

COMPARATIVE ANALYSIS OF COMPUTER SOFTWARE AND BRAILLE LITERACY TO EDUCATE STUDENTS HAVING VISUAL IMPAIRMENT

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ABSTRACT

This research investigates the comparative analysis of computer software and Braille literacy to educate students having visual impairment. The main objective of this research focus on compare the feasibility and usage of Braille literacy and computer software to educate children with visual impairment. Main objectives of the study were to identify the importance of Braille and Computer literacy by the perceptions of male and female students with visual impairment, to identify the importance of the Braille and Computer literacy in different classes of students with visual impairment and to identify the difference of Braille and Computer literacy importance in different schools of students with visual impairment. Five special education institutions were selected where students with visual impairment were studying. A convenient sample of 100 students was taken from these schools. A three point rating scale was used as research instrument. Researchers personally collected data from the respondents. Data was analyzed through SPSS. Major findings showed that students were more interested in Braille system than computer software. Braille system and required material was present in all the schools while computer teachers with required experience were not available in these institutions. Teachers were found expert in Braille literacy as compare to the computer software- It was recommended that proper awareness about most recent technologies were necessary for teachers in special education institutions. Students as well as teachers should be provided chances of hands on practice to create interest in computer software use in special education.

Key words: *Braille Literacy, Computer software, Visual impairment. Computer in special education*

BACKGROUND

Braille literacy is a tactile approach of reading and writing used by the visually impaired children. Braille is the key to literacy, successful employment and independence. In the early 1800s, Louis Braille developed a system of reading and writing that uses arrangement of six raised dots to represent letters, numbers and words. Braille is a building block of literacy and independence.

When visually impaired children are learning to read then Braille is the best way for them to develop skills in spelling, grammar and punctuation. "Braille is the primary tactile means for displaying information to students who are visually impaired. Braille and other avenues to study and learning are both the means of reception of information and expression of information by persons with visual disabilities" (Scadden, 1987). Braille is a matter of minutes rather than waiting for a day or more for the Braille to transcribe it.

At this time such units are expensive but the cost becomes more reasonable if a number of students are using the system. "Braille is a system of touch reading for the blind which employs embossed dots evenly arranged in quadrangular letter spaces or cells. In each cell, it is possible to place six dots, three high and two wide.

By selecting one or several dots in characteristic position or combination, 63 different characters can be formed" (Alt, D.1997). Braille is becoming an increasingly accepted option for students with low vision, especially those who rely on extremely large print. Many of these students are learning to use both media and to make choices about which are best for a given situation. Teaching Braille to students with low vision successfully depends a great deal on the teachers, parents, and student having a positive attitude about Braille. It is important that Braille not be viewed as a symbol of weakness or as "just for blind people" but that as a tool, which can empower people in situations when the use of large print is cumbersome or impractical. (lanuzzi, 1999 & 1991). Holbrook and Koenig, (1992) emphasized the importance of using methods and materials which will motivate students with low vision to learning Braille. These methods and materials may include Braille menus and schedules, reading material which is relevant and of interest to the children.

On the other hand computer is a fast and accurate electronic symbol (or data manipulating system that is designed to automatically accept and store input data, process them, and produce output results under the direction of a stored program instructions (Sander, 1996). Braille writers in regular classroom no longer need to wait for someone to transcribe their paper so that the teacher can grade them. JAWS for windows, is the world's best selling screen reading software, and Braille and speak, a note taking device with, Braille key input and speech or data output. Worldwide more than 78,000 people who are blind or have low vision use Jaws to achieve some or higher productivity in computer based jobs as people with average eyesight. College students and the professionals use Braille and speak devices to take notes in classes and meeting, keep address books and up date personal calendars. Other products include Magic Screen magnification; connect out loud web access software and Open Book, Scanning software that reads document aloud (Herald, D. July 2003). (<http://welcom.hp.com/country/us/en/termsfuse.html>).

Software is the term given to a programme or set of instructions that tell the hardware in a computer how to operate. Before the hardware can read data and do something with it, the software must instruct the CPU what to do and how to do it.

The role of software is to command the hardware and make it useful (Sander, 1996). Software for the visually impaired that reads the contents of a computer screen converting the text to speech. Screen readers are designed for specific operating systems and generally work with most applications. (www.definethat.com/hitting.asp?ID==6829-7K).

Following are the main computer soft wares and screen readers, used by the visually impaired children.

JAW is a powerful software program designed to work with a speech synthesizer to improve the productivity level of visually impaired employees, students and the casual user. By streamlining keyboard functions, automating commands, and eliminating repetition, JAWS allows the operator to learn faster and easier than ever before. JAWS is based upon a whole new approach to talking computers - that of designing software with the priorities of the blind user in mind. Yet, the sighted trainer or supervisor has not been forgotten, since JAWS offers both audible and visual flexibility.(<http://www.freedomscientific.com/fs-products/software-jawsSOfea.asp>).

