

# Awareness and Use of Electronic Resources by Visually Impaired Students at Aligarh Muslim University, Aligarh: A Study

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## Abstract

*The study was conducted in order to identify the awareness and use of e-resources by Visually Impaired students at Aligarh Muslim University, Aligarh by following survey technique in which structured interview was used as a research tool to gather precise data from 76 visually impaired students. The data so collected were analysed and tabulated using 'SPSS version 23'. Findings of the study revealed that 100% visually impaired students are aware of e-resources, among the majority of students (96.1%) make use of e-books and e-newspaper (84.2%). In due course, it also came to light that these students are using e-resources for remaining updated (89.5%) and writing assignments (88.2%). Besides, it is also found that 85.5% of users find it difficult to use e-resources because of the compatibility issue with screen readers and it is also found that while performing various tasks electronically majority of them are having average experience. Furthermore, it is anticipated that the findings of the study will be helpful for library professionals and institutions serving visually impaired persons to develop effective electronic services in digital environment to access knowledge without any barriers as well as suitably designed survey can be applied to reveal similar trends in different institutions.*

**Keywords:** Aligarh Muslim University, Electronic Resources, Visually Impaired

## 1. Introduction

The digitization of information has brought a new concept altogether in all the fields of human life and this has marked the beginning of 'information era'. Electronic resources are boon for academics as with the help of e-resources information can be extracted with just a single click. They are more current and updated in comparison to print resources and with the help of e-resources storing, sorting and retrieving of information have become convenient. In the present scenario, these resources have

become the necessity of academic institutions their usage has increased worldwide over the years and are at the top priority especially in developing countries (Pelzer & Wiese, 2006). E-resources can be accessed using computers or mobile devices either through internet or intranet, the most common e-resources are e-books, e-journals, e-theses/ dissertations, e-maps, etc. (International Federation of Library Associations and Institutions, 2012). World Wide Web (WWW) is the major driver of growth and development of such resources because WWW provides an opportunity of publishing, low cost of owning a website, easy updating as well as the potential to reach a wide audience (Pawan, 1998). The evolution and development of e-resources over

the years, has marked significant changes in studies and its pattern worldwide which has transformed library services as well from traditional information dissemination to digital knowledge transfer. Earlier, visually impaired people were only dependent on Braille but with the advent of e-resources new modes and means are available in the field of education for them as there is limitation in the availability of Braille books. According to Friend (2009), “Visually impaired is a term which is used to describe the people who are partially-sighted or completely blind”.

Though these resources serve best purposes to their users, visually impaired users are not getting benefitted on same parlance as for them advancement in information access is not going on the same pace (Kotso & Mohammed, 2011). Therefore, considering the significant and unbeatable role of e-resources in academics the study is undertaken to investigate the awareness and use of electronic resources by visually impaired students at Aligarh Muslim University (AMU) to find out their usage pattern and how they imply in their educational requirements and the problems faced while using these resources. AMU is one of the premier Universities in India; it has a long and distinguished history and accredited grade ‘A’ by National Assessment and Accreditation Council (NAAC). Maulana Azad Library central library of Aligarh Muslim University is considered as one of the largest university libraries in the world. A special features of this library is the Braille section that provides wide range of services to the visually impaired students which include: literature search, bibliographic compilation, current awareness services, web services, braille translation, screen reading enabled library catalogue, e-databases services as well as they have acquired assistive

technologies for visually impaired to access resources. Moreover, their collection development is based on the need of their students (Khowaja & Fatima, 2019).

## 2. Literature Review

The purpose of this study is to determine the compatibility, awareness and usage pattern of e-resources by visually impaired users, review of literature is important to seek understanding regarding the background of the research topic and also to become aware of the recent trends. In accordance to which the review is undertaken of the studies conducted across the globe related to the research topic to enhance the understanding of use of e-resources by visually impaired people. There are plenty of resources available electronically to serve educational requirements of users, whereas visually impaired users having difficulty in using those resources as they need alternative formats to use such resources. An electronic material comprises of digital files, usually HTML or PDF formats, which enables users anytime and anywhere access to documents. Sometimes, the electronic material was readable by a sighted individual but was not readable by the visually impaired even with the use of assistive technology (Konicek, Hyzny & Allegra, 2003). Kerkmann & Lewandowski (2012) concluded that Web Accessibility Initiative (WAI) is a good way for conducting accessibility study in a comprehensive manner that consists of three steps: “initial evaluation to identify potential accessibility problems; conformance evaluation to determine whether web resources meets established accessibility standards; and user testing which include practical use by person with disabilities”. Though visually impaired and its related terms such

as blind, partially sighted or visually disabled are used in LIS literature but these terms are not defined in depth which can be a barrier in accessibility and usability of electronic resources and selection of the participants for testing (Kleynhans & Fourie, 2014).

