

Extent of familiarity in using various software by the visually impaired students for accessing library resources in Karnataka for their academic use- A study

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ABSTRACT

This paper deals with use of specially designed software for visually impaired like Kurzweil OCR, Jaws talking software, NVDA, Widows eye, Duxbury and magic without speech screen magnification by visually impaired students for their academic usage. Extent of familiarity of the various software used by students studying in under-graduate and post-graduate courses are covered here

Keywords: Library Resources, software, Visually impaired

1. INTRODUCTION

The required information of visually impaired students cannot always be available in braille format when the informations are being published in digital format. Hence, to access the electronic information resources visually impaired students are invariably relying on some assistive technology software listed below for their academic purpose. Some of the software listed below are used by visually impaired student in this study.

About software

- 1. Kurzweil OCR Reading Software** combined with a flatbed scanner and PC convert into a reading machine. All one needs to do is to place the book or printed text face down on the scanner and once it is scanned the software converts it to readable format and reads out aloud the contents. This software speaks text aloud in a variety of natural-sounding voices that can be modified to suit individual preferences. In addition, it provides users with document creation and editing as well as study skills capabilities for note taking, summarizing and outlining text.
- 2. Jaws** The popular software being used to read the text that appears on the monitor. With the help of JAWS the visually challenged students and faculty can read the information sources that are procured to the library and information centres. It is an opportunity created with the help of technology for reading journal articles, books, monographs, reports, reference sources, theses and projects reports.

- 3. NVDA (Non-Visual Desktop Access)** is a free and open source screen reader for the Microsoft Windows operating system. Via synthetic speech and Braille, it enables people who are blind or vision impaired to access computers. Major features include support for over 20 languages and the ability to run entirely from a USB drive with no installation. NVDA is available from.
- 4. Windows Eyes** is a leading software application for the visually challenged students, which converts components of the Windows operating system into synthesized speech allowing for access to Windows based computer systems. The applications that utilize standard Microsoft controls are spoken automatically with little or no configuration necessary. The applications of windows eye requires simple modifications to Window- Eyes is nothing less than the most stable screen reader available on the market today.
- 5. The Duxbury software** is quite popular in India and it converts text of 12 Indian languages into Braille and the students can take a Braille printout or read the same text on Refreshable Braille Display Board. Duxbury's freeware may be downloaded from Duxbury's web site and used for any academic, legal and constructive purposes that does not involve redistribution to third parties. It may not be commercially distributed or otherwise, by any means including placement on other web sites.

6. Magic Screen Magnification Software magnifies or enlarges text into readable size for low vision students. The software can be installed on the PC systems that magnifies the computer screen from up to sixty times of its normal size including all the components of the screen like menus, tool bars, icons, etc. along with the text to enhance visibility for low vision students

Methodology:

The investigator has personally visited the higher educational institutions and libraries that are extending library and information services to the visually challenged students and research scholars. Responses were obtained from the 801 visually challenged students for the closed end interview schedule. The data thus obtained have been tabulated, analyzed and interpreted to arrive at the valid findings.

Table 1
Extent of familiarity in using kurzweil OCR reading software

| Responses | | Visual Impairment | | Gender | | Education | | Total |
|-----------------|------------|-------------------|--------|---------------------|--------|---------------------|--------|------------------------------------|
| | | Partial | Total | Male | Female | UG | PG | |
| Not at all | Frequency | 28 | 54 | 14 | 68 | 77 | 5 | 82 |
| | Percentage | 9.5% | 10.7% | 4.6% | 13.6% | 10.1% | 13.9% | 10.2% |
| Slightly | Frequency | 21 | 15 | 10 | 26 | 36 | 0 | 36 |
| | Percentage | 7.1% | 3.0% | 3.3% | 5.2% | 4.7% | 0.0% | 4.5% |
| Moderate | Frequency | 127 | 231 | 160 | 198 | 346 | 12 | 358 |
| | Percentage | 43.1% | 45.7% | 53.0% | 39.7% | 45.2% | 33.3% | 44.7% |
| High | Frequency | 96 | 124 | 82 | 138 | 205 | 15 | 220 |
| | Percentage | 32.5% | 24.5% | 27.2% | 27.7% | 26.8% | 41.7% | 27.5% |
| Very high | Frequency | 23 | 82 | 36 | 69 | 101 | 4 | 105 |
| | Percentage | 7.8% | 16.2% | 11.9% | 13.8% | 13.2% | 11.1% | 13.1% |
| Total | Frequency | 295 | 506 | 302 | 499 | 765 | 36 | 801 |
| | Percentage | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Test statistics | | | | CV= .174 P= .000 | | CV= .088 P= .188 | | X ² =420.030 P= .000 |

Table 1 projects the extent of familiarity with the use of kurzweil OCR reading software. Among the respondents, an overwhelming majority of respondents opine that they are familiar with the use of kurzweil software. 719 respondents

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representing 89.8% are familiar and just 82(10.2%) of the respondents have offered negative response. Further, 325(40.6%) respondents are familiar to the higher extent, 358 representing 44.7% are familiar to a moderate extent and

just 36(4.5%) of them are familiar to a little extent. Chi-square revealed a significant difference between these groups of frequencies having ‘moderate’ responses high ($X^2=420.03$; $p=.000$).

