

**A STUDY ON COMPUTER USAGE OF
VISUALLY IMPAIRED STUDENTS: A REFERENCE TO
SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY**

Submitted in partial fulfillment of the requirements for the award of

Bachelors of Business Administration

by

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Register No.(38280007)



SCHOOL OF BUSINESS ADMINISTRATION

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited with Grade “A” by NAAC | 12B Status by UGC | Approved by AICTE

Jeppiaar Nagar, RAJIV GANDHI SALAI, CHENNAI - 600 119

April – 2021



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SCHOOL OF BUSINESS ADMINISTRATION

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the confide work of MANJUNATHA GARI AJJESH Reg. No.38280007 who have done the Project work entitled “A STUDY ON COMPUTER USAGE OF VISUALLY IMPAIRED STUDENTS: A REFERENCE TO SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY” under my supervision from January 2021 to March 2021.

Internal Guide

(Dr. THINESH KUMAR M.COM, M.B.A, M.Phil Ph.D)

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Submitted for Viva voce Examination held on _____.

Internal Examiner

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with signature)

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DECLARATION

I MANJUNATHA GARI AJJESH Reg. No.38280007 hereby declare that the Project Report entitled A STUDY ON COMPUTER USAGE OF VISUALLY IMPAIRED STUDENTS: A REFERENCE TO SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY done by me under the guidance of Dr.M.THINESH KUMAR is submitted in partial fulfillment of the requirements for the award of Bachelors of Business Administration degree.

DATE:

PLACE:

SIGNATURE OF THE CANDIDATE

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(MANJUNATHA GARI AJJESH)

ABSTRACT

Generally world is inaccessible but technology makes the environment accessible for the persons with blindness. Persons with visually impaired are equal to people who has vision in many aspects, particularly in the matters of technology. Blinds can use smart phones, laptops and many technical related things. These people also use several accessible hardware and software devices for making their day today life easy and equal to the society. The devices like braille, me, braille printer and so on devices are used for their development in education.

Many such things are been mentioned in the study. Furtherly the research will provide more idea about how a visually impaired can use computers which is a main doubt for everyone who are less aware of the people with disability. Even the people in urban and developed sectors are also not aware of the people with visually impairment and how do they use computers and mobile phones. An attempt is made in this study to provide an idea.

TABLE OF CONTENTS

CHAPTER NO.	TITLE	PAGE NO
	ABSTRACT	I
	LIST OF TABLES	II
	LIST OF CHARTS	III
1	INTRODUCTION	1-6
	1.1 Introduction	1
	1.2 Industry Profile	2
	1.4 Need for the Study	4
	1.5 Scope of the Study	5
	1.6 Objectives of the Study	5
	1.7 Limitations of the Study	6
2	REVIEW OF LITERATURE	7-15
3	RESEARCH METHODOLOGY	16
	3.1 Research Design	16
	3.2 Sampling Technique	16
	3.3 Sources of Data	16
	3.4 Structure of Questionnaire	16
	3.5 Sample Size	16
	3.6 Period of Study	16
4	DATA ANALYSIS AND INTERPRETATION	17
	4.1 Tables and charts	17-32
5	FINDINGS, SUGGESTIONS AND CONCLUSION	33-35
	5.1 Findings of the Study	33
	5.2 Suggestions	34
	5.3 Conclusion	35
	REFERENCES	35
	BIBLIOGRAPHY	35
	APPENDIX – I (Questionnaire)	36-37

CHAPTER – 1

INTRODUCTION

1.1 INTRODUCTION

Blind and visually impaired can, and do, use computers, phones, and other electronic devices just as much as sighted people. People who are blind just have different ways of accessing these devices. Blind people use what's called assistive technology, including screen readers, refreshable braille displays, and digital screen magnification to interact with high-tech products. Assistive technology is any hardware or software used by people with disabilities to access computers, phones, tablets, and printed materials. There are many types of assistive technology, and different disabilities require different technologies. Desktop and laptop computers use screen readers. Software products, such as JAWS® (Job Access With Speech) for Windows and NVDA (Non-Visual Desktop Access), allow users who are blind and visually impaired to navigate the computer and access most of its functions. Instead of using a mouse to navigate around the screen, people who are blind use a system of key commands to get to where they need to go. Screen readers can give audio feedback, or they can be connected to refreshable braille displays. Refreshable braille is an electronic way of reading braille. Pins on a device pop up and can be read with a finger like hardcopy braille.

Once the person is done reading a line, the pins go down and pop up again with the next line in the text. Refreshable braille displays are especially helpful for people who are deaf and blind and cannot use text-to-speech output. People who are blind also use screen readers on touch screen phones and tablets. This kind of software reads aloud all the text on the screen, including navigation buttons. Android devices use an app called Talkback. Apple iOS devices use built-in software known as Voiceover, which uses text-to-speech output. Text-to-speech is essentially a synthesized voice that communicates what is on the screen.

There are many hand maneuvers, called "gestures," used to do various tasks on a phone or tablet. For instance, using Voice Over, tapping three times on the screen gives you an audible indication of where you are on a page. Tapping twice anywhere on the screen selects the link or item highlighted by the cursor.

Students who are blind use assistive technology in the classroom to follow along with their peers and do homework. Students who are visually impaired and have some usable vision can use an electronic magnifier to view what the teacher is writing on the board. Students who are blind use refreshable braille displays to silently read an e-book. Electronic note takers are used to write down notes in a class or to do research for a paper using the Internet. Textbooks can be read in hardcopy braille, large print, refreshable braille, or audio format, according to the student's abilities and preference.

These are just a few of the ways in which students and adults who are blind and visually impaired use computers, phones, tablets, and other technology. Advances in assistive technology have made it increasingly more possible for people who are blind and visually impaired to learn, compete, and communicate on an equal playing field with their sighted peers. Because of this increasing ease of accessing information and communicating, many people who are blind are more attached to their electronic devices than sighted people.

1.2 INDUSTRY PROFILE

Screen readers

A screen reader is a software application that enables people with severe visual impairments to use a computer. Screen readers work closely with the computer's Operating System (OS) to provide information about icons, menus, dialogue boxes, files and folders. The device provides access to the entire OS that it works with, including many common applications.

