



A CASE STUDY ON THE INTEGRATION OF ASSISTIVE TECHNOLOGY TO SUPPORT TEACHING AND LEARNING FOR VISUAL IMPAIRED STUDENTS

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ABSTRACT

Any unfavourable visual condition that hinders a person's capacity to carry out the necessary tasks of daily living is considered a visual impairment. Infants, toddlers, kids, and teens who often have problems with their visual system that impact their capacity to study are known as students with visual impairments. There are a variety of aids and technologies that teachers can employ to make their classrooms more accessible for visually impaired pupils. They can improve their learning abilities with the use of assistive devices. Supporting the learning process of visually impaired pupils through the use of aids and technology materials is the primary emphasis of this study. The overarching goal of this descriptive survey research project is to examine how visually impaired pupils make use of assistive technology in the classroom. This study utilized closed-form questionnaires. The sample consists of thirty students from the upper primary and thirty from the secondary level in School for the Blind, Ranipatna, Balasore. The results showed that the facility does have accessible technologies. Science classes heavily use assistive technology compared to language classes. Students are less likely to utilize computers as learning tools than audio recorders. Students rely on Braille more than they do on standard print or large print reading aids.

KEYWORDS: *Visually impaired, Assistive Technology*

INTRODUCTION

The term "assistive technology" (AT) refers to a wide range of products and services developed to enhance everyday life for people with disabilities (King, 1999). Accessible technology (AT) can help these people in many ways, including learning, making their surroundings more accessible, competing in the workplace, increasing their independence, and improving their quality of life (Blackhurst & Lahm, 2000). Access to play and learning, increased independence, and quality of life are all areas in which children and adults with disabilities can benefit greatly from assistive technology (AT). "With the assistance of technology, young children with disabilities can experience more success in exploring the world around them; in communicating their needs, desires and discoveries to others; and in making choices about their world" (Judge, 2000). To guarantee that students with visual impairments have full and equal access to educational opportunities, it is vital to appropriately modify instructional materials and teaching methods, according to Holbrook and Koenig (2000) in Foundations of Education. As simple as wide-lined paper with bold markers for writing and large-print books for reading are examples of low-tech assistive technology that can help kids with low functional vision (Kapperman & Koenig, 1996). Students with limited functional vision can benefit from high-tech access technologies such as electronic magnifiers and computer screen-enlargement software (Leventhal & Jacinto, 2008). All of the above show that there are many different ways to meet the needs of those who are visually impaired. The degree of intricacy or sophistication of the technology is determined by those needs. Thanks to individualised lessons, all children who require assistive technology have access to these possibilities.

AN ANALYSIS OF RELEVANT LITERATURE

Researchers in Kisumu County, Kenya, examined the impact of assistive technology on the academic performance of visually impaired students in a 2015 study by Koweru et al. It was found that students with VI rarely used modern assistive technologies, which hindered their ability to achieve quality educational outcomes including tailored learning and improved performance on internal and national exams. Research by Oira (2012) examined the impact of contemporary assistive technologies on the academic performance of visually impaired pupils at Kibos Special Secondary School in Kisumu County, Kenya. According to the study's results, the most common forms of assistive technology used in visually impaired classrooms were braille machines, embossers, thermoform, slates, and styluses. Research on the use of assistive technology in

the classroom for students with visual impairments was carried out by Alves (2009). According to the study's results, most visually challenged children are proficient computer users. Yet, the advantages of ICT do not accrue to them. Disparities in access to ICT benefits have emerged, particularly between people with and without disabilities. Students who are visually challenged can benefit greatly from the usage of ICT in the classroom. A study was carried out by Deivam (2008) at the University of Khartoum, Sudan, on the utilization of library technology and services by visually impaired and blind individuals. The study's findings were that the requirement for additional training on the use of the available assistive technology for visually impaired and blind pupils is one of several suggestions that are expected to improve the situation. Research on the Provision and Support Experienced by Blind Students in Schools was carried out by Zheng (2014). The informants in this study were provided with various forms of assistance and provision by the government and schools. This support included guide dogs, long canes, computers, audio programs, computer skills training, and one-on-one instruction. An Effective Learning Environment for Visually Impaired Students: Assessing their Perception was the subject of research by Ojha (2014). These results provide the first evidence that visually challenged kids in the upper primary stage have made use of audio books. The visually handicapped were given access to new and distinct learning environments and opportunities through audio books, allowing them to study independently at their own pace and without a volunteer reader.

