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Awareness and Use of Internet Resources by Visually-impaired Students in Kerala: Case Study of Thiruvananthapuram District

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ABSTRACT

The aim of the study is to investigate the awareness and usage of internet resources among visually challenged students in Thiruvananthapuram district, Kerala. Survey method and questionnaire tool were used to collect data from 74 visually challenged students, who are studying in various schools of Thiruvananthapuram. Analyses revealed that 59.46 % students are computer literates and are aware of online resources. However, internet usage is very less among the computer literates due to the lack of proper training. Among the respondents, a good number of students are aware of assistive technologies, even though many of them are not using them. The mostly used assistive technology is screen reader. It is found that students are depending on internet resources mainly for their academic purpose. Responses shows that lack of proper training creates a big barrier in using internet and only 25.67 % are using it very confidently. The results of the study would be helpful in getting a fairly good idea of the student's awareness level of internet resources and assistive technologies. The outcome of the study helps the school authorities, librarians and the government to provide adequate services and training to visually challenged students to access information without any barriers.

Keywords: Internet resources, assistive technology, visually-impaired, Thiruvananthapuram, Kerala

1. INTRODUCTION

Until recently Braille was the only option for visually challenged people to access the required information. Even though Braille products are still widely in use, the information and communication technology (ICT) paved way for visually-challenged in new means of solution through software and equipments. New hopes are streaming with the help of assistive technology. Nowadays, they can access the internet resources with assistive devices. As there are limitations in the availability of Braille books, visually challenged students are now depending on internet resources more to access the required information. The electronic information world empower them to complete tasks independently which they would normally not be able to accomplish without the help of others.

Access to ICT for visually-challenged students may require more resources than are provided for other differently-abled students. It has impacted greatly in education for visually-challenged in a number of ways. They are electronic technologies used for accessing processing, gathering, manipulating and presenting or communicating information. The introduction of ICT in education accelerates, enriches and deepens basic skills in reading, writing and it can motivate and engage students to learn as they become more independent and responsible for their learning. Moreover, ICT helps to encourage students to become active participants in social, cultural, and economic developments. ICT can be multi-media for instructional delivery. It can be delivered in textual, audio, visual, and audio-visual forms.

The use of internet and e-resources are increasing worldwide day-by-day. The Web environment is creating a new gateway for visually-challenged people to access information quickly and easily without any barriers and support from others. Introduction of ICT has impacted the traditional education system of visually-challenged students. Hence, an attempt is made to study whether the visually-challenged students are aware of these advanced technologies and whether these services provided by assistive

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devices are reaching them properly. To know about the role of internet in education, is also an aim of the study.

The study investigates the awareness and usage of internet resources among visually-challenged students in Thiruvananthapuram, the capital of Kerala. Among the four Government schools for blind students in Kerala, one is situated in Thiruvananthapuram district.

2. REVIEW OF LITERATURE

Various studies were carried out to find out the ICT skills, awareness about assistive devices and information needs of visually-challenged students. The use of ICT by the visually-impaired students who are studying in the Calicut University, Kerala was examined by Haneefa & Syamili[1]. Findings revealed that most of the students who participated in the study are computer literates, and they use mobile phones frequently. It was also found that even though most of the students have knowledge in using computer, majority of them requires training in using internet. Role of ICT in meeting the information requirements of visually-challenged people is highlighted by Midhula Soman & Sudhier[2]. The major assistive devices available for visually- challenged users were presented the conclusion was that utilization of ICT has made a remarkable shift in the structure of information sources for visually-challenged people.

Adetoro[3] carried out a survey study to assess the provision of information materials in alternative formats, in the aspect of its availability, access and level of use by the visually-impaired in public libraries in Southwestern Nigeria. The result revealed that alternative format availability was inadequate and e-resources were not available. According to the findings of the study, Braille was the most utilised format. A study conducted by Kumar and Sanaman[4] to find out the preference of e-resources used by visually challenged users in the leading National Capital Region of India revealed that ICT developed a positive impact in the lives of differently-abled people and it helps them to live independently. The authors came to the conclusion that, internet is the most preferred medium used by visually-challenged users in accessing information.