Higher percentage of female students are familiar with the use of kurzwell software than male respondents ($CV=.174$; $p=.000$). However, educational status did not have significant association with the responses.

Table 2
Extent of familiarity in using JAWS Talki software

| Responses | | Visual Impairment | | Gender | | Education | | Total |
|-----------------|------------|-------------------|--------|--------------------|--------|-------------|--------|-------------------------|
| | | Partial | Total | Male | Female | UG | PG | |
| Not at all | Frequency | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Percentage | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Slightly | Frequency | 6 | 6 | 6 | 6 | 10 | 2 | 12 |
| | Percentage | 2.0% | 1.2% | 2.0% | 1.2% | 1.3% | 5.6% | 1.5% |
| Moderate | Frequency | 42 | 66 | 16 | 92 | 102 | 6 | 108 |
| | Percentage | 14.2% | 13.0% | 5.3% | 18.4% | 13.3% | 16.7% | 13.5% |
| High | Frequency | 57 | 129 | 60 | 126 | 180 | 6 | 186 |
| | Percentage | 19.3% | 25.5% | 19.9% | 25.3% | 23.5% | 16.7% | 23.2% |
| Very high | Frequency | 190 | 305 | 220 | 275 | 473 | 22 | 495 |
| | Percentage | 64.4% | 60.3% | 72.8% | 55.1% | 61.8% | 61.1% | 61.8% |
| Total | Frequency | 295 | 506 | 302 | 499 | 765 | 36 | 801 |
| | Percentage | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Test statistics | | CV= .076 | | CV= .214 P=.000 | | CV= .080 | | $X^2=654.326$ P=.000 |

Table 2 shows the extent of familiarity with the use of JAWS talking software. It is important to note that all the visually challenged student respondents in the study are familiar with use of JAWS software. None of the students among 801 respondents has offered negative response. To be specific, 495 respondents representing 61.8% are familiar to the full extent and 186(23.2%) are familiar to the higher extent. Further, 108(13.5%) have opined that they are familiar to a moderate extent and only 12(1.5%) of the respondents that they are familiar to a little extent. Chi-square test revealed a significant difference between these groups of frequencies

having ‘very high’ responses maximum ($X^2=654.326$; $p=.000$).

Only gender as a secondary variable found have significant association with the responses, where we find that male respondents had more familiarity with the use of JAWS talking software ($CV=.214$; $p=.000$). Visual impairment and educational status did not have significant association with the response patterns regarding the familiarity with the use of JAWS talking software.

Table 3

Extent familiarity in using non visual disc access (NVDA) screen reader software

| Responses | | Visual Impairment | | Gender | | Education | | Total |
|-----------------|------------|---------------------|--------|---------------------|--------|---------------------|--------|-----------------------------------|
| | | Partial | Total | Male | Female | UG | PG | |
| Not at all | Frequency | 28 | 84 | 4 | 108 | 108 | 4 | 112 |
| | Percentage | 9.5% | 16.6% | 1.3% | 21.6% | 14.1% | 11.1% | 14.0% |
| Slightly | Frequency | 12 | 6 | 12 | 6 | 16 | 2 | 18 |
| | Percentage | 4.1% | 1.2% | 4.0% | 1.2% | 2.1% | 5.6% | 2.2% |
| Moderate | Frequency | 27 | 73 | 38 | 62 | 96 | 4 | 100 |
| | Percentage | 9.2% | 14.4% | 12.6% | 12.4% | 12.5% | 11.1% | 12.5% |
| High | Frequency | 198 | 301 | 218 | 281 | 477 | 22 | 499 |
| | Percentage | 67.1% | 59.5% | 72.2% | 56.3% | 62.4% | 61.1% | 62.3% |
| Very high | Frequency | 30 | 42 | 30 | 42 | 68 | 4 | 72 |
| | Percentage | 10.2% | 8.3% | 9.9% | 8.4% | 8.9% | 11.1% | 9.0% |
| Total | Frequency | 295 | 506 | 302 | 499 | 765 | 36 | 801 |
| | Percentage | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Test statistics | | CV= .159 P= .000 | | CV= .296 P= .000 | | CV= .054 P= .678 | | X ² =928.419 P=.000 |

