or even aware about the special need of the students. The support from them and technology they are using are creating problems for the students with disabilities. The situation in Pakistan is not encouraging, recently Higher Education Commission developed a draft policy to include the special need students in higher education institutions and that is much appreciated by the special need students and the civil society. This study was conducted in 2019 to explore different issues, challenges and support in admittance of equipments/tolls in ODL for special need students.

### **Literature review**

In the era of technology open and distance education opportunities are at exponential rate for the marginalized and vulnerable group of people/students. In developing countries this is the only option of higher education for them. In Pakistan, there is very rare that higher education institutions are providing or welcome the students with special needs. The only option is Allama Iqbal Open University, Pakistan which not only welcomes, accommodates and facilitates them according to their special needs (Majeed, 2014). The university is with motto that they can get admission regardless of age limit, class level, areas of attention and place. It is because of university adopting ICT or assistive technology in the programs offered at different levels. The experts of ICT and ODL agreed that ICT is an agent of transformation for every sector of our societies like employment, teaching-learning and more than that is quality of life.

In a research paper, NCES (2000) reported that Opportunities for special need or normal learners in Open and Distance Learning are available at large scale. In our life history, these opportunities are many fold more and ODL institution or formal education institution are offering different courses as well as programs to all the students apart from level of grades, his/her aptitude or interest and area of his/her location. All these are because of fast track advancements in and accessibility of, learning equipments/tolls. As quoted, most of the experts

have the same opinion that learning equipments are actually the agent of transformation in all aspects of our community/society like teaching and learning, getting jobs, and our lives with good quality. One of ODL technologist Burgstahler (2003) said, "Most of us agreed ODL Technology and accessibility is good equalizer when accessed or used by special need learners". On the other hand, NCDSSA reported (2000) this is also fact that benefit of technology in education or ODL for people with disabilities is not being fully utilized or realized. Most of the experts are very strongly agreed that not all the special need students or normal students use or access the learning equipments/tools which have potential of learning. Also, the question or problem of use or access is not because of the students, it is more than their accessibility or usability. Teaching and non-teaching staff with special needs also underprivileged when equipments/tools are needed to carry out their jobs or employment.

The broad purpose of education for both regular and special need learners is to prepare them to function in and contribute to society. Microcomputers can provide efficient and effective solution to many of the problems and issues educators face in attempting to meet this goal. As a tool for teachers and students, computers or educational technologies are both a medium and an object of instruction. Special educators can create individualized instructional environments and can manage and generate instructional, research and administrative data. For special need students, the computers or educational technology is a learning tool and for others (the physically and sensorial impaired) it is also a communication device can a mean of environmental control. It can also provide both recreational and vocational opportunities. The only limitation, which are fast dissipating, are the lack of appropriate software and the shortage of teachers skilled in creating and or adapting courseware to their curriculum needs. Computer/educational technology is particularly attractive as an education tool for special needs students. Behrmann and Lahm (2011) noted that there are many similarities among computers/educational technologies, instructional methods used in special education and the learning characteristics of handicapped children. Attempts in special education to differentiate instruction solely on the basis of students' characteristics have not been particularly successful (Lloyd, 2010). However, there are some educational technologies that have proven effective with most handicapped students. With well-designed software, the computer can provide these instructional supports. It can be used for everything from drill and practice to stimulations of real-life events. It is a vehicle for teaching logical thinking, conducting reasoning and creative writing skills.

However, its greatest potential, even more significant than enhancing academic learning, may be in the areas of communication, motivation, and self-esteem.

### **Statement of the Problem**

All over the World use of ICT is now common in every field of life; education is one of the fields. The Survey of Pakistan reported that there are 2.47% people are with special needs or disabled. In this population the dominant are people with visual impairment. Provisions of educational facilities for the students/people with special need are somehow satisfactory at the school level. But at higher education (universities/colleagues) they are facing numbers of issues, problems and challenges. Most of the special need students especially visual impaired and hearing impaired students using different technologies while their studies. The Open and Distance Learning system is much dependent on educational technologies but most the technology used by distance education as well as formal education are not accessible and supportive for them (Hameed, 2014). The higher education institutions never checked or evaluated the educational technologies being used by the teachers for the special need students. This study was conducted to explore the different problems, issues, challenges and support accessing the distance education technologies being used for the education of special need students.

### **Objectives of the Study**

The study was conducted to:

1. Explore the issues, problems, challenges and support in accessing technologies by special need students in higher education institutions of distance education and formal education.
2. Assess the support in accessing technologies by special need students in higher education institutions of distance education and formal education.
3. Check the beyond-accessible technology, the promise and barriers of the design, layout and delivery of accessible content in distance education.
4. Identify the assistive technologies' formulation requirements, procurement, development, use and delivery of accessible products, software and content varies.

**Significance of the study:**

In Pakistan or developing countries like India, Bangladesh, Sri Lanka students with special need having less or rare opportunities to be in higher education institutions. One of the reasons is accessible technologies in formal and distance education. In distance education, AIOU is the only institution in Pakistan which is providing accessible technology to special need students especially to visually impaired students. The study provided the guidelines and information to formal education to make minor/small changes in the technology to make them accessible. The study also explored the problems, issues and challenges related to accessing assistive technologies available in distance education and by this AIOU administration, academia and student support department will improve the accessibility. The accessible technology available and experts will be shared with newly established distance education units of different formal universities of Pakistan.

This study also helped the instructional designers, eLearning experts/online course developers, tutors of online courses as well as students of special need students in procurement, designing, developing and implanting respectively. The study suggestions and recommendations are same helpful for the formal and distance education universities of Pakistan. As Pakistan is just entering in online or eLearning field so at this stage if they stakeholders consider the recommendations of the study we will be on strong foundations.