Assistive Technologies such as “modified computer keyboards, audio web browsers and screen readers with speech or Braille output, can provide access to information to visually impaired people” (Kumar & Sanaman, 2015). Oppenheim & Selby (1999) highlighted that Visually impaired users face problems in using e-resources even with the help of assistive technologies, librarians and web developers should ensure that their websites must be accessible to these persons, which includes issues of screen design, font size used, colour used in fonts as well as in screen backgrounds and there must not be an excess of graphics because that might be appealing to sighted users but create difficulty for persons with visual impairment. Information can be provided in audible formats with the help of auditory prompts while copyright consideration restricts the digital form of information resources (Chelin, 1999). Sonam & Sudhir (2015) found that high school and senior secondary school students at Thrivanthapuram, Kerala, were computer literate and use screen readers for usually accessing online resources for academic purposes while proper training was not provided to them which was the barrier in the usage of these resources. Eguavoen (2016) highlighted that in Nigeria visually impaired students were using IT for their studies and they are having positive effects in their academics and the most used gadget by those students for using resources were mobile phones.

Kumar & Sanaman (2013) revealed that visually impaired persons at NCR region, India were aware

of the high technologies available nowadays, as internet browsing and downloading informative material was preferred by those users, which indicates that IT enables them to work independently and enhance their confidence level. Techniques are developed which enable these users to make proper use of e-resources so that they can also get benefited with the growth and developments of the resources (Craven & Booth, 2006). Use of information resources are lacking across the globe as effective information service to people with visually impaired are not provided due to compatibility issues with system designs, strict copyright laws and licensing policies for purchasing and transforming content from one format to another create difficulties in providing information to these users; these difficulties can be overcome with the help of assistive technologies, enabling policies, trained and skilled staff and most importantly flexible copyright regulations (Majinge & Mutula, 2018). Tesendic & Krsticev (2015) found that “web services act as an intermediary between the Audio Library System for the visually impaired and the library management systems as it aggregates collections of different libraries in a single access point for the Audio Library system to make use of e-resources” and it was the first software solution for solving the problem of e-books lending in Serbia.

To overcome the information gap online library was suggested for visually impaired to access e-resources; it will support librarians to make procurement decisions based on accessibility (Schmetzke, 2002). Byerley & Chambers (2003) put forth that Americans Disabilities Act, section 508 were raised database company awareness of accessibility issues so companies must not only rely on PDF files for delivery of the documents rather

they provide HTML text versions to visually impaired to serve them sufficiently. Librarians for selecting any database for visually impaired must be assured from the database vendors about its accessibility. FirstSearch, and Gale Group's Expanded Academic ASAP, periodical databases offered by OCLC provide a high degree of accessibility to these users (Byerley & Chambers, 2002). Mostly indexes and databases are amenable with accessibility standards as well as enable common search tasks but their interfaces are not user-friendly for persons with disabilities (Stewart, Narendra & Schmetzke, 2005).

It is quite clear from the available literature on usability and accessibility of e-resources that visually impaired students are not able to utilise the available resources due to lack of proper guidance and accessibility issues. Literature should be encouraged in this area so that information needs to visually impaired people will be known. As far as the present study is concerned the findings of the study will be helpful for the library authorities to maintain the resources as per the requirements of visually impaired students and it also provides suggestions to overcome the problems faced by these students in making use of it.

### 3. Objectives

The major aim of the study is to identify the use and compatibility of e-resources by visually impaired students and the below-listed objectives are to be covered in the study.

The objectives of the study are:

- ❖ To identify awareness and use of e-resources.
- ❖ To determine the method of learning about e-resources.

- ❖ To identify the place and gadgets for using e-resources.
- ❖ To identify the purpose of using e-resources.
- ❖ To determine the frequency of using e-resources.
- ❖ To identify the problems faced while using e-resources.
- ❖ To identify the experience of users while performing various tasks electronically.