Table 3 depicts the extent of non-visual disc access (NVDA) software. It is interesting to note that a large majority of the respondents are familiar with the use of NVDA software. Among the respondents, 689(86%) have expressed that they are familiar with use. Only 114 (14%) of the respondents have offered negative response regarding familiarity with NVDA software. Further, it is also important to note that 571 respondents representing 71.3% are familiar the use to the higher extant and another segment comprising of 100 (12.5 %) respondents are familiar to moderate extant. Hence, it is inferred that a large majority of the visually challenged students are familiar with the use of NVDA screen reading software. Chi-square revealed a significant difference between groups of frequencies of responses having 'high' responses maximum ($X^2=928.419$; $p=.000$).

Among secondary variables, in visual impairment status it was found that partially impaired respondents were more familiar with non-visual disc access (NVDA) software than totally blind respondents (CV=.159; $p=.000$). Gender-wise comparison revealed that male respondents were more familiar than female respondents. However, educational status of the respondents did not have significant association with their response patterns (CV=.296; $p=.000$).

Table 4
Extent of familiarity in using windows eye software

| Responses | | Visual Impairment | | Gender | | Education | | Total |
|-----------------|------------|-------------------|--------|---------------------|--------|-----------------|--------|------------------------------------|
| | | Partial | Total | Male | Female | UG | PG | |
| Not at all | Frequency | 274 | 462 | 274 | 462 | 707 | 29 | 736 |
| | Percentage | 92.9% | 91.3% | 90.7% | 92.6% | 92.4% | 80.6% | 91.9% |
| Slightly | Frequency | 10 | 14 | 16 | 8 | 19 | 5 | 24 |
| | Percentage | 3.4% | 2.8% | 5.3% | 1.6% | 2.5% | 13.9% | 3.0% |
| Moderate | Frequency | 7 | 22 | 8 | 21 | 27 | 2 | 29 |
| | Percentage | 2.4% | 4.3% | 2.6% | 4.2% | 3.5% | 5.6% | 3.6% |
| High | Frequency | 4 | 2 | 0 | 6 | 6 | 0 | 6 |
| | Percentage | 1.4% | 0.4% | 0.0% | 1.2% | 0.8% | 0.0% | 0.7% |
| Very high | Frequency | 0 | 6 | 4 | 2 | 6 | 0 | 6 |
| | Percentage | 0.0% | 1.2% | 1.3% | 0.4% | 0.8% | 0.0% | 0.7% |
| Total | Frequency | 295 | 506 | 302 | 499 | 765 | 36 | 801 |
| | Percentage | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Test statistics | | CV= .101 P=.088 | | CV= .140 P= .003 | | CV= .143 P=.003 | | X ² =2589.668 P=.000 |

Table 4 shows the extent of the use of windows eye software. Among the respondents, 65 respondents representing 8.1 % are familiar with the use of windows eye software. It is evident that 12 (1.4 %) of them are familiar to higher extent, 29 (3.6 %) are familiar to moderate extent and 24 (3.0%) are familiar to little extent. The data reveal that a large percentage of visually challenged students are unfamiliar with the use of windows eye software. Chi-square test revealed a significant difference between these groups of frequencies having 'not at all' responses very high.

Gender-wise comparison indicated that, male respondents were more familiar with the use of windows eye software than female respondents (CV=.140; p=.003). Education status wise

it was observed that Post Graduate students were more familiar than the UG students. However, visual impairment status did not have significant association with the responses.

Table 5
Extent of familiarity in using *duxbury translation software*

| Responses | | Visual Impairment | | Gender | | Education | | Total |
|-----------------|------------|--------------------|--------|---------------------|--------|--------------------|--------|----------------------------------------|
| | | Partial | Total | Male | Female | UG | PG | |
| Not at all | Frequency | 277 | 468 | 274 | 471 | 712 | 33 | 745 |
| | Percentage | 93.9% | 92.5% | 90.7% | 94.4% | 93.1% | 91.7% | 93.0% |
| Slightly | Frequency | 4 | 8 | 8 | 4 | 12 | 0 | 12 |
| | Percentage | 1.4% | 1.6% | 2.6% | 0.8% | 1.6% | 0.0% | 1.5% |
| Moderate | Frequency | 14 | 24 | 20 | 18 | 35 | 3 | 38 |
| | Percentage | 4.7% | 4.7% | 6.6% | 3.6% | 4.6% | 8.3% | 4.7% |
| High | Frequency | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Percentage | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Very high | Frequency | 0 | 6 | 0 | 6 | 6 | 0 | 6 |
| | Percentage | 0.0% | 1.2% | 0.0% | 1.2% | 0.8% | 0.0% | 0.7% |
| Total | Frequency | 295 | 506 | 302 | 499 | 765 | 36 | 801 |
| | Percentage | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Test statistics | | CV= .067 P=.308 | | CV= .121 P= .008 | | CV= .048 P=.598 | | X ² =1978.77 0 P=.000 |

Table 5 Depicts the extent of use of Duxbury braille translation software. Among the respondents 56 representing 7 % have expressed that they are familiar with use of Duxbury software. A large majority are not familiar with the use of software which was found to be statistically high ($X^2=1978.707$; $p=.000$). Further, 6 (0.7%) are familiar to the highest extent, 38 (4.7%) are familiar to a moderate extent, and 12 (1.5 %) are familiar to a little extent.