**Methodology**

The study was descriptive in nature but mixed research approach (questionnaire and interview) was followed. In descriptive type of researches, mostly survey method is used for collection of data or information from the respondents but interview helped in collecting in-depth/detailed information so, interviews were conducted from the special need students along with other stakeholders. The population of the study was students with special needs (visually impaired, hearing impaired, physically handicapped) studying at postgraduate level. Most of the students with special needs were from department of special education. As the population of the study was not so large so all the students were selected as sample of the study. Same all the special need students from the formal universities of Islamabad were sample of the study. Total 27 students were sample of the study. The researcher arranged a briefing meeting for the respondents of the study. The concept of accessibility and assistive technology was discussed in detail with examples. A well-structured questionnaire on problems, issues and

challenges related to accessibility assistive technologies in distance and formal education were covered in the 25 items questionnaire. The respondent responded to each item or question on five-point Likert scale. The important areas of questionnaire were accessible education, faculty and staff, technology as a disadvantage, videoconferencing without captioning for hearing impaired, video signals, real time chats for visually impaired. Most important issues are production, procurement and usability of local accessible hardware with software. Also, barriers of design, delivery and layout of the content especially in open and distance education. For students with special needs in distance education the major issue highlighted in the area for their response was academic and technical support of divergent stakeholder groups especially e-instructor or tutor. The tools of the study both questionnaire and interview highlighted the challenges too which is access in distance education. The interviewees were asked to give their comments or share their experience on current state of accessing education through technology and practices which lead to full access as student in open and distance education.

## Results and Discussion

### Quantitative Data Analysis

As discussed in methodology, the study was descriptive in nature and survey in design with mixed method of research. In sample, there were 08 students with hearing impairment, 12 were visually impaired and 07 were physically or functional disabled. Total statement of the questionnaire was 25 and respondents responded on five-point Likert scale and 100% students responded the questionnaires. Students with visual impairment and fine motor skills problems were provided an assistant to fill up the questionnaires. The analysis was simple as frequencies and percentages were derived to know the different issues and challenges with respect to accessible technology with usage in distance education with the usage.

Table 1

#### *Direct Accessibility of Hardware and Software*

| Accessibility | Average Score | N  |
|---------------|---------------|----|
| Hardware      | 2.12          | 27 |
| Software      | 3.05          |    |

Table 1 shows it that hardware and software are high level problems in hardware and software. The data reflected the level of hardware having low level of problems, issues and challenges as compare to software. The

AIOU students demanded that software should be available for them which accommodate their needs.

Table 2

*Accessibility of Content Presentation and Usage of Content*

| Curriculum/Content      | Average Score | N  |
|-------------------------|---------------|----|
| Presentation of Content | 3.10          | 27 |
| Usage of Content        | 4.25          |    |

Table 2 revealed that presentation and usage of current are problems for the special need students especially for the visually impaired students. Most of them reported that graphs, colors and data always problematic is usage or reading. They also highlighted the issue of accessibility of the content with the technology available in the distance education. The situation of formal university was reported much worst as compare to distance education.

Table 3: Designing and Delivering of online programs

N=27

Table 3

*Designing and Delivery of Online Programs*

| Accessibility in/of Online Programs | Average Score | N  |
|-------------------------------------|---------------|----|
| Designing                           | 2.90          | 27 |
| Delivery                            | 3.10          |    |

Table 3 highlights the issues and challenges of online programs with respect to presentation and usage of content. Visually impaired students reported that they issue of delivery mechanism is not suitable for them and the students with physically handicapped just having problems that if they use too with one design next time it is different from the previous one so there should be homogenized design in every course available for them.

Table 4

*Policies/Legislations and Administrative Matters*

| <b>Policies/Legislations</b> | Average Score | N  |
|------------------------------|---------------|----|
| Policies/Legislations        | 3.90          | 27 |
| Administrative Matters       | 4.10          |    |

Table 4 highlights the perception about policies/legislation and administrative matters for the special need students.



**Qualitative Data Analysis**

All the participants were interviewed, and questions asked were in context of statements or questions in questionnaire. The interview with hearing impaired students were with the help of sign language experts though the researcher has skill of sign language but for more accurate interpretation help of sign language experts was helpful. All the students were ensured that information they provided will only be used for the study with mentioning their names. The visually impaired students said the issues of design and accessibility in content and usage of accessible technology in distance education. Physically disabled students highlighted mostly the hardware challenges of technology, and hearing-impaired students said that the policies and tutors are the major issues for them. All of them suggested that administration and stakeholders must consult with them before purchasing the hardware and software as well as for developing the online programs.

**Conclusions**

Special need students in distance education and formal education system were not satisfied with the provisions or facilities provided for them. As distance education is most suitable system of education especially for higher education so, they demanded compatible hardware and software for them. Students with special needs in formal education highlighted more issues and challenges as compare to distance education. In interviews, students studying in distance education commented that institutions of high education with formal system of education must treated them equally as they are facilitating to students without special needs. The issues of hardware were highlighted by physically handicapped students in distance and formal education that most of the computers and input devices are not according to their physical or functional disabilities. The students with visual impairment faced issued of software and licensing of these software. The software of JAWS or screen readers is mostly pirated and students without special needs always created problems with the settings. They also demanded accessibility centers in distance education as well as in formal universities. They suggested that universities must arranged trainings for course developers and students for the usage of assistive technologies. The trainings should include experts from abroad, distance education experts, students with special needs and university administration. They recommended that formal universities must have partnership or networking with institutions of distance education because of technology in use to minimize the issues and challenges they faced especially in formal system of education.

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