REASONING BEHIND THE RESEARCH

Every kid who is at least fourteen years old has an inherent right to receive a free and compulsory education, according to the Right to Education Act of 2009. All students, including those with visual impairments, have the right to an equitable education under this Article. Teaching and learning tools must be of high quality for education to be of high quality. In terms of their schooling, it is crucial.

STATEMENT OF THE PROBLEM

The study was looked into the use of assistive technology of visual impaired students. The study is titled as **“A CASE STUDY ON THE INTEGRATION OF ASSISTIVE TECHNOLOGY TO SUPPORT TEACHING AND LEARNING FOR VISUAL IMPAIRED STUDENTS”**

OBJECTIVE OF THE STUDY

The objectives of the study are as follows

- To know the available assistive technologies in visually impaired students' teaching learning process.
- To find out the utilisation of assistive technology in the teaching learning process of visually impaired students.

RESEARCH QUESTIONS

- Would the assistive technology in the teaching-learning process be available for visually impaired students?
- Whether the assistive technology in teaching and learning process can be utilised with the specific means for visually impaired students?

OPERATIONAL DEFINITION OF KEY TERMS

Assistive technology- Assistive technology encompasses not just the tools that individuals with disabilities use to get around, but also the methods that are employed to find, evaluate, and ultimately make the most of these tools.

Visual Impairments-When one's eyesight is impaired to an extent that common corrective lenses, such glasses, are unable to restore normal vision, this is referred to as visual impairments, vision impairments, or vision loss.

DELIMITATION OF THE STUDY

- The researcher delimited his study school for the blind, Ranipatna, Balasore district only.
- The study was delimited to 60 students from the school

METHODOLOGY

The usage of assistive technology in the learning process of visually impaired pupils was studied using a survey method. The best way to find out where something stands in the field of education right now is to conduct a survey.

POPULATION

All the visual impaired students of Odisha were constituted the population of the study.

SAMPLE

The research sample included every single student at the School for the Blind in Balasore, Ranipatna. Thirty children comprised the upper primary level and thirty the secondary level.

TOOLS

A tool is any specific item used in a research project to gather evidence or information about an issue. The instruments were created and utilized by the researchers for this study; Availability and utilisation of assistive technology questionnaire

TECHNIQUES OF DATA ANALYSIS

Due to the descriptive nature of the study, numerical codes were applied to the obtained data and then entered into MS Excel for analysis. We interpreted all of the items based on their frequency and percentage analysis.

ANALYSIS AND INTERPRETATION OF DATA

TABLE-1: AVAILABILITY OF ASSISTIVE TECHNOLOGY

Sl. No.	Items	Yes (frequency in percentage)	No (frequency in percentage)
1	Do you have your computer system with well-equipped current assistive technology facilities to work independently at home?	3(4.8)	57(95.2)
2	Are you happy with the current assistive technology facilities available in the institution for you?	30(50)	30(50)
3	Are you happy with the current assistive technology facilities available in the institution for you?	45(75)	15(25)
4	Do assistive technology help being independent in your life?	52(86.6)	8(13.4)
5	Do you agree that assistive technology can play an important role in minimizing the disability divide among the users?	56(89.6)	4(10.4)
6	Do you prefer digital resources rather than print resources?	49(78.4)	11(21.6)
7	Do you use assistive technology in various subject?	50(80)	10(20)
8	Do you use visual aids?	47(75.2)	13(24.8)
9	Do visual aids are sufficiently available in school?	50(80)	10(20)

Table-1. shows that out of all the students surveyed, 4.8% have their own home computer system, 95.2% do not, 50% of students are satisfied with the facilities provided, and the remaining percent are unsure. Three fourth of the students say yes, one fourth say no, 86.6 percent say assistive technology is highly important in their lives 13.4 percent say no, and 89.6 percent of the students say assistive technology helps them and 10.4 percentage says no help.among students, 78.4% choose digital resources over print ones, while 21.6 percent say no.whereas 80 percent use some form of assistive technology in class and 20 percent do not use. 75.2% of the class makes use of some kind of visual aid. The answer is no, according to 24.8%. Out of the total number of students surveyed, 80% feel that their school provides adequate visual aids, while 20% disagree. The preceding study establishes that the institution possesses assistive technologies.