There are two ways that this hardware can provide feedback to the user:

- **Speech**
- **Braille**

A screen reader uses a Text-To-Speech (TTS) engine to translate on-screen information into speech, which can be heard through earphones or speakers. A TTS may be a software application that comes bundled with the screen reader, or it may be a hardware device that plugs into the computer. Originally, before computers had soundcards, screen readers always used hardware TTS devices, but now that soundcards come as standard on all computers many find that a software TTS is preferable.

In addition to speech feedback, screen readers are also capable of providing information in Braille. An external hardware device, known as a refreshable Braille display is needed for this. A refreshable Braille display contains one or more rows of cells. Each cell can be formed into the shape of a Braille character, a series of dots that are similar to domino dots in their layout.

As the information on the computer screen changes, so does the Braille characters on the display change, providing refreshable information directly from the computer. Whilst it is possible to use either format independently, Braille output is commonly used in conjunction with speech output.

How does a screen reader work?

Since the majority of users don't use a mouse, all screen readers use a wide variety of keyboard commands to carry out different tasks. Tasks include reading part or whole of a document, navigating web pages, opening and closing files, editing and listening to music. A visually impaired computer user will use a combination of screen reader commands and operating system commands to accomplish the many tasks a computer is capable of performing.

All current operating systems have their own keyboard shortcuts, which are available to everyone not just screen reader users. An example of a Microsoft Windows keyboard shortcut is using the alt + A key combination to open the Favorites menu in Internet Explorer. Each screen reader uses a different series of commands, so most people will tend to choose a screen reader and stick with it, as the task of learning a large number of new keyboard commands is considerable

Which operating systems do screen readers work with?

Screen readers are available for each of the most common operating systems, Linux, Mac OS and Windows.

What applications do screen readers support?

Screen readers are capable of supporting the range of applications that are most common to their native platform. The Linux screen readers support a range of applications, including VI or Open Office for word processing, Evolution for email, Firefox, W3 or Lynx for browsing, as well as many other common Linux applications. Voice Over for the Mac is integrated with the operating system, so offers support for all common Mac applications. The Windows screen readers support common Microsoft applications such as Office, Internet Explorer and Messenger, as well as varying support for other applications including Soundforge, Winamp, Firefox, Eudora and Acrobat Reader. Two of the Windows based screen readers, Window Eyes and Jaws, offer an additional means of supporting applications that are not supported by default. They both provide a scripting, or mapping, language that can be used to create a bridge between the screen reader and an application that is not already catered for. It is then possible for a technically minded user to develop scripts for themselves and further widen the range of applications their chosen screen reader will work with.

How do screen readers deal with different languages?

A screen reader will have a primary language, which matches the language of the operating system. In addition they are capable of dealing with different languages within documents. For example, if a passage of text in a web page is marked up in the code as being in French, a screen reader will alter the accent, pitch and speaking rate of the synthesized speech output to mimic the style of spoken French. Most screen readers support common languages including English, American English, French, Spanish, Italian and German. Other languages, including French Canadian, Mexican Spanish, Finnish and Basic Chinese are offered by different screen readers.

1.3 NEED FOR STUDY

Research methodology is mainly needed for the purpose of framing the research process and the designs and tools that are to be used for the project purpose.

Research methodology helps to find the customer experience base for the product. This time research methodology is framed for the purpose of finding the level of customer satisfaction and changing trends of the customer expectations.

1.4. SCOPE OF THE STUDY

The research measures the experiences of visually impaired persons. Defines and analyses the experiences based on key deliverables. This project aims to evaluate the usability of a university website by visually impaired students. In the technology era, the new technologies provide visually impaired people to access printed and electronic environments freely, so these people should be aware of such technologies and they should learn how to use such technologies. If the new information and communication technologies (ICT), properly taught and used, could play an important role as tools for the general restructuring of learning instruction processes, facilitating the development of students' skills of collaborating and working productively with knowledge. In addition, the number of ICT related courses should be increased.

1.5 OBJECTIVE OF THE STUDY

This project is designed mainly to identify and evaluate the customer's response towards usage of computers for visually impaired persons.

1.5.1 Primary objective: -

A STUDY ON COMPUTER USAGE OF VISUALLY IMPAIRED PERSONS.

1.5.2 Secondary objectives

1. To understand the perception towards the usage of computers being a visually impaired persons.
2. To analyze the usage of computers visually impaired persons.
3. To give suggestion towards the usage of computer being a visually impaired persons.

1.6 LIMITATIONS OF THE STUDY

- The analysis of the present study has been carried out based on the information has collected from the usage of computers of visually impaired persons.
- The study is an opinion survey; caution may have to be exercised while extending the result to other areas.
- Due to time constrict only 111 numbers of respondents were considered. The result fully depends on the information given by the respondents which may be based.

CHAPTER – 2

REVIEW OF LITRATURE

2.1. Introduction

Reviews of literature means we have to collect the data which is already done by the others in the past. as similarities of this project.

2.2 List of reviews

Authors: Karen Stendhal (2012)

University of south-eastern Norway .the author discussed about how accessible digital world to differently abled persons. now a days digital world is more comfortable to all the persons in the world .for that the author researched many articles. this literature states that There is wide agreement that information and communication technology (ICT) is a valuable tool for people with disability. Several research disciplines have focused on how people with disability can take advantage of the technology available for social, educational and personal purposes. Virtual worlds represent the latest addition to the technologies available, yet there is little research on how people with disability use and experience virtual worlds. A review of research conducted in different disciplines on the affordances and challenges of virtual worlds and ICT for people with disability is presented here. The main objective was to highlight areas that lack sufficient research in the field of virtual worlds for people with disability. Understanding how use of ICT influences people with disability is important to identify the possibilities and challenges virtual.

Authors: Peter Williams (2006)

in author point of view Purpose To provide a review of the past studies on use of information and communications technology (ICT) for people with special education needs (SEN) to inform a major research project on using ICT to facilitate self-advocacy and learning for SEN learners. Design/methodology/approach – Literature review, encompassing academic journals indexed in education, information science and social sciences databases, books, grey literature (including much internet-based material), and government reports. Information was gathered on the perceived

benefits of ICT in SEN, and the use of some specific applications with people having various conditions. A number of usability studies, mainly Internet and web technologies, are also outlined. Findings – Although the literature shows a great number of ICT initiatives for people with all kinds of disabilities, there has been a surprising lack of research into the usability of the various applications developed, and even less concerning those with learning difficulties. The review of existing literature indicates a lack of attention to the application of ICT for people with SEN, compared to the other groups of disabled people such as visually impaired. Originality/value – Findings highlight the need for more research on usability aspects of current and potential applications of ICT for people with SEN.

