

YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF ECONOMICS
MASTER OF ECONOMICS

**A Study of the Use of Learning Aids Materials and Its
Impact on Educational Achievement of Students with Visual
Impairments**
(Case Study: Yangon Education Centre for the Blind)

VUNG HAU DIM

SEPTEMBER, 2019

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A thesis submitted as a partial fulfillment of the requirements for the Degree of
Master of Economics, M.Econ (Economics) Degree.

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ABSTRACT

Learning aids materials are important for visually impaired students to access information and academic learning. The aim of this thesis is to identify the use and impact of learning aids materials for visually impaired students. The study is carried out by descriptive method. To obtain the subject data, in-depth interview was conducted at Yangon Education Centre for the Blind at Yangon in October 2019. It is found that Braille is the most common learning aids materials used in the school. The learning materials such as abacus, tactual map and magnifying glass are accessible. It is also found that the use of modern learning aids materials has enormous contribution to students' communication skills and education learning. Thus, the learning aids materials have strongly impact on these students in their education areas and daily life. In order to achieve sufficient and good education quality for students with visual impairment, the Ministry of Education should consider the potential of modern assistive materials in supporting education for students with visual impairment and the special schools with modern assistive materials which are easy efficient, quick and independent learning.

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TABLE OF CONTENTS

	Page
ABSTRACT	i
ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
LIST OF ABBREVIATIONS	vi
CHAPTER I INTRODUCTION	1
1.1 Rationale of the Study	1
1.2 Objective of the Study	2
1.3 Method of Study	2
1.4 Scope and Limitations of the Study	3
1.5 Organization of the Study	3
CHAPTER II LITERATURE REVIEW	4
2.1 Education on Economic Development	4
2.2 Visual Impairment	5
2.3 Role of Education for People with Visual Impairments	7
2.4 Education for All (EFA) with Visual Impairment (VI)	10
2.5 Learning Aids Material for Visually Impaired Students	12
2.6 Reviews on Previous Studies	14
CHAPTER III OVERVIEW OF SPECIAL EDUCATION IN MYANMAR	16
3.1 Situation of Persons with Disabilities in Myanmar	16
3.2 Law and Policies for Disability in Myanmar	18
3.3 Children with Disabilities in the Education System	21
3.4 Special Education Schools for Visual Impairments in Myanmar	23
CHAPTER VI SURVEY DATA ANALYSIS	28
4.1 Profile of Yangon Education Centre for the Blind	28
4.2 Survey Design	28
4.3 Survey Results	29

CHAPTER V CONCLUSION	44
5.1 Findings	44
5.2 Suggestion	45
REFERENCES	
APPENDICES	

LIST OF TABLES

Table No.	Title	Page
3.1	People with Disabilities Rate by Categories	16
3.2	Population by Disability Status, Urban and Rural Areas	17
3.3	Training School of Person with Disabilities	18
3.4	Quantity of Trainees and Schools for Visual Disabilities in Myanmar	24
3.5	List of Special School for Visual Impairments	25
3.6	Number of Students at Special Schools	27
4.1	Distribution of Student Respondents' Age	29
4.2	Students Grade and Age Distribution	30
4.3	Children with Visually Impaired Students' Dreams for the Future	31
4.4	Teacher-Student Ratio during the Survey	32
4.5	Teachers Age Distribution	33
4.6	Teacher Participants Qualification	33
4.7	Training Distribution of Teachers	34
4.8	Teachers' Experience in Teaching Visually Impaired Students	34
4.9	Use of Assistive Technology by Students Respondents in Reading during their Free Time	35
4.10	Instructional Media Available for Students with Visual Impairments	36
4.11	Special Needed of Students	38
4.12	Challenges Faced by the Students	40
4.13	Impact of Assistive Technology in Teachers' Responses	41
4.14	Students Responded on Impact of Assistive Materials	42