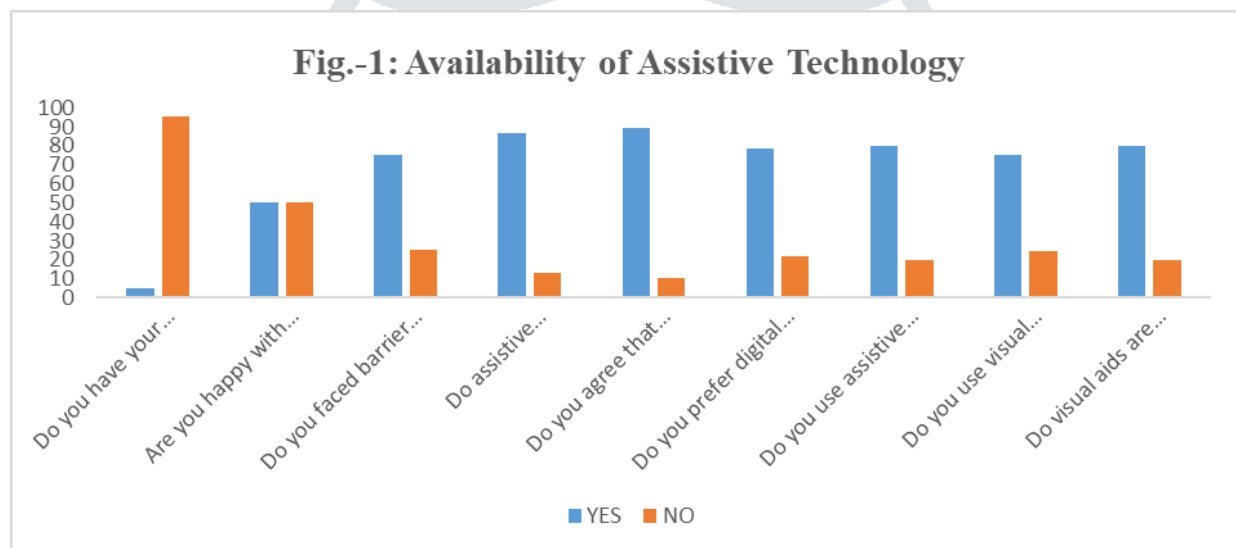


TABLE -2: USE OF ASSISTIVE TECHNOLOGY IN VARIOUS SUBJECT

Sl. No.	Item	Frequently (frequency percentage)	Occasionally (frequency percentage)	Rarely (frequency percentage)	Never (frequency percentage)
1	Language subject	10(16.6)	7(11.7)	16(26.7)	27(45)
2	Science Subject	40(66.6)	10(16.7)	10(16.7)	0(0)
3	Social Science Subject	30(50)	5(8.3)	7(11.7)	18(30)

When asked, "How often do you use assistive technology in different subjects?" Table-2 shows the results. In language classes, 16.6% of students utilize assistive technology, in scientific classes, 66.6% do, and in social science classes, 50% sometimes. The percentage of students who use assistive technology in language classes is 11.7%, in science it is 16.7%, and in social science it is 8.3% on occasion. On the other hand, students rarely utilized assistive technology in language arts (26.7%), science (16.7%), and social studies (11.7%). In the fields of language and social science, just 45%,0%,30% of students ever use assistive technology. According to the data shown above, students use assistive technology at a far higher rate in science classes than in language classes.