Discover the world's research

Authors: ICF Consulting Services Ltd (2015)

This study provides an assessment of research literature about digital learning and teaching to inform the Scottish Government's intended strategy. Context The Scottish Government has ambitions to raise educational attainment for all learners, and to narrow the gaps in attainment between the most and least disadvantaged children in Scotland. Tackling youth unemployment is also a priority of the Scottish Government. It has set a target to reduce the proportion of young people who are not in education, employment or training by 40% by 2020, and Curriculum for Excellence aims to support all children and young people to develop essential skills they will need to live and work in the twentyfirst century. To help pursue its ambitions, the Scottish Government has developed initiatives to support and encourage the use of digital technology in schools, with the vision that 'Scotland's educators, learners and parents take full advantage of the opportunities offered by digital technology in order to raise attainment, ambition and opportunities for all'. One of the main elements of this work to date has been the delivery of Glow, an online learning environment that provides access to a variety of digital tools and resources, funded by the Scottish Government and made available to all schools across Scotland¹. Education Scotland recently published a report on the digital technology area of Curriculum for Excellence, which

found that ICT is 'used as an enhancement to learning' but is on the fringes of the main purpose of tasks.

Author: Assistive technology (2012)

This literature was written by many authors. This study provides an assessment of research literature about digital learning and teaching to inform the Scottish Government's intended strategy. Context The Scottish Government has ambitions to raise educational attainment for all learners, and to narrow the gaps in attainment between the most and least disadvantaged children in Scotland. Tackling youth unemployment is also a priority of the Scottish Government. It has set a target to reduce the proportion of young people who are not in education, employment or training by 40% by 2020, and Curriculum for Excellence aims to support all children and young people to develop essential skills they will need to live and work in the twenty-first century. To help pursue its ambitions, the Scottish Government has developed initiatives to support and encourage the use of digital technology in schools, with the vision that 'Scotland's educators, learners and parents take full advantage of the opportunities offered by digital technology in order to raise attainment, ambition and opportunities for all'. One of the main elements of this work to date has been the delivery of Glow, an online learning environment that provides access to a variety of digital tools and resources, funded by the Scottish Government and made available to all schools across Scotland¹ Education Scotland recently published a report on the digital technology area of Curriculum for Excellence, which found that ICT is 'used as an enhancement to learning' but is 'on the fringes of the main purpose of tasks

Author: GUY MEYER, ALAN WASSYNG, MARK LAWFORD, KOUROSH SABRI (2020)

**LITERATURE REVIEW OF COMPUTER TOOLS FOR THE VISUALLY IMPAIRED:
A FOCUS ON SEARCH
ENGINES**

in this literature we are going to know about the information usage of tools for. Computers a sudden reliance on the internet has resulted in the global

standardization of specific software and interfaces tailored for the average user. Whether it be web apps or dedicated software the methods of interaction are seemingly similar. But when the computer tool is presented with unique users, specifically with a disability, the quality of interaction degrades, sometimes to a point of complete uselessness. These roots from one's focus on the average user rather than the development of a platform for all (a golden standard). This paper reviews published works and products that deal with providing accessibility to visually impaired online users. Due to the variety of tools that are available to computer users, the paper focuses on search engines as a primary tool for browsing the web. By analyzing the attributes discussed below, the reader is equipped with a set of references for existing applications, along with practical insight and recommendations for accessible design. Finally, the necessary considerations for future developments. for example: the screen readers like JAWS and NVDA are used for computers to do operations. Android accessibility sweet is used for doing operations in mobile. and voiceover for IOS device.

Author: Stephen (2018)

The Effect of the Usage of Computer-Based Assistive Devices on the Functioning and Quality of Life of Individuals who are Blind or have low Vision The Israel Ministry of Social Affairs and Social Services subsidizes computer-based assistive devices for individuals with visual impairments (that is, those who are blind or have low vision) to assist these individuals in their interactions with computers and thus to enhance their independence and quality of life. The aim of this study was to examine the effect of computer usage on the quality of life of computer-based assistive device users, and to evaluate their capacity to carry out computer-based tasks.

Methods

The study was conducted between the years 2013 and 2015. Questionnaires were provided to 96 randomly sampled individuals with visual impairments. These questionnaires were designed to collect information about the quality of life, types and frequency of computer use, satisfaction with the assistive devices, and the effects of

computer-based assistive device usage on the participants' lives. In addition, the study evaluated participants' performance in tasks such as e-mail use, Internet surfing, and the use of Microsoft Word; participants performed these tasks on their personal computers. The research sample accounts for about 10% of visually impaired persons in Israel. This is the point of view of the author.

**Authors: Lesley M. Bolton, MB, Ch. B, FRACO, DO (Lond.)
Ophthalmologist, Low Vision Clinic, Palmerston North Hospital, New Zealand
(2010)**

once upon a time Twenty-five visually handicapped people, including two who were completely blind, were trialed on recently developed equipment which enables such severely visually impaired people access to the modern computerized world. Twenty-one of the people found that such equipment would enhance their study, work and recreational capabilities and allow them to utilize computerized technology alongside their normally sighted peers. Two already had equipment sufficient for their needs, and two children were too young to require it at this stage. with this test surely we can say that a visually impaired person can adoptable to the modern world .this is the example to strongly prove that experience of trial test.

Author: John (2019)
Understanding teachers' attitude towards computer technology integration in education:

This literature presents that T/his exploration of teachers' attitude towards technology survey scales from multiple studies. It presents a review of literature on the development of survey scales. Eleven survey scales were collected and assessed on the kind of constructs used to define attitude as well as the content representativeness items carry in explaining the construct. Enjoyment, confidence, anxiety and teachers position towards technology integration were the most common constructs. The number and span of items across constructs differed depending on the focus of the study with some having very few items. We concluded that appropriate construct uses as guided by previous research, and representativeness

items carry for each construct are important for effective interpretation and operationalization of attitude as a construct. This is a preview of subscription content, access via your institution. Now day's computers are playing a key role in this world. Without computers there is no world.