ABBREVIATIONS

AFB	American Foundation for the Blind
CBO	Community-based Organizations
CRPD	Convention on the Rights of Persons with Disabilities
DSW	Department of Social Welfare
EFA-VI	Education for All with Visual Impairment
EHA	Education for All Handicapped Children Act
ICEVI	International Council for Education of People with Visual Impairment
IDEA	Individuals with Disabilities Education Act
INGO	International Non-Government Organization
JAWS	Job Access with Speech
JICA	Japan International Cooperation Agency
NFPE	Non-formal Primary Education
NGOs	Non-Government Organizations
PWD	Persons with Disabilities
UNESCO	United Nations Educational, Scientific and Cultural Organization
WBU	World Blind Union
WHO	World Health Organization

CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

A learning aid is something intended to enhance learning and retention by the learner. They may include, but are not limited to: written materials, visualizations, charts, diagrams, processes, strategies, or any other appropriate item (Kwantlen Polytechnic University). Assistive technology is one of learning aid materials. Assistive technologies are innovative technologies that modify the classroom for special learning needs. Assistive technology supports in teaching students who have some kind of disabilities. According to American Foundation for the Blind (2012), assistive technology is any devices that helps with disabilities to do things more quickly, easily and independently. The ability to achieve information is essential for success in education, employment and life.

According to World Health Organization (WHO, 2010), it is estimated that 285 million people of all ages are visually impaired and 39 million of them are blind. The major causes of visual impairment are uncorrected refractive errors and cataract. Cataract is the first cause of blindness. In 2010, visual impairment is a major global health issue and it was predicted that the number of blind and visually impaired people will be double by 2030. Increased aging population in developed countries and the growth of the population in developing countries are one of ongoing causes of concern.

The government of Myanmar committed to widespread reforms in 2010. In the education sector, a new national Educational Law was passed by Parliament in 2014. Myanmar is signatory of international instruments which seek to protect the rights of children with disabilities to education. According to the First Myanmar National Disability Survey (2008-2009), a total of 2.3 percent of Myanmar's population have some form of disability and 13.3% are persons with visual impairment. The Department of Social Welfare (DSW) implements social welfare for

disabilities through multisectoral approach with coordination and cooperation of relevant ministries.

At the same time, human resource is one of the vital things to achieve a country economic growth. One of main sources to improve human capital is to enhance in education sector. Education is very important for all people including normal and disabled. Special education is essentially needed for disabled person, information technology and information communication (assistive technology) plays in one of the most important part.

Educational achievement for students with visual impairment relate to the whole concept of education, which are academic achievement, personal development. The objective of special education is to narrow the gap between the disability and ordinary students, thus educational achievement can be measured through examining the output. If the blind schools can modify or adapt assistive technology, students with visually impaired who attend regular schools can able to achieve good quality of education and can competitive with nondisabled students. This study attempted to analyze the use of assistive technology and its effect on educational achievement for vision impairments in the Blind Schools at Yangon.

1.2 Objectives of the Study

The objectives of the study are

- to study the current special education in Myanmar
- to identify visual impairment in Yangon
- to find out the impact of assistive technology on the educational achievement of students with visual impairment at the blind schools.

1.3 Method of Study

To achieve the objective of the study, qualitative method was applied in this study. The information and data applied in this study are primary and secondary data. The primary data were collected by conducting personal interviews. The secondary data were obtained from books, journals, articles and internet website. The interview data was clustered to identify the common themes using bottom-up approach, inductive analysis approach.

1.4 Scope and Limitation of the Study

This study focus on the use of assistive materials and its effect on educational achievement for students with visual impairment. Other forms of disability or impairments were not included in this study. The study was conducted in Yangon Education Centre for the Blind in Yangon, therefore, other special schools in the country are not also included.

1.5 Organization of the Study

This study is organized into five chapters. Chapter 1 mentions introduction which includes rationale of the study, objectives, methods, scope and limitation of the study. Chapter 2 expresses literature review. In Chapter 3 explains overview of special education in Myanmar, Chapter 4 examines survey analysis data. The conclusion with findings and recommendation are present in Chapter 5.

CHAPTER II

LITERATURE REVIEW

2.1 Education on Economic Development

“Education is the most powerful weapon which you can use to change the world” by Nelson Mandela (1918-2013). Education is very important for success in life. Education empowers minds that will be able to conceive good thoughts and ideas. Early Childhood and Higher Education is important. For personal, social and economic development of the country, education is necessary and important. There is only one thing that can eliminate corruption, unemployment, and environmental problems which is education.