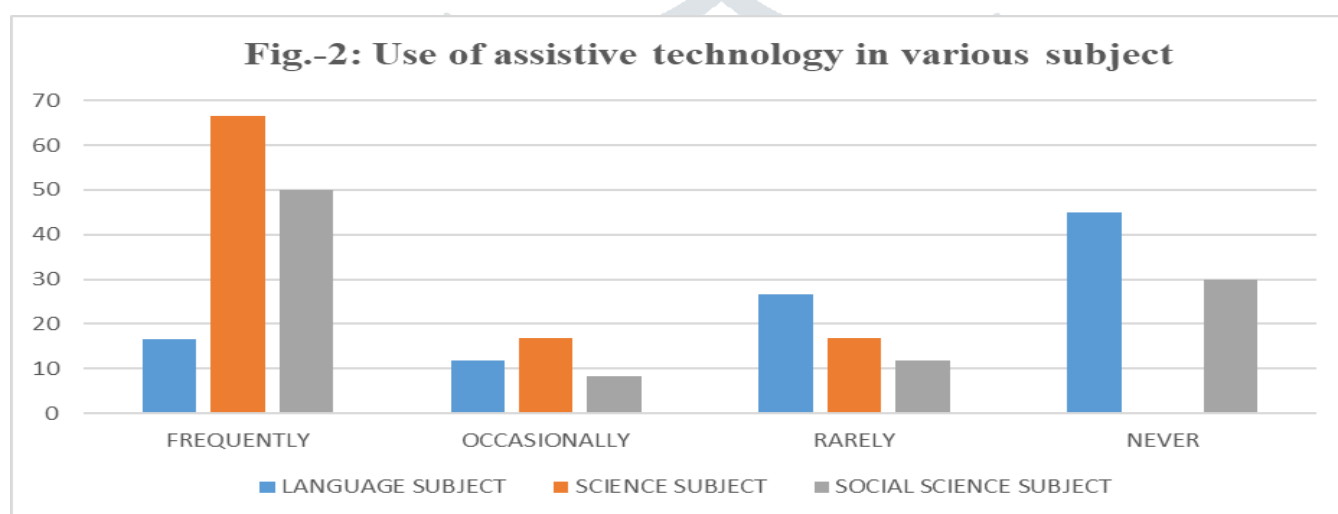


TABLE -3: USE OF TEACHING AIDS

Sl. No.	Item	Frequent (frequency percentage)	Sometime (frequency percentage)	Not used (frequency percentage)
1	Magnifiers	20(33.3)	10(16.7)	30(50)
2	Visual aids	10(16.7)	20(33.3)	30(50)
3	Audio recorder	50(83.3)	10(16.7)	0(0)
4	Computer	0(0)	10(16.7)	50(83.3)
5	Talking watch	0(0)	20(33.3)	40(66.7)

The data in Table-3 show that In response to the inquiry, "How often do you use various teaching aids?" A small percentage of students utilize visual aids, a large percentage use audio recorders, and a small percentage use computers and talking watches as teaching aids on a regular basis. Magnifiers are used by 16.7% of students, visual aids by 33.3%, audio recorders by 16.7%, computers by 16.7%, and talking watches by 33.3% as supplemental learning tools on occasion. In terms of instructional aids, half of the students do not use magnifiers, half do not use visual aids, zero percent do not use audio recorders, 83.3% do not use computers, and 66.7% do not use talking watches. According to the data presented above, students primarily use audio recorders, and computer usage is low.