### 4. Scope and Methodology

The study was conducted by using convenience sampling, to determine the awareness and use of electronic resources by visually impaired students at AMU. Total of 76 visually impaired students enrolled in PhD, postgraduate, undergraduate programmes taught in the university during the year 2018-19 (as per the record of Disability Unit, AMU) is considered for the study.

The study followed the survey method and made use of structured interview to gather the precise data from the students at Braille section of the central library and also from the departments in which the visually impaired students were enrolled. The questions asked were projected to reveal the results based on following specific points:

- ❖ Use of different e-resources.
- ❖ Methods of learning about e-resources.
- ❖ Place and gadgets used by them for using e-resources and their experiences while performing different tasks.
- ❖ Frequency of using e-resources.
- ❖ Purpose of using e-resources.

- ❖ Problems faced by them in using e-resources.

The responses thus received were analysed using SPSS (version 23) for making conclusion and interpretations.

### 5. Data analysis and Interpretation

To make it more understandable results and interpretation of the analysed data is divided into respective headings.

### 5.1 Demographic Information of the Respondents

The study was conducted on 76 visually impaired students, among those 52 (68.4%) were males and 24 (31.6%) were females. Students under study were enrolled in different courses of study viz. 16 (21.1%) in PhD, 23 (30.3%) in postgraduate and 37 (48.7%) in undergraduate programmes (table 1).

**Table 1: Demographic Information of the Respondents**

Category	Division	No. of Respondents (N=76)	Percentage	Total
Gender	Male	52	68.4	76
	Female	24	31.6	
Course	PhD	16	21.1	76
	Post Graduate	23	30.3	
	Under Graduate	37	48.7	

### 5.2 Awareness of E-resources Among Visually Impaired Students

In the present digital era, it is requisite to analyse the awareness of e-resources among visually impaired students. A dichotomous question was asked to find out the awareness about the e-resources. The results revealed that 100% students are aware of the e-resources and are making use of them (Table 2).

**Table 2 : Awareness of E-resources Among Visually Impaired Students**

Awareness of E-resources	No. of Respondents (N=76)	Percentage
Yes	76	100
No	0	0
<b>Total</b>	<b>76</b>	<b>100</b>

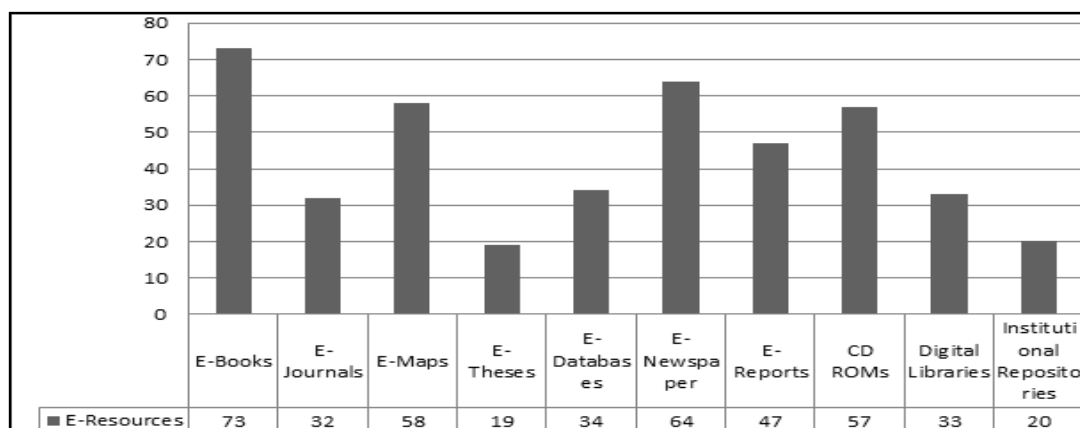
### 5.3 Use of E-resources by Visually Impaired Students

From the results of table 3, it is witnessed that 73 (96.1%) students are using e-books followed by 64 students who use e-newspapers the least used resources are Institutional repository and e-theses/dissertations with 20 (26.3%) and 16 (25%) students using them respectively depicted in figure 1.

**Table 3: Use of E-resources by Visually Impaired Students**

E-resources	No. of Respondents (N=76)	Percentage
E-books	73	96.1
E-journals	32	42.1
E-maps	58	76.3
E-theses/Dissertations	19	25.0
E-Databases	34	44.7
E-newspaper	64	84.2
E-reports	47	61.8
CD ROMs	57	75.0
Digital library	33	43.4
Institutional Repository	20	26.3

NOTE: Multiple responses were allowed

**Figure 1 Use of E-Resources by Visually Impaired**

#### 5.4 Methods for Learning About E-resources

Visually impaired students were asked from where they get learnt about e-resources. From table 4 and figure 2 it reveals that the maximum number of

students learnt about e-resources through formal schooling i.e. 39.5% students followed by through friends and colleagues and self-learning mentioned by 34.2% and 26.3% students respectively.