Every child are deserved to be educated. For governments and countries, to develop their nations, their first budget allocation has to be on the education infrastructure (Sharma, July 2016). Education is not only about to exchange of information and pre-set instruction, it is a way that opens up people creative and imaginative capabilities. Education brings greater importance than ever in today’s society. It does not only people to able to read or write it also allows them the opportunity to have a good life, communication better, develop new technologies and support the economy. It is not only crucial for ordinary students/people but also for disabled people.

Jim Yong Kim (2013) - to end poverty and boost shared prosperity, countries need strong, inclusive economic growth. And to drive growth, they need to build human capital through investments in health, education and social protection for all citizens. Education and health are basic objectives of development. Education is vital for a happy and rewarding life. Education plays a key role in the ability of a developing country to absorb modern technology and to develop the capacity for self-sustaining growth and development (Michael P. Todaro, Stephen C. Smith, 2015).

Education is the fundamental factor of development. It is a powerful force for poverty reduction and sustainable economic development. Education enriches people’s understanding of themselves and the world. It improves the quality of lives

and leads to broad social benefits to individuals and society. Education enhances people's productivity and creativity and promotes entrepreneurship and technological advances. It plays a very crucial role in securing economic and social progress and improving income distribution. By increasing a child's integration with dissimilar social or ethnic groups early in life, education contributes significantly to nation building and interpersonal tolerance. A balanced education system promotes not only economic development but also productivity and individual income per capita. Greater equity in education enrolments and school quality will result in a more equal income distribution and reduce socioeconomic inequalities. (UNESCO, 2010)

Human capital views that investment in people is a kind of capital investment. Education is the investment in people. The greater investment in education, the greater productivity. The skills of individual and income can be increased by education. Education can add to the value of production in the economy and to the income of the person who has been educated (Sen, 1999). The higher level of education of the labor force the higher overall productivity of capital because the most more educated are more innovative thus affect everyone's productivity (Lucas, 1998).

Illiterate individuals or households are less productivity and the lower productivity tend to become less earning and lower level of living standards. Most of illiterate people are below the poverty line. There is a relationship between education and poverty. There is strongly positive relationship between income and education attainment, thus low earnings of the poor are the result partly of lower human capital endowment and partly of labor market discrimination.

2.2 Visual Impairment

Visual impairment and blindness have a significant impact on the socioeconomic development of individual and societies. The consequences are greater impact in the developing countries where 80% of the world blindness occurs (Solaange R. Salomao, 2009).

Douglas and McLinden defined visual impairment as a term that outlines the wide spectrum of the loss of visual function. Visual function has many characteristics that are visual acuity (ability to resolve detail), accommodation, field of vision (ability to focus), color vision, and adaptability to light (Graeme Douglas, 2009). Visual impairment including blindness is one of the six broad types of category of disabilities which are physical, visual, hearing, intellectual, psychological disabilities, and

disabling diseases. Blindness is a condition of lacking visual perception due to physiological or neurological factors.

World Health Organization (WHO) classifies visual function into four range; normal vision, moderate visual impairment, severe visual impairment and blindness. . According to the Individuals with Disabilities Education Act (IDEA) of 1997, a visual impairment refers to “an impairment vision that, even with correction, adversely affects a child’s educational performance. The term includes both partial sight and blindness”.

Hoover (1957) suggested the term severe visual impairment including blindness as refer to serious visual problems ranging from lack of ability to read printed materials with the use of ordinary glasses. Okeke (2001) defined visual impairment as those who have problems with their vision, and that include the visually handicapped (the blind, low vision and partially sighted), the short-sighted, the long-sighted and those who suffer from astigmatism (an eye defect resulting in blurred vision). Ology (2005) identified visual impairments as those whom sense of vision is defective and that could be ability to see slightly too total blindness. The visually impaired persons cannot perform tasks that involve the use of vision. (Ipuole, April 2016)

The International Classification of Diseases 11 (2018) organized visual impairment into two categories, distance vision impairment (mild, moderate, severe, blindness) and near vision impairment. Students with uncorrectable vision difficulties have visual impairments. To qualify as a visually impaired student, some criteria must be necessary to meet such as low visual acuity, visual field limitation, eyes diseases. The following terms may be used in the special education or mainstream education school environment. (Gabbert, May 2009)

1. Partially Sighted: A visual impairment that adversely effect on a student’s education performance even when corrected to the extent possible.
2. Low Vision: When student’s vision is between 20/70-20/160 and cannot be corrected, the student has moderate to low vision.
3. Legally Blind: Legally blind with severe low vision is from 20/200-20/400. From 20/400-20/1000 is profound visual impairment, and it is very close to total blindness.
4. Totally Blind: The lack of light perception is known as total blindness or total visual impairment.