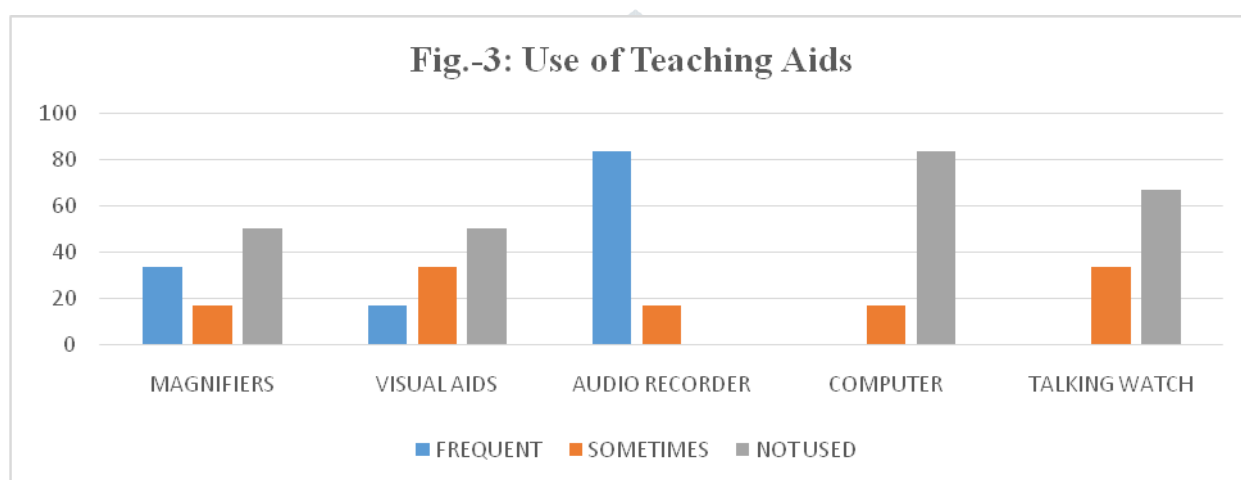
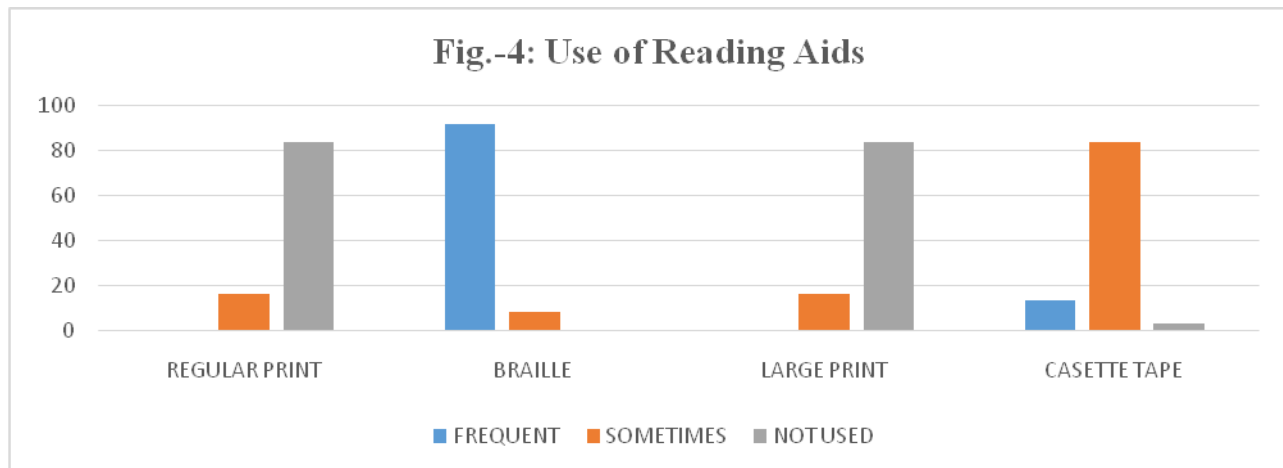


TABLE-4: USE OF READING AIDS

Sl. No.	Item	Frequent (frequency percentage)	Sometime (frequency percentage)	Not used (frequency percentage)
1	Regular print	0(0)	10(16.7)	50(83.3)
2	Braille	55(91.7)	5(8.3)	0(0)
3	Large print	0(0)	10(16.7)	50(83.3)
4	CassetteTape	8(13.4)	50(83.3)	2(3.3)

According to Table-4, in response to the inquiry, "How often do you use various teaching aids?" While 13.4% of students regularly use cassette tape, 91.7% of pupils use Braille, and no one uses large print. In terms of regular print formats, 16.7% of students use standard print, 8.3% use braille, 16.7% use large print, and 83.3%

use cassette tape occasionally. Of the students surveyed, 83.3% did not utilize conventional print, 0% used Braille, 83.3% used large print, and 3.3% used cassette tape. Based on the data presented above, Braille appears to be the reading aid most commonly utilized by pupils, while a smaller percentage choose for large print.



MAJOR FINDINGS OF THE STUDY

- The facility makes accessible technology available.
- In science classes, the majority of students use assistive technology, whereas in language classes, the percentage is much lower.
- The majority of pupils use the audio recorder, while the computer is used less frequently.
- Braille is the most popular reading aid, but fewer students actually utilize large print.

EDUCATIONAL IMPLICATION

- Students who are visually impaired are able to learn more effectively with the use of assistive technology.
- Students are able to become more self-sufficient as a result.
- Assistive technology makes the inclusive concept a reality.

SUGGESTION FOR FURTHER STUDIES

- A comparison of assistive technology in the classroom with that in a typical classroom setting.
- This can be applied to all special schools in Odisha, since my research focuses on just one.

CONCLUSION

Visually impaired people can live fulfilling lives with the help of assistive technology (AT). Students with visual impairments rely heavily on their teachers to help them learn. It comes to the conclusion that pupils utilize the available assistive technology in many subjects at school. To help them learn and read, children use a variety of tools. However, more students and teachers should take the initiative to employ various forms of assistive technology to help students with disabilities fully participate in society. Education that is both successful and productive is a key component in making the inclusive concept a reality.

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