Authors: aback Baylor a, Hafiz Kiser (2010)

General review on computer literacy of visually handicapped the author has expressed about this represents the challenges and issues that were faced by visually handicapped the author has researched many articles for this. he wrote all the key points in this review.so if we want to know all of this article we need to follow this article. Basically this article gives us plenty of information about the handicapped. Which means how they are accessible with the computer and how they far utilizing this resources.

Author: Blue Eyes Intelligence Engineering (2019)

Visually impaired people are part of everyday smartphone users. Most smartphone app developers follow the same design principles in designing mobile app's user interface. But in the case of designing for users with visually impaired, the user interface design is not always easy. Gesture engineering is required to improve the existing gestures in order to allow visually impaired people to utilize their smartphones better and easier. The amount of existing gestures design studies for visually impaired people is few and need to be further increased in order to ease visually impaired people to use smartphones. More solutions such as new gestures or forms of input modalities for smartphone applications needed to be provided to enhance the use of smartphone by visually impaired people. The objective of this paper is to comprehend better and closely review the current state of analysis concerning gesture design for visually impaired people on mobile platforms. A systematic literature review has been conducted as an approach to gather, examine and analyze knowledge from previous articles targeted on this analysis field if visually impaired person wants to use the smart mobile for that we have many gestures like swiping up and down swiping left and right, swipe up with 2 fingers etc.

Author: Xiao fang Zheng (2014)

A Study on Blind Students' Experience of Provision and Support in Schools the author states that what are the challenges limitations has explained in this research. This is a qualitative study which aims to investigate what blind students experience to be appropriate provision and support in schools. In order to explore the answer, this study examined the proper terms that could be used in educational researches, difficulties that a blind student encountered in study, provision and support that were provided to them in schools, what they considered to be appropriate provision and support for facilitating their study, challenges with the practices and suggestions for improvements. Three totally blind people were invited to participate in this study. Data were collected through semi-structured interviews. All interviews were transcribed for data analysis. Result showed that the blind student experienced difficulties at three different levels including physical/medical limitations, environmental limitations and they needed extra support on their study. Finding in this study showed that the informants received certain types of provision and support from the government and schools, including guide dogs, long canes, computers, audio programs, training on computer skills and some one-to-one teaching sections. However, result also indicated that challenges of the practices tended to come from three different levels. At the individual level, the informants experienced a lack of training and support on orientation and mobility. At the teachers' level, there was lack of teacher training and the teachers had little knowledge and skills to support blind students in schools. At the decision-making level, the informants experienced some mismatches between what they actual needed and the provision and support that being provided. In the end, the informants suggested that blind students should be invited to participate in decision-making events, their voice should be heard and they wanted to be decision-makers for their education. Potential implications of this study are that: First, for researchers, educators, and parents to learn what kind of difficulties blind students experience in study. So they will understand when they should provide help and support to a blind student. Second, this study shows some good practices of supporting blind students. These practices can be piloted and expended so that more blind students can be supported to tackle the difficulties they have in study. Third, this

study presents a model of how to involve blind people into an educational research. The last, the findings from this study might influence policymakers when they decide provision, support and education for blind students in future.

Author: Beneath (2020)

Tools and Technologies for Blind and Visually Impaired Navigation support the author tells us navigation support how it is useful for the visually impaired persons. The development of navigation tools for people who are visually impaired had become an important concern in the research area of assistive technologies. This paper gives a comprehensive review of different articles published in the area of navigation solutions for people who are visually impaired. Unlike other review papers, this review considers major solutions that work in both the indoor or/and outdoor environments which are based on different technology. From the review, it became clear that the navigation systems proposed for the target users lack some core features that are quite important for independent navigation. Also, there can be instances in which humanitarian conditions also have to be considered in the navigation system design. Based on these findings, a set of recommendations are also given which can be considered in the future design of navigation systems for blind and visually prepared people.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

3.1.1 Descriptive Research Design

Descriptive research is a study designed to depict the participants in an accurate way. More simply put, descriptive research is all about describing people who take part in the study.

3.2 Convenience sampling method

A convenience sample is one of the main types of non-probability sampling methods.

A convenience sample is made up of people who are easy to reach.

3.3 SOURCES OF DATA

Data collection is the term used to describe a process of preparing and collecting data.

Primary Data – Questionnaire given to 120 respondents
Secondary Data - Websites and online journals, Published reports & Review of literature from published articles

3.4 STRUCTURE OF QUESTIONNAIRE

Questionnaire was divided into two sections. First part was designed to know the general information about customers and the second part contained the respondent's opinions about customer's experience

3.5 SAMPLE SIZE

The sample of the study is 111

3.6 PERIOD OF STUDY

The duration of study is from January 2021 to March 2021 which is a three months of study.

CHAPTER – 4

DATA ANALYSIS AND INTERPRETATION

4.1 PERCENTAGE ANALYSIS

Source: primary data

2. age

109 responses

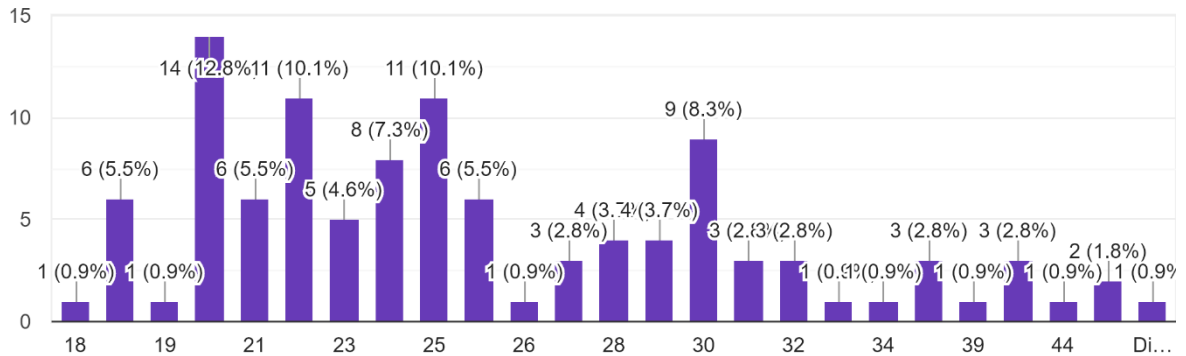


Chart 4.1.1 age of the respondents

Interpretation

From the above table **4.1.1** it is interpreted that the age wise classification of the respondents are 20 years old (12.6%).