2.3 Role of Education for People with Visual Impairments

The subject of blindness and education has included evolving approaches and public perceptions of how best to address the special needs of blind students. The practice of institutionalizing the blind in asylums has a history extending back over a thousand years, but it was not until the 18th century that authorities created schools for them where blind children, particularly those more privileged, were usually educated in such specialized settings. These institutions provide simple vocational and adaptive training, as well as grounding in academic subjects offered through alternative formats. For instance, literature was being made available to blind students by way of embossed Roman letters.

The Ancient Egyptians were the first civilization to display an interest in the causes and cures for disabilities and during some periods blind people are recorded as representing a substantial portion of the poets and musicians in society. The *Hospital Royal des Quinze Vingts* was an early institution for the blind and it was established for soldiers who had lost their sight by French monarch. Applicants had to be both blind and poor and some of them produced craft work but they did not received formal instruction.

Attempts to actually educate the blind were first attempted towards the end of the century. Until that time they were considered mostly in-educable and un-trainable. The modern era in the history of the blind opened in 1784 when Valentin Haüy (1745-1822) founded the Institute National des Jeunes Aveugles in Paris, one of the first special schools in the world. It was the first school in the world to teach blind students. The purpose was to educate students and teach them manual work: spinning and letterpress. Louis Braille (1809-1852) who was a French educator and inventor of a system of reading and writing for use by the blind or visually impaired attended Haüy's school in 1819 and later taught there. His system remains virtually unchanged to this day, and is known worldwide simply as Braille. (Rony, 2017)

In 1835, the first school with a focus on proper education for the Blind was established in England. It taught arithmetic, reading and writing while at the school of the London Society for Teaching the Blind to Read founded in 1838 a general education was seen as the ideal that would contribute the most to the prosperity of the blind. The first school for blind adults was founded in 1866 at Worcester and was called the College for the Blind Sons of Gentlemen. Another important institution was the General Institution for the Blind at Birmingham (1847), which included training

for industrial jobs alongside a more general curriculum. The early 20th century saw a handful of blind students enrolled in their neighborhood schools, with special education supports. Most still attended residential institutions, but that number dropped steadily as the years wore on- especially after the white cane was adopted into common use as a mobility tool and symbol of blindness in the 1930s.

Most blind and visually impaired students now attend their neighborhood schools often aided in their educational pursuits by regular teachers of academics and by a team of professionals who train them in alternative skills: Orientation and Mobility (O and M) training- instruction in independent travel- is usually taught by contractors educated in that area, as is Braille. Blind children need special training in understanding spatial concepts, and in self-care, as they often unable to learn visually and through imitation as other children do. Home economics and education dealing with anatomy are necessary for children with severe visual impairments.

Since only ten percent of those registered as legally blind have no usable vision, many students are also taught to use their remaining sight to maximum effect, so that some read print (with or without optical aids) and travel without canes. A combination of necessary training tailored to the unique needs of each student, and solid academics, is going a long way towards producing blind and visually impaired students capable of dealing with the world independently.

Providing education for visually impaired children is a challenge for many governments. Traditional solutions based around special schools can only cater for a small proportion of children who need support. Therefore, local mainstream schools are often the only places where these children will have a chance of receiving education. However, visually impaired children attending a mainstream school will need additional support in order to cope with the demands in places on them. Because a great majority of early learning comes through vision, children who are blind or visual impaired will be slower to learn many skills than their sighted peers. Thus, intervention at the pre-school stage is very important for encourage these children to learn and develop, and to prepare them for mainstream schooling. These conditions sometimes have a severe impact on children's quality of life, especially when vision impairment coexists with other impairments, and can have major consequences on education and future opportunities for employment. (Hwe, 2014)

a) Educational Services for Children with Visual Impairments

Historically, individuals with visually impaired were educated in special schools: today most visually impaired students are educated in their neighborhood schools (AFB, 2011). Integrating students with disabilities into the general education classroom allows more opportunities for students with visual impairments to share more experiences with their ordinary peers and provided numerous advantages to all students (AFB, 2012).