**Table 4 Methods for Learning About E-resources**

Methods for learning about e-resources	No. of Respondents (N=76)	Percentage
Self-learning	20	26.3
Through friends and colleagues	26	34.2
Formal schooling	30	39.5

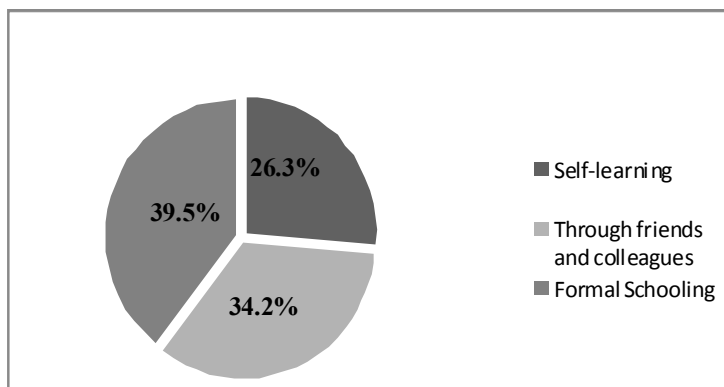


Figure 2: Methods for Learning about E-resources

**5.5 The place for Browsing E-resources**

The study ascertained the place from where the students are browsing e-resources and it is found from table 5 that majority 72 (94.7%) students are

browsing from central library followed by hostel with 54 (71.1%) students, 18 (23.7%) are using from department, 14 (18.4%) from internet cafe and only 7 (9.2%) students are using e-resources from computer centre. Figure 3 displays the browsing pattern

Table 5: Place for Browsing E-resources

Place for browsing	No. of Respondents (N=76)	Percentage
Department	18	23.7
Hostel	54	71.1
Central Library	72	94.7
Internet Cafe	14	18.4
Computer Centre	7	9.2

Note: multiple responses were allowed

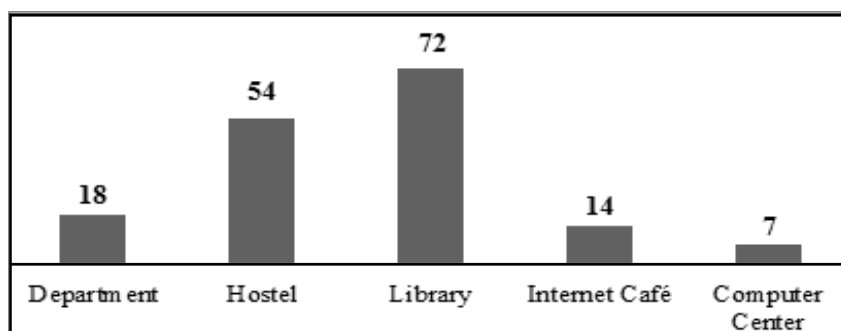


Figure 3: Place for Browsing E-Resources

### 5.6 Gadgets Used for Using E-resources

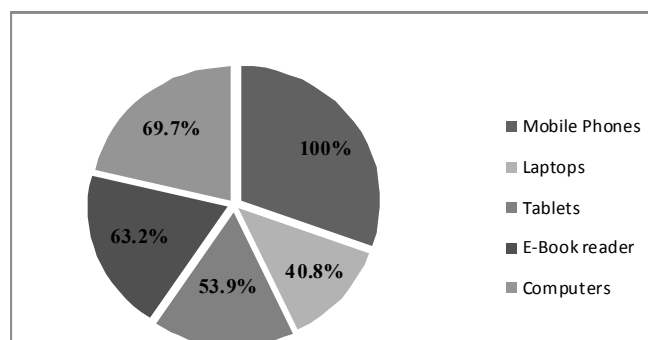
Table 6 highlights gadgets used by the students for using e-resources. Out of the results it can be seen

that 100% of them are using these resources from mobile phones, 69.7% from computers, 63.2% from e-book readers, 53.9% from tablets while 40.8% accesses from their laptops respectively can be seen in figure 4.