Inference

Majority 12.8% of the respondents are 20 years old.

Table 4.1.2: Gender of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	Male	57	55.9%
2	Female	45	44.1%
Total		102	99.1%

Source: primary data

3. Gender

102 responses

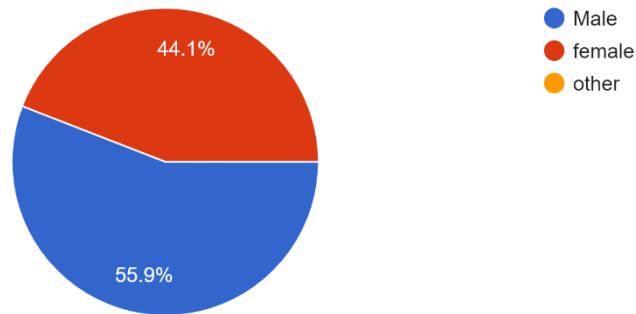


Chart 4.1.2 gender of the respondents

Interpretation

From the above table **4.1.2** it is interpreted that the number of male respondent is 57 and 55.9% female respondents is 45 and 44.1%

Inference

Majority 55.9% of the respondents are males.

Table 4.1.3: Occupation of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	Employee	47	45.2%
2	Student	57	54.8%
Total		104	100%

Source: primary data

5. Occupation

104 responses

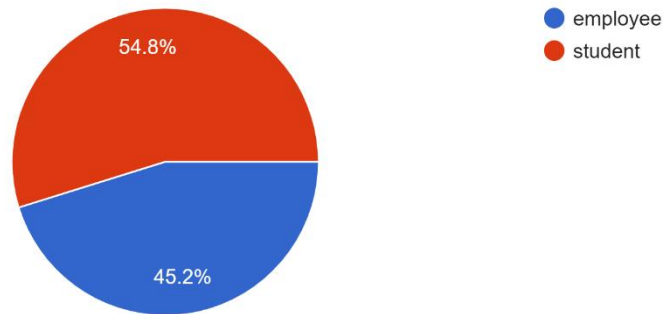


Chart 4.1.3 occupation of the respondents

Interpretation

From the above table **4.1.3** it is interpreted that the number of respondents of the employees is 47 and 45.2% Students is 57 and 54.8%

Inference

Majority 54.8% of the respondents are the students.

Table 4.1.4: site percentage of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	30%	5	.0%
2	50%	22	22%
3	75%	27	27%
4	100%	46	46%
Total		100	95%

Source: primary data

6. What is the percentage of your Visual impairment

100 responses

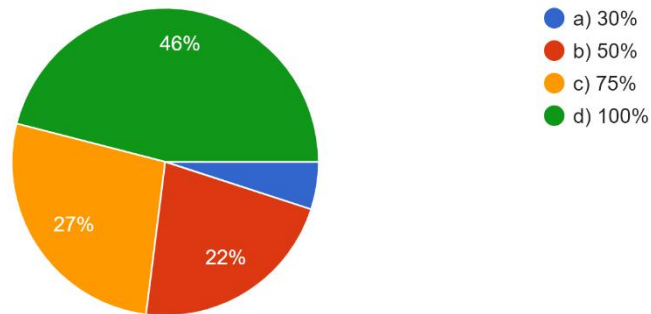


Chart 4.1.4: Site percentage of the respondents

Interpretation

From the above table **4.1.4** it is interpreted that the number of respondents of the 30% is 4 and 4% 50% is 22 and 22% 75% is 27 and 27% and 100% is 46 and 46%.

Inference

Majority 46% of the respondents are 100%

Table 4.1.5: In spite of use computer of visually impaired persons of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	Yes	102	99%
2	No	1	1%
Total		103	100%

Source: primary data

7. Do you know, how to use computer in spite of your Visual impairment

103 responses

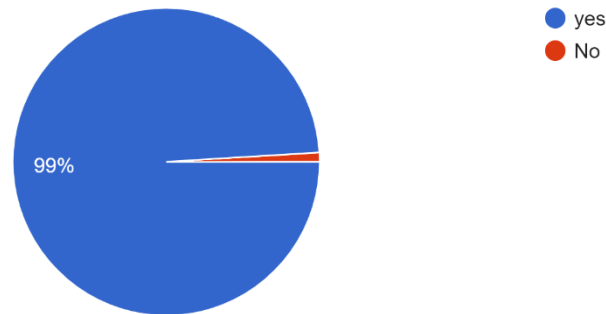


Chart 4.1.5: in spite of use computer of visually impaired persons of the respondents

Interpretation

From the above table **4.1.5** it is interpreted that the number of respondents said by yes is 102 and 99% said by no is 1 and 1%

Inference

Majority 99% of the respondents are said by yes.

Table 4.1.6: knowing about visually impaired persons to use computers of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	10 to 18 years	71	68.3%
2	18 to 25 years	31	29.8%
3	25 years above	2	3%
Total		104	100%

Source: primary data

8. When you come to know that, Visually impaired persons can use the computers

104 responses

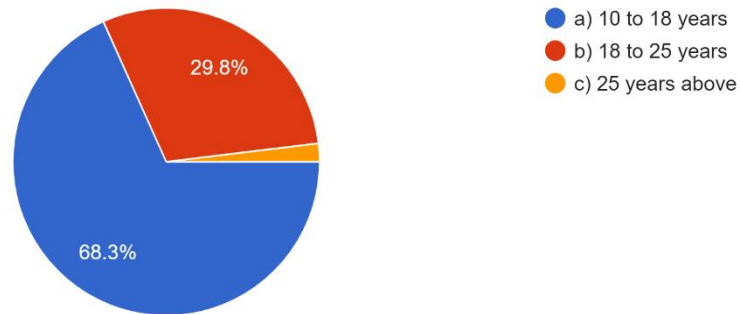


Chart 4.1.6: knowing about visually impaired persons to use computers of the respondents

Interpretation

From the above table **4.1.6** it is interpreted that the number of respondents is 10 to 18 years is 71 and 68.3% 18 to 25 years is 31 and 29.8% 25 and above years is 2 and 2%.

Inference

Majority 68.3% of the respondents are 10 to 18 years.