Fichten[5], *et al.,* made a study to find out how ICT related needs of differently-abled students are being met at higher educational institutions and at home. The study was conducted among differently-abled students in Canadian University and junior/community, colleges. The finding show that students' ICT related needs are generally well met on campus than at home and at colleges than at universities. Singh[6] investigated whether Indian libraries are friendly for visually-challenged users. He conducted the study among 100 users using prominent libraries in Delhi. The study observes that ICT gadgets are becoming the true companion of visually-challenged users. The study tried to find out the major barriers that visually challenged users are facing while seeking information, and the major reasons found were lack of audio and Braille books, and the lack of computers to read electronic text and use internet resources. This shows that internet and e-resources are playing a major role in their lives. Another study conducted by Singh[7] analysed the information seeking behaviour of visually-challenged people in selected libraries in Delhi. To identify the available information sources for these users in the selected libraries and to correlate the sources available with their information needs. Analysis revealed that most of the users use both Braille and audio books in the form of audio cassettes more than any other sources.

Pufflen[8] focused on the relationship between the ICT trainings offered to the visually-challenged people and their competencies in online information processing. The study tried to analyse how visually challenged people perceive their participation in society through ICT. Sharma[9] in her study looked at the library and information services offered to visually-challenged students in Rajasthan University library. Through the study, she suggests the adequate service that has to be offered to visually-challenged users, which helps them in accessing information without barriers

It is clear from the literature that awareness about computer and related technologies among visually-challenged users were very low. But nowadays with the advancement of technologies, ICT became a part of day today life of visually-challenged people. Awareness and use of internet and multimedia resources are increasing among visually-challenged people. The review of studies shows that there is scarcity of studies related to the information requirements of visually-challenged in Kerala. Literatures should be encouraged in this area, which will help to give additional information about the needs of visually-challenged and how they can be met.

3. OBJECTIVES

The objectives of the study are to:

- Determine the students awareness about the internet and electronic resources
- Know the usage of internet resources among visually-challenged students
- Find out the awareness level and use of assistive technologies among students
- Find out the popular internet resources for the visually-challenged students and
- Identify the technologies available for visually-challenged students to reduce the barriers and access to information

4. METHODOLOGY

The study is based on a questionnaire based survey of visually-challenged students in Thiruvananthapuram district. The study included 74 respondents from 12 Government schools, including one special school for blind in Thiruvananthapuram district. Students studying in high school and higher secondary sections are included in the study. A structured questionnaire was designed for the purpose of data collection and distributed among the students. As the respondents are visually-challenged, data required for the study was personally filled up through interacting with them. The collected data was analysed using latest version of MS-Excel for appropriate statistical analysis.

5. ANALYSIS

5.1 Gender-wise Distribution

Majority of the students participated in the study are females (52.70 %) and 47.30 % are male students.

5.2 Awareness of Computer and Internet Facility

In this information technology age, it is essential to analyse the awareness of computer and internet facility among these students. Students were asked to indicate their awareness of computer and internet facility and the result reveals that 44 students (59.46 %) responded positively that they are aware of computer and related technologies, but 30 (40.54 %) are not aware of internet resources.

5.3 Place of Access

Among the 44 students who are using computer and internet, 26 students are accessing it from their home. 18 responded that they are using internet from the school IT lab and no student is accessing internet from internet café or other outside sources.

5.4 Medium of Using Internet

This question was intended to know the medium that students are more comfortable for accessing online resources. The study also aimed to find out their level of knowledge in technologies that helps them to access internet in mobile phones. It shows that no student is using mobile phone to access internet and only 5 students are using laptops. Among the 44 students who have computer literacy, 39 are using desktop computers to access online information.

5.5 Frequency of Using Internet

Only (59.46 %) are aware of internet. Among them only 12.16 % are using it daily. Students who are using internet monthly (31.08 %) are greater than that of using it weekly (16.22 %) and daily

Table 1. Frequency of using internet

S. No.	Frequency	No. of respondents
1.	Daily	9 (12.16%)
2.	Weekly	12 (16.22%)
3.	Monthly	23 (31.08%)
4.	Rarely	30 (40.54%)
Total		**74 (100%)**

(Table 1). 30 students (40.54 %) are not using internet. The inconsistency in using internet may be due to the lack of proper training and lack of knowledge in using internet.