There is general agreement among experts in visual impairments that educational services for these students should be based upon not only clinical assessments but also the functional implications of visual impairment (AFB, 2011). The use of both clinical and functional definitions is important because it provides connections between health and educational services (Douglas, G., McCall, McLinden, M., & Pavey, S., Ware, J. & Farrell, 2009). The population of students with visual impairments and/or blindness is extremely diverse so it is important to consider a variety of factors when designing an appropriate educational program for a student with blindness or visual impairment (AFB, 1995). Although, the IDEA guarantees students with visual impairments a free and appropriate public education, these students still face many educational challenges such as leaving school without adequate skills or knowledge essential for further education, gainful employment, and independent living at home and in their communities; severe shortage of qualified teachers of visually impaired and orientation and mobility specialists to provided instructions to students, which restricts access to the specialized skills these children need; and the perception that residential and special schools for children with visual impairments are too costly (AFB, 2005).

Howe asserted the beliefs that children who were blind should be provided with the same opportunities, experiences, and hopes as sighted children (McGinnity, 2004). In the late nineteenth century, social Darwinism replaced conservatism as the primary rationale for individuals that were different from those of the general population, and therefore more segregated programs and settings became the norm. At the onset of the twentieth century, children with disabilities were still often excluded from public schools and kept at home, if not institutionalized. In order to respond to the new population of students with disabilities entering schools, school officials created still more special classes in public schools (Mock, January 7, 2002).

2.4 Education for All (EFA) with Visual Impairment (VI)

The International Council for Education of People with Visual Impairment (ICEVI) is the world's major association of individuals and organizations concerned with the equality of access to appropriate education for children and youth with vision impairment. The Education for All Children with Visual Impairment (EFA-VI) is a global campaign and program of the ICEVI to ensure that all girls and boys with blindness and low vision enjoy the right to education; it is acting in partnership with the World Blind Union (WBU). The Global Campaign on Education for All Children with Visual Impairment (EFA-VI) was launched in 2006. The Campaign addresses four of the Millennium Development Goals: eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; develop a global partnership for development. (WBU, March 2015)

The Campaign works within the framework of the general and special education system of countries and initially focuses attention on awareness and demand creation for education of children with visual impairment. Provision of appropriate support in educational settings and creation of alternative settings to reach out to the un-reached are key aspects of the campaign.

The other important elements of the Campaign are capacity building of teachers and others, development of literature, production of assistive devices and operational research. This global effort is partnership with international funding organizations, inter-governmental organizations, corporations and foundations to create educational equity for all children with visual impairment.

The success of the campaign is measured by: increased enrolment rates; reduced dropout rates; improved access to support services; and educational achievement for children with visual impairment.

The vision of EFA-VI is that by 2020 all children with visual impairment will enroll and complete primary education and their educational and social achievement will be on a par with non-disabled children.

The mission of the Education for All Children with Visual Impairment Campaign is threefold;

- To harness the power of information and communications technology, enabling blind and partially sighted students to participate in mainstream schools alongside their sighted peers, and to acquire the specialist literacy skills they need to make their way in the world;

- To broker partnerships with relevant global education organizations, assisting them to put disability at the heart of their planning and delivery; and
- For ICEVI to maintain exemplary programmes, assisting with technical advice, and serving as a catalyst to help other agencies provide access to appropriate education for all visually impaired children and youth.

a) Needed of EFA-VI Campaign

The World Education Forum adopted the Dakar Framework for Action in April 2000, entitled Education for All: Meeting our Collective Commitments. This declaration states that by 2015 all children, particularly girls, those in difficult circumstances, and those belonging to ethnic minorities, have access to complete, free and compulsory primary education of good quality. Despite this declaration and expenditure of considerable sums, in most developing countries education of children with a disability, including those with visual impairment, remains a low priority. (Hwe, 2014)

Of the reported 61 million children who are not attending primary school, it is estimated that at least 16 million (1 in 4) are children with disability, of whom 4 million have visual loss.