Table 4.1.7: regular usage computer of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	Yes	93	87.7%
2	No	13	12.3%
Total		106	100%

Source: primary data

9. Do you use computer for your day to day activity.

106 responses

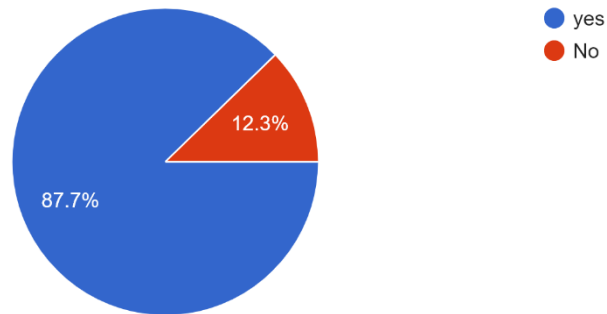


Chart 4.1.7: regular usage of computer of the respondents

Interpretation

From the above table **4.1.7** it is interpreted that the number of respondents is said by yes is 93 and 87.7% no is 13 12.3%

Inference

Majority 87.7% of the respondents are said by yes.

Table 4.1.8: operating system of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	Windows	65	59.1%
2	Android	51	46.4%
3	IOS	12	10.9%
4	MAK	7	6.4%
5	Other	0	0%
6	MS windows	22	20%
Total		110	100%

Source: primary data

10. Which Operating system (OS) do you use comfortably

110 responses

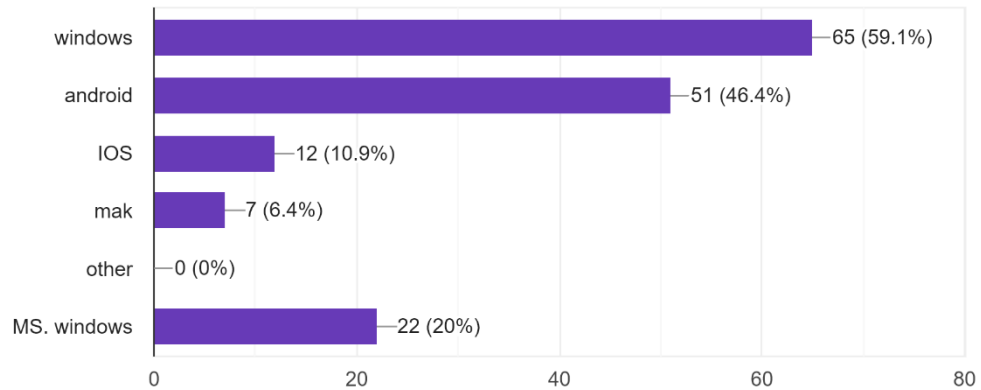


Chart 4.1.8: operating system of the respondents

Interpretation

From the above table **4.1.8** it is interpreted that the number of respondents Windows 65 and 59.1%. android 51 and 46.4%. IOS 12 and 10.9%. mark 7 and 6.4%. other 0 and 0%. MS windows 22 and 20%.

Inference

Majority 59.1% of the respondents are windows.

Table 4.1.9: use of screenwriter of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	NVDA	74	67.3%
2	JAWS	62	56.4%
3	Narrator	13	11.8%
4	Other	1	0.9%
Total		11	

Source: primary data

11. which screen reader do you use

110 responses

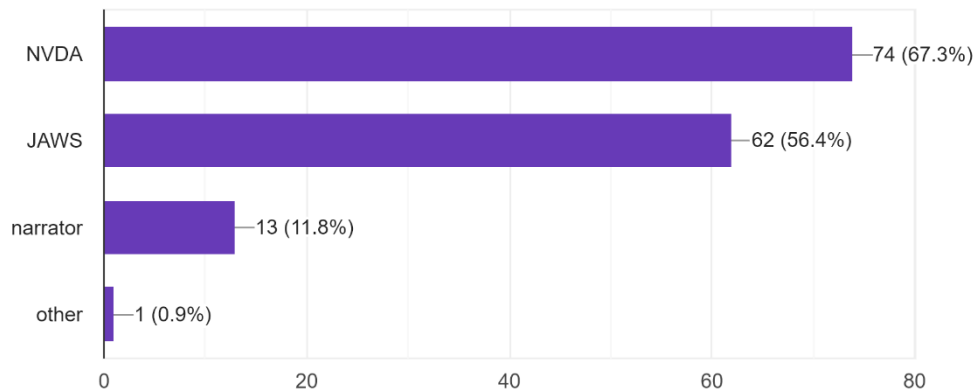


Chart 4.1.9: screenwriter of the respondents

Interpretation

From the above table **4.1.9** it is interpreted that the number of respondents for NVDA is 74 and 67.3% JAWS is 62 and 56.4% narrator is 13 and 11.8% other is 1 and 0%

Inference

Majority 67.3% of the respondents are NVDA

Table 4.1.10: the above screen reader to supports all programs of the respondents

Source: primary data

12. Does above Screen reader supports all the programs, which you use

100 responses

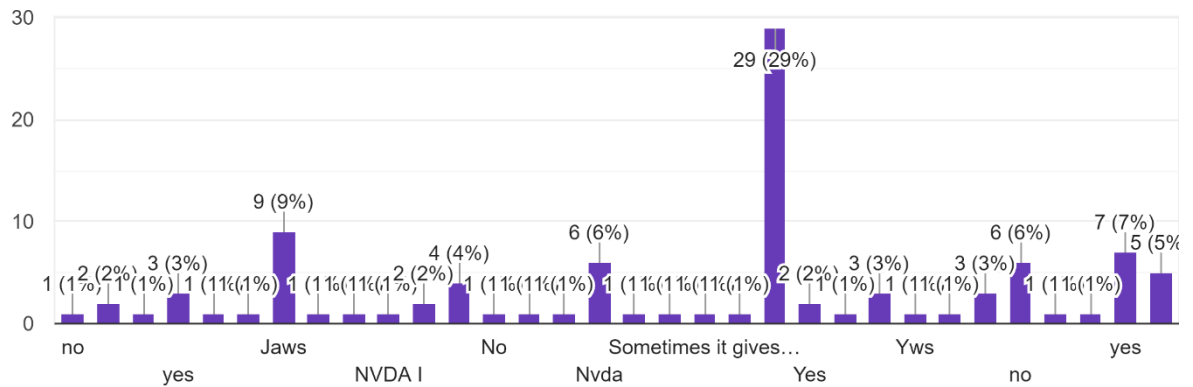


Chart 4.1.10: the above screen reader to supports all programs of the respondents