5.6 Purpose of Using Internet

As the population under study belongs to student's category, it is essential to know the purpose of using internet. As Braille was the only medium to access information till recently; the analysis helps to know the influence of internet in education for visually-challenged students. As shown in the Table 2, majority of students (38) uses internet for their academic purpose which is a positive response towards the influence of internet in education. Even though there are 44 students who responded that they have knowledge in using internet, only 16 students are using internet to check their e-mail. It is also revealed from the study that only 16 students are having e-mail id. 11 students responded they are using internet to read online magazines and newspapers. Even though most of the students are aware of social networking sites like Facebook, Twitter, etc., only 6 students are using it. 9 students are using internet for other purposes and no students are using internet for reading E-books. As books are changing to E-Books nowadays, training should

Table 2. Purpose of using internet

S. No.	Purpose	No. of respondents
1.	Academic purpose	38
2.	Check email	16
3.	Check online magazines/ newspapers/ journals	11
4.	E-books	0
5.	Check social networking sites	6
6.	Others	9

be given to visually challenged students to use and access E-Books which they can use without the help of any other person. As the question was type of multiple category and the respondents were allowed to tick more than one choice, so the percentage exceeds 100.

5.7 Confidence Level in Internet Use

Table 3 represents the confidence level of students in using internet and related services. The

Table 3. Confidence in using internet

S. No	Purpose	Excellent	Average	Poor	Total
1.	Surfing internet	19 (25.67 %)	25 (33.79 %)	30 (40.54 %)	74 (100 %)
2.	Searching with keywords	21 (28.38 %)	23 (31.08 %)	30 (40.54 %)	74 (100 %)
3.	Using e-mail	11 (14.86 %)	5 (6.76 %)	58 (78.38 %)	74 (100 %)
4.	Playing audio/ video online	9 (12.17 %)	18 (24.32 %)	47 (63.51 %)	74 (100 %)
5.	Downloading files	24 (32.43 %)	17 (22.98 %)	33 (44.59 %)	74 (100 %)
6.	Using social networking sites	5 (6.76 %)	1 (1.35 %)	68 (91.89 %)	74 (100 %)

analysis reveals that majority of the students shows their confidence level is poor in using internet.

Among the 44 % students who are aware of internet very few (25.67 %) are confident in using it. To download files students require capability of searching with keywords in search engines, and students who have average capability (31.08 %) in using it is greater than that of those who are using it excellently (28.38 %). As discussed earlier only 21.62 % students are using email services, and 14.86 % are using it excellently. 32.43 % responded that their level of confidence in downloading files from internet is excellent, while 22.98 % indicated that their level of confidence in downloading files as average. 63.51 % stated that they are not confident in playing videos and games. Though Facebook, twitter and other social networking sites are becoming part of our lives, only 8.11 % are using it. Among them only 6.76 % responded their confidence level in using it as excellent.

5.8 Awareness of Assistive Technologies

Assistive technologies are devices that helps visually challenged people to access information in alternative formats easily. There are many devices for visually challenged people that help to access computer and internet without the support of others. So, the awareness of assistive technologies among visually challenged is an important aspect that shows their knowledge in ICT and recent advancements.

Table 4. Awareness of assistive technologies

S. No.	Awareness	No. of respondents
1.	Aware of assistive technologies	42 (95.45 %)
2.	Not aware of assistive technologies	2 (4.55 %)
Total		**44 (100 %)**

Table 4 reveals the level of knowledge of assistive technologies among visually challenged students. It is clear from the study that 42 students (95.45 %) are aware about assistive technologies and online software's, which shows a positive attitude towards new technologies.

5.9 Use of Assistive Technologies

Table 5 presents the assistive technologies and adaptive devices that visually-challenged students prefer mostly to access information. The study shows that 52.27 % students prefer screen reader, which helps them to access information that is being displayed on the screen. Screen reader keeps track of what the computer is doing and speaks or magnifies the necessary information that user needs to use the computer. Among the rest of the respondents, 15.91 % depends screen magnifier that allows them to enlarge text and graphical information displayed on the screen. 31.82 % students responded that they prefer other assistive devices like, DAISY books, text readers, magnification devices, audio books, etc. Through the study it is found that students are depending on recorders like angel players for their educational purposes mostly. It is also revealed that most of the students are aware of software's like ORCA, JAWS, and other technologies that enables them to access information online. Even though there were options like adaptive keyboards and speech synthesisers, no student responded to it.