**Table 6: Gadgets Used for Using E-resources**

Gadgets used for accessing e-resources	No. of Respondents (N=76)	Percentage
Mobile Phones	76	100
Personal Laptops	31	40.8
Tablets	41	53.9
E-book reader	48	63.2
Computers	53	69.7

Note: multiple responses were allowed



**Figure 4: Gadgets Used for Using E-resources**

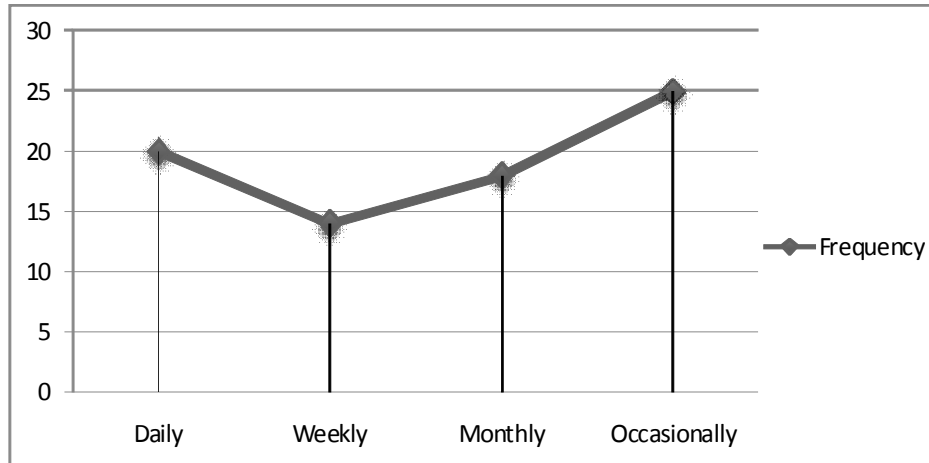
### 5.7 Frequency of Using E-resources

Students were asked how frequently they are using e-resources and it is revealed from table 7 that 25 students using e-resources occasionally followed by 20 students who are using daily, 18 and 14 students mentioned that they are using monthly and weekly respectively shown in figure 5.

**Table 7: Frequency of Using E-resources**

Frequency of using e-resources	No. of Respondents (N=76)	Percentage
Daily	20	26.3
Weekly	14	18.4
Monthly	18	23.7
Occasionally	25	32.9





**Figure 5: Frequency of Using E-resources**

### 5.8 Purpose of Using E-resources

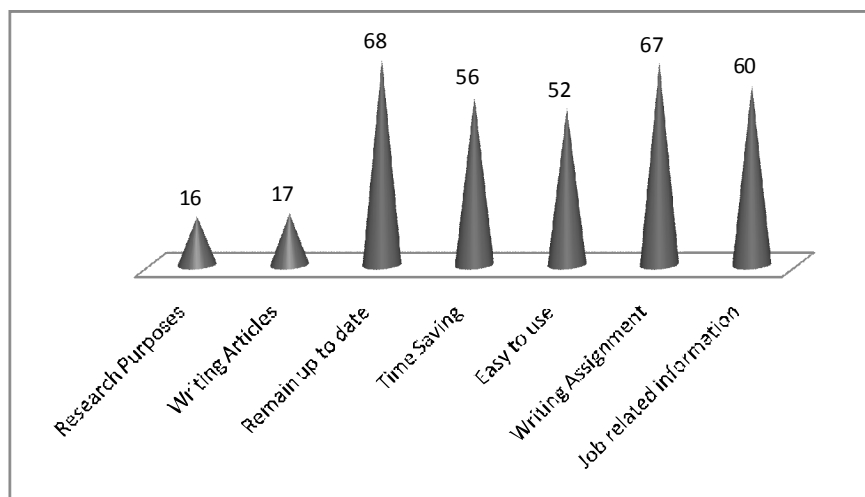
E-resources are used for different purposes by students depending on their academic needs and requirements. Therefore, the study ascertains the purpose of these students for using e-resources and it is revealed from table 8 and figure 6 that 68 students are using for remaining updated as the information

available electronically is more current. 67 students mentioned that they are using for writing their assignments, 60 students using for finding information related to jobs, 56 students using e-resources as feel they are time-saving, 52 found it easy to use, 17 students are using for writing article while only 16 students are using for research purposes.