There are many reasons for this situation, including;

- General education systems that often fail to include children with impaired vision;
- An absence of action to mobilize and empower blind persons and their families to become effective advocates;
- Lack of public policy, or failure to enforce such policies where they exist;
- Public policies that result in children being placed in custodial care facilities rather than appropriate educational programmes;
- Severe shortage of trained general and special education human resources;
- Weak or non-existent early identification and intervention programmes;
- Insufficient empirical data on programme models that are effective and sustainable within the context of a developing country; and

- Shortage of affordable and accessible teaching aids, low vision devices, textbooks and new technologies that allow blind and low vision persons to do things that were only a dream just a few decades ago.

2.5 Learning Aids Material for Visually Impaired Students

The educational materials and teaching process needs to make available to visually impaired students and blind. The student with disabilities may need special assistive devices to perform daily activities, education and the demand of assisted devices are vary. Students with visual may require special tools and materials to access information both inside and outside of the classroom. These learning aids materials range from low-tech devices to complex high-tech devices. Many schools of visually impaired are taking a number of steps to innovate accommodating learning environments for these students.

Students who are blind or visually impaired will adapt vary materials on the degree of vision function and effects of additional disabilities. Students may use braille, large print, print with the use of optical devices, tactile symbols, a calendar system, recorded materials for academic and communication. The special schools for visual impairment in Singapore provide the visually impaired students with special assistive device such as the handheld, desk magnifiers, Perkins Brailier, Braille Notetaker, Screen Reader Software, Cramner Abacus and Talking Scientific Calculator, computers, electronic talking/magnification software devices, Braille textbooks.

i) Learning Aids Material: Braille

Braille is irreplaceable and modern method for literacy. For visually impaired child or person, learning to read and write in braille can make a dramatic difference in their life. Braille is a system of raised dots that can be read with the fingers by people who are blind or visually impaired. Braille is based on a logical system and it is not a language. Braille is written with “stylus” on a Braille paper in a frame or by Perkins Braille or by an embossed connected to a computer (Odoh, 2016).

Additional paths of literacy for braille users have provided and continued to expand by technological development in high-technology. High-tech devices available for students with visually impaired are Refreshable Braille Display, Braille Printer/Embosser, Braille Translation Software and Electronic Braille Note Takers.

ii) Learning Aids Material: Accessible Educational/Instructional Materials

Accessible educational materials are print and technology-based instructional materials that include printed and electronic textbooks and related core materials that are designated for various special needs of students regardless of format (print, digital, graphical, audio, video). There are also two broad categories of technology for visual impairment: general technology such as computers, smartphones and cell phones, GPS devices, ect.; and assistive technology such as screen magnifiers, video magnifiers, braille watches, braille printers, screen readers software (JAWs, NVDA, etc.), recording devices, electronic dictionary with speech, auditory books, ect. These devices enhance the learning ability and absorbing knowledge for students with visually impaired.

For low vision students Acetate or Color Filters, Bold Line Paper, Book Stands and Slant Boards, Felt Tip Pens, Graphic Pencils, Large Print Keyboards, Low Vision Watches, Reading Guides with high lighters, Task lighting, and Typocopes are accessible for their education areas. These devices are designed for visual impairments. Students who are blind or visually impaired used their tactual skills as a primary or secondary mode of learning. The students who are blind can complete curriculum activities and daily living activities by adapting assistive materials. Braille Compass, Braille Watches, Braille Labelers, Bump dots, Cranmer Abacus, Full Page, Writing Guide, Script Letter Board, Raised Line Paper, Slate and Stylus, etc. are accessible in around the world.

Mathematics is a visual present subject and it can be very difficult for visually impaired students. There are some learning aids materials for mathematics are accessible and useful for visual impairments and students can adapt these devices for educational performance. These adaptable devices are Cranmer Abacus, Base Ten Blocks, Math Flash software, Tactile Dice, Talking calculator app, Braille number magnets, counting books, etc. are used in number and counting.