Table 5. Use of assistive technologies

S. No.	Adaptive devices	No. of respondents (%)
1.	Screen Reader	23 (52.27 %)
2.	Screen Magnifier	7 (15.91 %)
3.	Others	14 (31.82 %)
Total		**44 (100 %)**

5.10 Method of Learning Assistive Technologies

The visually-challenged students require special training in using internet and assistive technologies. They were asked to indicate the methods of learning computer, internet and assistive technologies.

From the responses mentioned in Table 6, it is clear that out of the 44 computer literates, majority of the students 26 (59.09 %) got training from the school authority, and 13 (29.55 %) students stated that they attended short term courses for learning internet and to get knowledge about assistive technologies. Very few students (6.81 %) got assistance from friends and family members and 2 students responded that they studied it without the help of anyone.

Table 6. Method of learning assistive technologies

S. No.	Method of learning	No. of respondents
1.	Self learning	2 (4.55 %)
2.	Short-term courses	13 (29.55 %)
3.	Through friends and family members	3 (6.81 %)
4.	Formal schooling	26 (59.09 %)
Total		**44 (100 %)**

5.11 Opinion on Use of Assistive Technologies

The students were asked to express their opinion and to rate themselves about their ability to use assistive technologies. No student was confident enough about their ability to use internet resources and assistive technologies.(Table 7)

Only 19 (43.18 %) students opined that they have average knowledge in using assistive technologies. 14 (31.82 %) students indicated their ability to use it is good, where as 7 opined that they are not confident and are bad in using it.

6. DISCUSSIONS AND SUGGESTIONS

The findings of the study agreed with the results of the study of Kumar & Sanaman that internet is the most preferred medium of access to information among the majority of visually-challenged people. It is found from the study that a majority (59.46 %) of visually-challenged students are aware of internet resources and assistive technologies that help them to access information. But lack of proper training in using internet and e-resources and non-availability of resources is still a barrier to access information for the visually-challenged students. Lack of computer literacy among the rest (40.54 %) shows a negative impact towards the influence of ICT in their world. It is observed that there is no student who participated in the study is using mobile phones to access internet. It is analysed as a contradictory fact that visually-challenged students studying in university level are using mobile phones frequently and use internet whereas students in formal schooling who participated in the study are not even aware of mobile technologies available to them. The significant factor that hinders the use of assistive devices among students who are aware of assistive technologies is the low level of skills in using them. It is also found that a good number of students are not aware of the assistive devices that help to access information in alternative formats easily.

Table 7. Opinion on the use of assistive technologies

S. No.	Ability to use assistive technologies	No. of respondents
1.	Very good	0
2.	Good	14 (31.82 %)
3.	Average	19 (43.18 %)
4.	Bad	7 (15.91 %)
5.	Very bad	4 (9.09 %)
Total		**44 (100 %)**

The findings of the study have enabled the investigators to offer some feasible suggestions:

- Proper computer training should be given to visually-challenged students, which reduces the barriers in accessing information.
- Proper training should be provided to make them aware of the softwares and tools available in the mobile phones to access internet.
- The authorities should take initiatives in providing awareness about assistive technologies and to develop confidence in using them.
- The authorities need to review their policies and school curriculum by including technological development so that it will be beneficial to students in accessing information with the help of latest technologies.
- Students should be given motivation by conducting awareness programmes in using internet and electronic resources which helps to increase their confidence level in using these resources.

7. CONCLUSIONS

The study reminds that the priority needs of these students are not special, they are basic. Even though most of the students are computer literate they are not enjoying the benefits of ICT, due to the unavailability of resources. Today, various types of assistive devices are available to help the visually challenged to use mobile phones, but no student who participated in the study is aware of mobile technologies. Technology can reduce the effects

of impairment by improved activity and greater participation to promote inclusion of differently-abled students. It is revealed that no student was confident enough about their ability in using internet resources and assistive technologies.

The school authorities must take initiatives in introducing internet resources and assistive technologies to visually-challenged students and they should get proper training in using it. Then only, they can participate in the general, cultural and societal activities. It can be concluded that even in this digital world, the real challenge is not the production and storing of information, but the dissemination of information.

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