**Table 8: Purpose of Using E-resources**

The purpose of using e-resources	No. of Respondents (N=76)	Percentage
Research Purposes	16	21.1
Writing articles	17	22.4
Remain up to date	68	89.5
Time-saving	56	73.7
Easy to use	52	68.4
Writing Assignment	67	88.2
Job-related information	60	78.9

Note: multiple responses were allowed



**Figure 6: Purpose for Using E-resources**

### 5.9 Problems Faced in Using E-resources

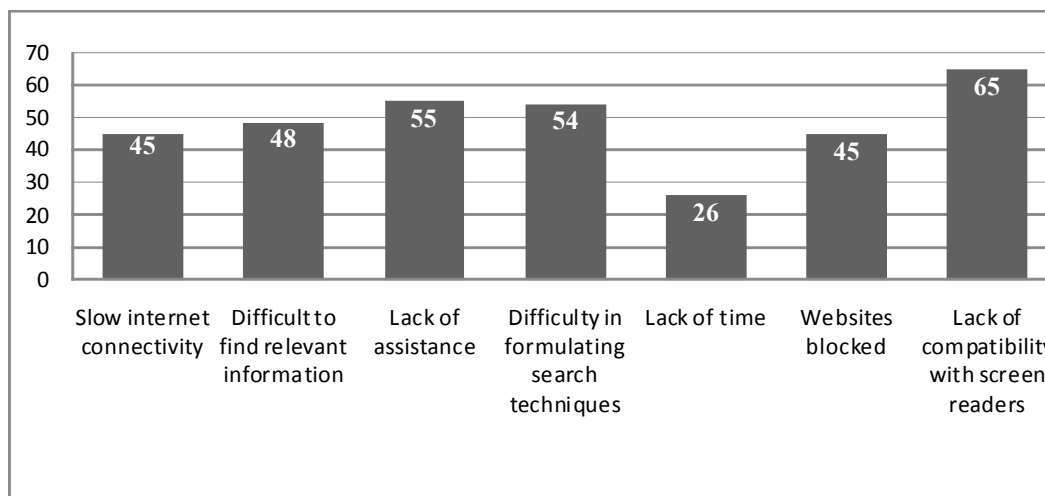
Though the visually impaired user is provided access to resources, still there are various difficulties faced by them while using such resources. The study ascertains the problems which are faced by these students and the results (table 9) highlight that 65 (85.5%) students are having compatibility issues of the available resources with screen readers. 55

(72.4%) students mentioned that they are not having proper guidance when they use such resources, 54 (71.1%) students face difficulty in formulating search techniques. Difficulty in finding relevant information, slow internet connectivity, blocked websites and lack of time mentioned by 48 (63.2%), 45 (59.2%), 45 (59.2%) and 26 (34.2%) respectively in figure 7.

**Table 9: Problems Faced in Using E-resources**

Problems faced in using e-resources	No. of Respondents (N=76)	Percentage
Slow internet connectivity	45	59.2
Difficult to find relevant information	48	63.2
Lack of assistance	55	72.4
Difficulty in formulating search techniques	54	71.1
Lack of time	26	34.2
Websites blocked	45	59.2
Lack of compatibility with screen readers	65	85.5

Note: multiple responses were allowed



**Figure 7: Problems faced in Using E-resources**

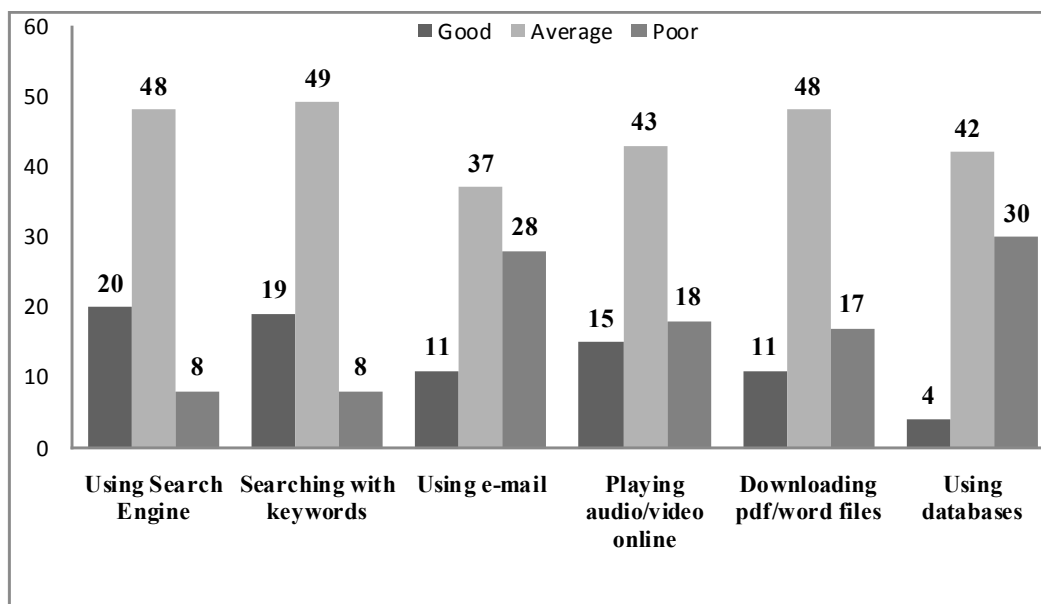
**5.10 Experiences of Visually Impaired Students While Using E-resources**