Interpretation

Inference

Table 4.1.11: mouse users of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	Yes	39	62.5%
2	No	65	37.5%
Total		104	100%

Source: primary data

13. Do you use Mouse

104 responses

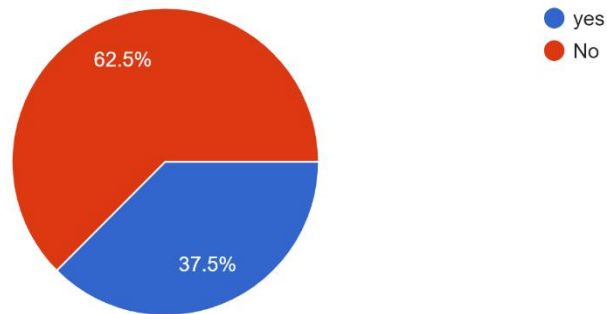


Chart 4.1.11: mouse users of the respondents

Interpretation

From the above table **4.1.11** it is interpreted it is that the number of respondents said by yes is 39 and 62.5% no is 65 and 37.5%

Inference

Majority 62.5 of the respondents are said by yes.

Table 4.1.12: usage of special keyboard of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	Yes	44	55.1%
2	No	54	44.9%
Total		98	100%

Source: primary data

14. Do you use any Special' keyboard to access the computer

98 responses

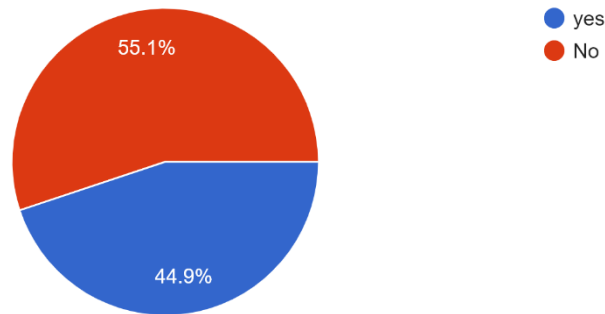


Chart 4.1.12: usage of special keyboard of the respondents

Interpretation

From the above table **4.1.12** it is interpreted that the number of respondents are said by yes is 44 and 55.1% no is 54 and 44.9%

Inference

Majority 55.1% of the respondents are said by yes.

Table 4.1.13: which text editor preferable of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	Notepad	64	58.7%
2	WinWord	75	68.8%
3	Other	1	1%
Total		109	100%

Source: primary data

15. Which text editor do use to take notes

109 responses

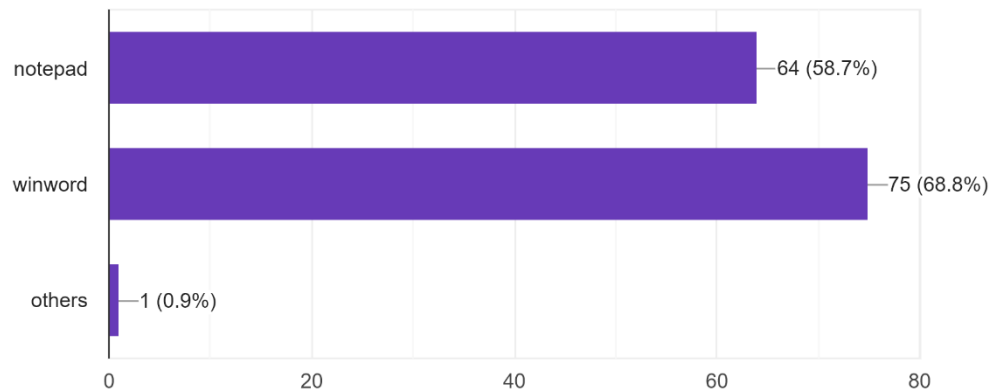


Chart 4.1.13:which text editor preferable of the respondents

Interpretation

From the above table **4.1.13** it is interpreted that the number of respondents of the notepad is 64 and 58.7% WinWord is 75 and 68.8% other 1

Inference

Majority 68.8% of the respondents are WinWord.

Table 4.1.14: browser of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	Google chrome	86	78.9%
2	Firefox	57	52.3%
3	Microsoft edge	24	22%
4	Other	1	
Total		109	

Source: primary data

16. Which browser do you use to surf the internet

109 responses

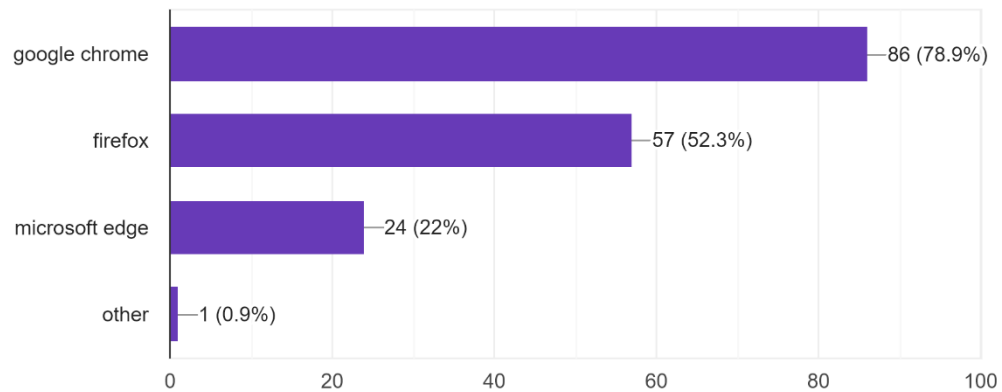


Chart 4.1.14: browser of the respondents

Interpretation

From the above table **4.1.14** it is interpreted that the number of respondents of Google chrome is 86 and 78.9% Firefox is 57 and 52.3% Microsoft edge is 24 and 22%

Inference

Majority 78.9% of the respondents of the Google chrome.