Magic 9.50 introduce a new approach to settings files and customization. Just as Windows provides a "My Documents" folder for each user on a computer or serve, Magic now allows each user to have his or her own profile. This profile contains the user's custom Magic settings and schemes. This allows different users on the same system to set up and run Magic in completely different ways.

Open Book Scanning Reader Software allows you to convert printed documents or graphic based text into an electronic text format using accurate optical character recognition and quality speech. Open Book's many powerful low vision tools allow you to customize how the document appears on your screen, while other features provide portability.

Window - Eyes is nothing less than the most stable screen reader available on the market today. Featuring Windows 9X, Me, 2000, XP and 2003 compatibility, Window-Eyes puts you in the hands of the most powerful screen reading software ever created.

Window-Eyes gives total control over what you hear and how you hear it. Plus, with its enhanced Braille support that control is extended to what you feel as well. On top of all that, the power and stability of Window-Eyes means that most applications work right out of the box with no need for endless tinkering in order to get them to function properly.

Hal Screen Reader You don't have to see a computer screen to use the latest IT applications. Hal Screen Reader provides the very best intelligent screen access for visually impaired computer users through speech and Braille.

Hal Standard and professional versions are also available in

USP pen drive editions. As many customers have a need for accommodations on multiple computers or within a shared computer environment the Pen Edition makes it possible for blind and low vision computer users around the world, to walk up to any computer and find their access program running automatically and configured just the way. The following problems may become hurdle for the students with visual impairment;

- The students will face difficulty in the beginning of the training if there would be no expert teachers for them.
- The instructions sometimes are not clear to the students.
- They are not being provided with facilities.
- They are not being given enough time for getting trained in computer skills.
- There are not separate computer systems for all students.

The use of full graphics (e.g. line drawings, bar charts) are also likely to be increased. These displays cannot be converted to non-visual output automatically in the general case, but it will be possible, even though expensive, to do the conversion in special cases. This will also apply to the use of WIMPs. The use of images (e.g. a photograph displayed on a computer screen) is also likely to increase (Gill, J.M.,1987).

On the basis of above mentioned situation about the use of Braille and computer software to teach visually impaired students this study was designed to compare the importance of both the methods under the title of "A comparative study of Computer software and Braille literacy to educate students having visual impairment". Following were the main objectives of the study:

- To identify the importance of Braille and Computer literacy by the perceptions of male and female students with visual impairment,
- To identify the importance of Braille and Computer literacy with reference to different age groups of male and female students with visual impairment,
- To identify the importance of Braille and Computer in different classes of students with visual impairment and
- To identify the difference of Braille and Computer literacy importance in different schools of students impairment.

METHOD AND PROCEDURE

The study was descriptive in nature. The sample of the study comprises on 100 children with visual impairment. The population of the study included all the children with visual impairment from 6th to 10th class. The sample of the study consisted of 100 students with visual impairment form 6th to 10th class, from five special schools of five districts in Punjab. Convenient sampling technique was used to select the sample from the population.

The researchers developed a questionnaire as an instrument of the study. The researchers personally collected the data with the help of the questionnaire developed by them. The data was tabulated first and then analyzed through SPSS. The instrument consisted of 43 items. Three point rating scale was used. The student had to respond to the questionnaire having the options like: Yes, No and to some extent. The items were developed on the basis of the components like; reading and writing of Braille, Braille contractions, qualification of teachers, developing confidence and independence in students, effect of Braille literacy. Braille crisis, use of JAWS software, availability of other computer software, satisfaction level for computer education, special materials available at school, problems related with computer education and future developments in Braille literacy and computer education.

Researchers went in five districts to the five schools of special children with visual impairment and asked the questions from 100 students of 6th and 10th class. They read out the questions to the students and tick mark the options told by the students, Data was tabulated and analyzed through SPSS software. Data was analyzed on the basis of percentage and frequency of the responses. T-test was applied to know either there was a significant difference between the groups of the sample (Male and female) or not.