Auditory access devices help a student accesses information easily. Students who is blind or visually impaired can access print and information by using auditory devices although listening to books on tape is not the same as literacy. Thus, auditory devices should be used in tandem with print or braille as it is essential for a student be as literate as their cognitive skills allow.

Other common assistive materials such as services dog, white cane, electronic mobility aids are not directly impact on education process but these devices are useful to visual impairment in their daily life and to access more independent.

To conclude that students with visual impairments are the best-benefited group by using assistive materials/technologies. There are many advanced technology and assistive technologies are available in this digital age and by using technologies visually impaired students are more independent in their life. The visually impaired people needs more support in reading, writing and concept development because they are not able to access learning through vision like sighted pupils, thus, visual impairment pupils need the assist of technologies.

2.6 Reviews on Previous Studies

Ipuole, Clement Ikogor (2016) studied that the impact of computer assistive technology on the academic achievement of students with visual impairment in School for the Blind Gindri. The researcher used pre-test post-test experimental research design and seven samples were drawn out of the target population for the study. The researcher found that there is a significant positive impact of computer assistive technology devices on the academic achievement of visually impaired students. Thus, computer skills and used of screen reader enhance academic performance of visual impairment students.

Odoh, Anthony Ochigbo(2016) studied the impacts of Braille reading and writing on the academic performance of students with visual impairment in Jos metropolis. In this study, the method was causal comparative design. The results of the finding was the lack of ability to read and write Braille affects the academic performance of students with visual impairment and availability of Braille materials has also a significant role in the performance of visually impaired students in their academic subjects.

David A. Hume (2011) studied the assistive technology use by Kentucky students with visual impairments. The study has shown that half of these students using assistive technologies. The researcher found that there no significant correction between the size of employing district, years of teaching experience, level of education, specific areas of AT training and the extent of assistive technology use. Significant positive correlation was found between the amount of overall AT training and the extent of AT use.

The impact of school facilities on Student achievement, attendance, behavior, completion rate and teacher turnover rate in selected Texas high schools was studied by Robert Scott McGowen (2007). The purpose was to disclose the possible relationship between school facility conditions and school outcomes. The data were collected through the Public Education Information Management System managed by the Texas Education Agency and investigated by multiple regression models. The major research finding was there was not statistically significant relation to school facility condition an student achievement, attendance and completion.

Maaga Oira studied the use of modern assistive technology and its effect on educational achievement of students with visual impairment at Kibos special secondary school Kisumu country, Kenya. The study used a case study research design where both qualitative and quantitative data of one special school was collected and analyzed. The study employed purposive sampling technique to select a sample of 40 students, 10 teachers, 1 librarian and 1 transcriber. The study revealed that the school used analogy technology and use of modern assistive material has great contribution on curriculum coverage and early completion of class work and assignments.

Meng Ee Wong and Libby G. Cohen studied the access and challenges of assistive technology application. This study described the experience of teachers of students with visual impairments in Singapore. In-depth interviews were conducted to understand beliefs, practices and needs regarding the use of assistive technology in the study. The study found that there was a high recognition that assistive technology is a facilitator for accessing information and improving the quality of life for visually impaired students. There was also a great gaps and disconnection in assistive technology knowledge and skill among teachers.

CHAPTER III

OVERVIEW OF SPECIAL EDUCATION IN MYANMAR

3.1 Situation of Persons with Disabilities in Myanmar

Person with disability mean that a person who has one or more of the long-term physical, vision, speaking, hearing, mental, intellectual or sensory impairments from birth or not. Currently the Department of Social Welfare (DSW) classifies disability into four types: i) persons with visual impairments; ii) persons with hearing impairments; iii) persons with physical (mobility) impairments; and iv) persons with intellectual impairments. For the Myanmar National Plan of Action for persons with Disabilities 2010-2012, the Government utilized a definition which approaches the international definitions: “Disability is an evolving concept and that disability results from the interaction between persons with impairments and attitudinal and environmental barriers that hinders their full and effective participation in society on and equal basis with others.” Table (3.1) presented the percentage of disabled people with types of impairments. In the table, 2.5% of population are visual disability and the most common type of disability in Myanmar.