Table 4.1.15: to use computer effectively equally to the sited persons of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	Comfortable	42	41.6%
2	More comfortable	48	47.5%
3	Neutral	9	8.9%
4	Uncomfortable	00	00%
5	Fully uncomfortable	2	.0%
Total		101	98%

Source: primary data

17. Do you think; i am able to use computers effectively equalent to sided person?

101 responses

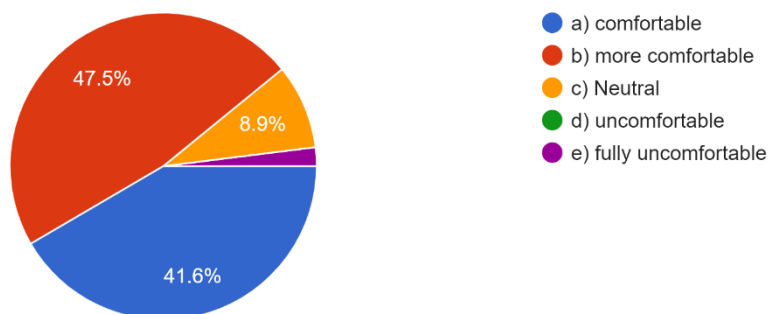


Chart 4.1.15: to use computer effectively equally to the sited persons of the respondents

Interpretation

From the above table **4.1.15** it is interpreted that the number of respondents of comfortable 42 and 41.6% more comfortable 48 and 47.5% neutral 9 and 8.9% uncomfortable 0 and 6.0%

Inference

Majority 47.5% of the respondents are more comfortable.

Table 4.1.16: overall rate of the respondents

S. No.	Particulars	NO. of respondents	Percentage
1	1	1	1%
2	2	2	2%
3	3	0	0%
4	4	16	16%
5	5	81	81%
Total		100	100%

Source: primary data

19. please rate overall usage of computers in your life?

100 responses

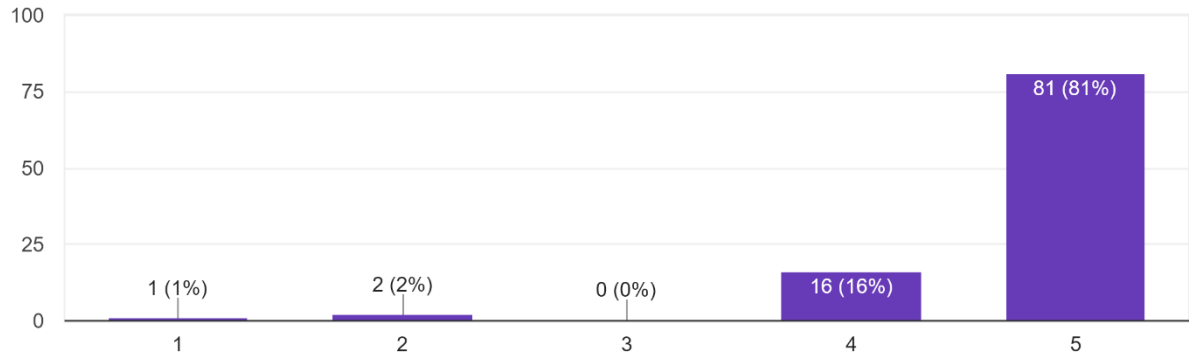


Chart 4.1.16: overall rating of the respondents

Interpretation

From the above table **4.1.16** it is interpreted that the number of respondents of rating 1. Scale 1 and 1%. 2. 2 and 2%. 3. 0 and 0%. 4. 16 and 16%. 5. 81 and 81%.

Inference

Majority of the respondents is 5. 81 and 81%.

CHAPTER – 5

5.1 FINDINGS

- 1.** Majority 55.9% of the respondents are males.
- 2.** Majority 54.8% of the respondents are the students.
- 3.** Majority 46% of the respondents are 100%
- 4.** Majority 99% of the respondents are said by yes.
- 5.** Majority 68.3% of the respondents are 10 to 18 years.
- 6.** Majority 87.7% of the respondents are said by yes.
- 7.** Majority 59.1% of the respondents are windows.
- 8.** Majority 67.3% of the respondents are NVDA
- 9.** Majority 62.5 of the respondents are said by yes.
- 10.** Majority 55.1% of the respondents are said by yes.
- 11.** Majority 68.8% of the respondents are WinWord.
- 12.** Majority 78.9% of the respondents of the Google chrome.
- 13.** Majority 47.5% of the respondents are more comfortable.
- 14.** Majority of the respondents is 5. 81 and 81%.

5.2 SUGGESTIONS

The overall experience and satisfaction from the study is accessible to all the visually impaired persons. We need to follow the regular updates from the technology.

Then only we are able to experience all the technical related activities. If we have any lagging in technology We have to wait for the updates.

5.3 CONCLUSION

Now a day's computers are playing most important key role in the world. Without computers we can't imagine the world. People are always busy with the computers. Computers are also simplifying like laptops, smart mobiles and TV. etc. Finally with this study you will get how visually impaired persons are using computers.

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APPENDIX

QUESTIONNAIRE

1. Enter your name :
2. What is your age :
3. Gender
 - a) Male
 - b) female
 - c) others
4. Email
5. what is your occupation
 - a) employee
 - b) student
6. What is the percentage of your Visual impairment
 - a) 30%
 - b) 50%
 - c) 75%
 - d) 100%
7. Do you know, how to use computer in spite of your Visual impairment
 - a) Yes
 - b) No
8. When you come to know that, Visually impaired persons can use the computers
 - a) 10 to 18 years
 - b) 18 to 25 years
 - c) 25 years above
9. Do you use computer for your day to day activity.
 - a) Yes
 - b) No
10. Which Operating system (OS) do you use
 - a) Windows
 - b) android
 - c) IOS
 - d) mark
 - e) others
11. which screen reader do you use
 - a) NVDA
 - b) JAWS
 - c) narrator
 - d) others
12. Does above Screen reader supports all the programs, which you use
13. Do you use Mouse
 - a) Yes
 - b) No
14. Do you use any Special' keyboard to access the computer
 - a) Yes
 - b) No
15. Which text editor do use to take notes
 - a) Note pad
 - b) WinWord
 - c) others
16. Which browser do you use to surf the internet

a) Google chrome b) Firefox c) Microsoft edge d) other

17. Do you think i am able to use computers effectively equaling to sided person?

a) Comfortable b) full comfortable c) neutral

d) Uncomfortable e) fully uncomfortable

18. What is your opinion on usage of computers?

19. Please rate overall usage of computers in your life?

1 to 5 rating scale.