MAJOR FINDINGS OF STUDENTS RESPONSES TOWARDS BRAILLE LITERACY

All of the students (100%) agreed that they were being taught Braille writing, and given Braille training, majority of the students (66%) agreed that to some extent the instructional material was available in the schools, majority of the students (58%) agreed that they were provided with the course books in Braille code, majority of the students (74%) agreed that they were being taught Braille constructions from earlier classes. Majority of the students (96.0%) agreed that they were motivated by the learning of Braille, all of the students (100%) agreed that they wrote their notes in Braille form. Majority of the students (98.0%) agreed that their teachers were expert in Braille skill, majority of the students (86.0%) agreed that they did not record their class lectures in the tape recorder, majority of the students (88.0%) agreed that they were given permission of taking Braille course

books to home. Majority of the students (70.0%) agreed that they were being provided with the help of parents in Braille reading and writing to some extent and majority of the students (94.0%) of parents in Braille reading and writing to some extent and majority of the students (94.0%) agreed that they could express their feelings in the form of Braille, Majority of the students (90.0%) agreed that they considered themselves a successful person after learning Braille majority of the students (96.0%) agreed that the help was provided to them by the teachers in the case of Braille reading and writing problems.

Independent sample T-test showed that the female children had more positive responses towards Braille literacy than the male children with visual impairment and there was a significant difference between the responses of female and male children with visual impairment towards Braille literacy.

MAJOR FINDING OF STUDENTS RESPONSES TOWARDS COMPUTER SOFTWARE LITERACY

Half of the students (48.0%) agreed that the computer software education is being provided to them, half of the students (50.0%) agreed that the training of computer software programs are given to them according to their needs, majority of the students (58.0%) agreed that the expert computer teaches are present in their schools, half of the students (46.0%) agreed that they are provided with the proper time for learning computer software, majority of the students (60.0%) agreed that the JAWS software is available in the computers of their school, all the students (100%) agreed that they have no facility of narrator software in the computers of their school, majority of the students (60.0%) agreed that they are facilitated with the JAWS software in their school, majority of the student (68.0%) agreed that they have no facility of screen reader software in their school, majority of the students, (56.0%) agreed that they do not feel any use of getting training in other software's in spite of JAWS software, majority of the students, (52.0%) agreed that to some extent help is being provided to them in the subjects like Arabic, Urdu and Math by these software, majority of the students (56.0%) disagreed that their teachers train them in different computer software programs properly, majority of the students (62.0%) agreed that there is no availability of computer systems separately for every student in the school.

Majority of the student agreed that they are not satisfied with the availability of screen reader software in the school, majority of the students (58.0%) agreed with the development of independence in them after getting training in computer software programs, majority of the students (58.0%) disagreed that they are satisfied with the computer education being, provided to them in the school.

Independent sample T-test shows the result that male children/students had more positive responses towards computer software literacy. Thus there is significant difference between the responses of female and male children with visual impairment towards computer software literacy.

CONCLUSION/DISCUSSION

Following conclusion were drawn on the basis of the findings:

All of the students said that they were being taught Braille reading and writing, they also got training in it. They were not much satisfied with the instructional materials given to them. They were provided with course books in Braille form. They were being taught Braille contractions from the earlier classes. They had motivation towards learning of Braille. The students said that they had expert Braille teachers. They wrote their notes in Braille form. They did not record their class lectures in the tape recorder because they preferred to write in Braille, recording was done in very few cases. They were given perkin facility for increasing speed of writing to some extent they faced problems in Braille writing. They were given permission to take Braille course books to home for studying.

They were not provided with the Braille reader in the classroom. They were given extra time for Braille reading and writing. Their parents helped them to some extent in Braille reading and writing.

They could express their feelings in the form of Braille. They considered themselves a successful person after learning Braille. Their teachers helped them in Braille reading and writing. They were also getting training in computer software. For this training expert teachers were not available in the school. The students were not satisfied with the availability of proper time to learn the computer software skills. In their schools JAWS software was available in computer system but narrator software was not available. In their schools they had no facility of screen reader software. They students did not learn other software except of JAWS. To some extent help was provided to them through software in the different subjects. Every student in the school wanted a separate computer system for hi. They considered themselves a successful person after learning the computer software skills. Most of the students said that they faced problems while getting training in computer skills. Some students said that computer software programs fulfilled their educational demands and some respond in negative also. Mostly of the students were not satisfied with the computer education in their schools.

It is concluded that the students with visual impairment of specials schools had more positive responses towards Braille literacy as compared to computer software literacy with reference to perceptions, ages, classes and schools of male and female students with visual impairment. Thus it showed that the Braille literacy was more important than the computer software literacy in the education of children with visual impairment.

RECOMMENDATIONS

The following recommendations are made on the basis of conclusion:

- Instructional aid used in the classroom for children with visual impairment should be concrete and of high quality.
- All of the course books in the school should be in the form of Braille.
- More Perkins should be given to the students for developing their writing speed and it is ideal if each student could have separate Perkins for himself.
- The assertive material like tape recorder and writer should be provided to the child while he is attempting the examination paper.
- The quality of computer education should be improved in the schools.
- The different computer software programs except of JAWS according to the needs of the students should also be taught.
- The teachers should be trained fully in computer software skills.
- Screen reader software should be provided to the students in the schools.

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