In due course of the study, the experiences of visually impaired students were examined while performing different tasks electronically. The results showed in table 10 and figure 8 that the students are having an average experience, furthermore while using search engine 20 students mentioned their experience as good, 48 as average and 8 as poor experience. While searching with keywords 19

students mentioned as good, 49 as average and 8 as poor respectively. 11 students mentioned their good experience in email usage, 37 as average and 28 as poor. While playing audio/video online 15 students mentioned that they are having good experience, 43 as average and 18 as poor. In addition, while downloading pdf or word file 11 students mentioned good experience, 48 as average and 17 as poor. And in last, 4 students mentioned good experience, 42 as an average and 30 as poor experience while making use of different databases.

**Table 10: Experiences of Visually Impaired Students While Using E-resources**

Experiences	Good (N=76)	Average (N=76)	Poor (N=76)	Total
Using Search Engine	20 (26.32%)	48 (63.2%)	8 (10.5%)	76
Searching with Keywords	19 (25.0%)	49 (64.5%)	8 (10.5%)	76
Using E-mail	11 (14.5%)	37 (48.7%)	28 (36.8%)	76
Playing Audio/Video Online	15 (19.7%)	43 (56.6%)	18 (23.7%)	76
Downloading pdf/word files	11 (14.5%)	48 (63.2%)	17 (22.4%)	76
Using Databases	4 (5.3%)	42 (55.3%)	30 (39.5%)	76



**Figure 8: Experiences of Visually Impaired Students While Using E-resources**

## 6. Major Findings and Suggestions

The present study was conducted at AMU, Aligarh in which 76 Visually Impaired students were used as sample which includes 52 males and 24 females enrolled in PhD, Postgraduate, Undergraduate courses to determine the awareness and use of e-resources by following structured interview method and it was found that all these students are using e-resources among which the majority of students are using e-books 73 (96.1%) followed by e-newspapers 64 (84.2%). Some students are using e-resources occasionally (32.9%) some of them are using daily 26.3%, few monthly 23.7% and remaining 18.4% are using them weekly. The purpose of using the e-resources recorded from the students highlights that 68 (96.5%) students use to remain updated and 67 (88.2%) students are using for writing their assignments. While using e-resources the major problems faced by these students is the

compatibility issue of resources with screen readers (85.5%) and lack of assistance (72.4%).

Based on the findings following suggestions are given for effective electronic services to visually impaired students:

- ❖ Proper computer training and awareness about the software available should be given to visually impaired students to increase the smooth accessing of information in the digital era.
- ❖ Awareness of the use of e-journals, e-databases and institutional repositories should be provided to obtain current information.
- ❖ Students should be motivated by conducting awareness programmes for performing tasks electronically which boost their confidence level as well.

- ❖ Access to e-resources is an important issue for these people. Therefore, libraries should focus on the accessible web design to ensure access and use of such resources.

## 7. Conclusion

Today libraries and its users are depending on e-resources and databases for their information needs. Therefore, it is the need of an hour that these resources should be made accessible to visually impaired users along with other materials as well (Power & LeBeau, 2009). Visually impaired students of AMU are well aware of e-resources and are making use of these resources for different purposes such as remaining up to date and writing their assignments while the major difficulty they come across is the issue of compatibility of such resources with screen readers and lack of assistance. To overcome these barriers libraries must acquire accessible resources and provide them proper training so that the problems could be ruled out, when there will be an emphasis on providing resources on time then there will be no disability.

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