Only gender was found to have significant association with the responses where we find that male respondents were more familiar with the use of Duxbury Braille translation software than female respondents ($CV=.121$; $p=.008$). However, visual impairment and educational status did not have significant association with their response patterns

Table 6

Extent of familiarity in using *magic without speech screen magnification*

| Responses | | Visual Impairment | | Gender | | Education | | Total |
|-----------------|------------|--------------------|--------|---------------------|--------|--------------------|--------|------------------------------------|
| | | Partial | Total | Male | Female | UG | PG | |
| Not at all | Frequency | 268 | 467 | 262 | 473 | 702 | 33 | 735 |
| | Percentage | 90.8% | 92.3% | 86.8% | 94.8% | 91.8% | 91.7% | 91.8% |
| Slightly | Frequency | 18 | 12 | 20 | 10 | 28 | 2 | 30 |
| | Percentage | 6.1% | 2.4% | 6.6% | 2.0% | 3.7% | 5.6% | 3.7% |
| Moderate | Frequency | 9 | 27 | 20 | 16 | 35 | 1 | 36 |
| | Percentage | 3.1% | 5.3% | 6.6% | 3.2% | 4.6% | 2.8% | 4.5% |
| High | Frequency | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Percentage | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Very high | Frequency | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Percentage | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Total | Frequency | 295 | 506 | 302 | 499 | 765 | 36 | 801 |
| | Percentage | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Test statistics | | CV= .107 P=.010 | | CV= .145 P= .000 | | CV= .027 P=.749 | | X ² =1230.539 P=.000 |

Table 6 depicts the extent of the use of magic –screen magnification software. Here, among the respondents, 66 students representing 8.2% are familiar with use. A large majority is unfamiliar with use of magic –screen magnification software, which is found to be statistically high and significant ($X^2=1230.539$; $p=.000$). However, 36 (4.5%) of the respondents are familiar

with the use to moderate extent and 30 (3.7%) are familiar to a little extent. This clearly proves that a large percentage of visually challenged students are unfamiliar with the use of magic- screen magnification software.

Among secondary variables, visual impairment status comparison revealed that partially blind respondents were more familiar in the use of magic –screen magnification software than totally blind respondents ($CV=.107$; $p=.010$). It was also observed that male respondents were more familiar than female respondents ($CV=.145$; $p=.000$). Educational status of the respondents did not have significant association with the response pattern.

Recommendations and Suggestions:

Kurzweil OCR Reading Software is an essential item needed in the learning resource centre meant for visually challenged students. In the present study, it is encouraging to note that an overwhelming majority, representing 89.9% of the respondents are familiar with the use of Kurzweil OCR Reading Software. Further, 40.6% of the respondents are familiar to an higher extent and the post graduate students are better in using Kurzweil than the undergraduate students

As regards the familiarity with the use of JAWS Talking Software, again it encouraging to note that 61.8% of the visually challenged respondent are familiar with the use of JAWS talking software. Further, 23.2% of them

are familiar with the use to an higher extent. It is also pertinent here to note that the use of JAWS software is an essential are for the visually challenged mainly as screen reading software (Table 37). Further, regarding the use of Non- Visual Disc Access (NVDA) Software, 86% of the respondents have offered positive response showing that they are familiar with the use.

While referring to the extent of familiarity in the use of Duxbury Braille Translation Software, only 7% of the respondents have expressed familiarity. Though the Braille translation software is an important one to get the English and some of the Indian language text converted into Braille Script, a large majority of the visually challenged students are not familiar with its use.

Conclusion:

By giving adequate library facilities like establishment learning resource center for visually challenged students with fully equipped software listed in this study really it helps to visually challenged students studying in higher education system and giving them an equal opportunity to develop lifelong learning skills.. It is a matter of social justice and fundamental human right. Further, inclusive education is an important factor for a successful society and the framework for how to attain the inclusion by providing library service at its best. Thus, the libraries have to venture to prove that disability is not an inability and it is not a hindrance for teaching and learning process with the adoption of assistive technology.

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