Table (3.1) People with Disabilities Rate by Categories

Type of Disability	Percentage of Population
Visual/Seeing	2.5
Hearing	1.3
Physical	1.9
Intellectual	1.7

Source: The Union Report, Census report volume 2 (2014)

According 2014 Census, Myanmar has 2.3 million or 4.6% of its population living with some form of disability. More than a quarter of this population has multiple disabilities. 1.11% of the country’s population live with a moderate or higher level of disability and 0.43% of its population live with severe disabilities. At the

household level, nearly 16% of conventional households live with at least one person with a disability. Among 4.5% of disability in Myanmar 17% of males and 32% of female are illiterate. 27% of males and 39% of females have no access to education. Moreover, only 29% of males, 15% of females with moderate/severe walking disabilities and only 30% of males, 21% of female with moderate/severe intellectual (remembering and concentrating) disability are in labour force (MCRA & AAR).

Table (3.2) Population by Disability Status, Urban and Rural Areas

	Without Disability	With Disability	Total	Prevalence rate	Share of Population without disability	Share of population with disability
Urban	14,345,879	532,064	14,877,943	3.6	29.9	23.0
Rural	33,622,771	1,779,186	35,401,957	5.0	70.1	77.0
Total	47,968,650	2,311,250	50,279,900	4.6	100.0	100.0

Source: Thematic Report on Disability (Aug, 2017)

People who live in rural areas have higher levels of disability compared to urban counterparts among 2.3 million people have any level of disability. Table (3.2) reveals that 1.8 million of disabilities live in rural areas and 532,064 live in urban areas. The share of population with disability in rural areas is 77 percent while 23 percent in urban area. Additionally, the prevalence rate in rural areas (5%) is higher than in urban areas (3.6%).

Disabled students have few options with just 15 special education schools in the entire country for the deaf, blind, physically disabled and intellectually disabled outside mainstream schools. There are also seven vocational training schools for people with physical disabilities. Some of these special education schools are run by the government, but the majority were established by NGOs. About half of them are in Yangon, and almost all the rest are in other urban centers, making it nearly impossible for disabled students in rural areas to pursue an education. Table 3.3 shows training school of persons with disabilities in Myanmar.

Table (3.3) Training School of Person with Disabilities

No	Organization	Region
1	Kha Wei Chan Training School for Visual Impairment	Yangon
2	Myit Kyi Na Training School for Visual Impairment	Kachin
3	Pyin Oo Lwin Training School for the Needy Blind	Mandalay
4	Yang Chi Thit Training School for Visual impairments in Mone Ywa	Sagiang
5	Shae Saung Training School for Visual Impairments in Meik Htee Lar	Mandalay
6	Pa Kouk Ku Training School for Visual Impairments	Mandalay
7	Mary Chapman Training School for Hearing Impairments	Yangon
8	AAR- Japan (Association for Aid and Relief Japan)	Yangon
9	Eden Centre for the Disabled Children	Yangon
10	Aye Myit Tar Caring Home for the Children with Disabilities	
11	Myanmar Medical Massage Training School for Visual Impairments	
12	Flowers Special Education and Physiotherapy Centre)	
13	Light House Learning Centre	
14	Montessori Children's House	
15	New World Therapeutic Training Centre for Special Needs Children	

Source: Naw Hmwe Hmwe Tun

3.2 Law and Policies for Disability in Myanmar

Constitution of the Republic of the Union of Myanmar of 2008, Basic Education Law of 1973, University Education Law of 1973, and the National Education Law of 2014 are the basic laws that concern with education in Myanmar. The Constitution of 2008 expresses obligations of the Union regarding education and the rights of all Myanmar citizens to an education. The Constitution (2008) provides the foundation legal framework for the education sector in Myanmar and states that every citizen:

- a) has the right to education;

- b) shall be given basic education which the Union prescribes by law as compulsory;
- c) has the right to conduct scientific research, explore science, work with creativity and write to develop the arts and conduct research freely in other branches of culture (article 366 of Constitution).

The National Education Law (NEL) 2014 and its Amendment 2015 provide an excellent national framework for the implementation of a wide range of complementary reforms across the national education system, such as: recognition of the right of all citizens to free, compulsory education at the primary level; establishment of a standard-based education of the basic education system to 13 years; support for the learning of nationalities' language and culture; and greater decentralization within the education system (UNHCR, 2019).

There is no laws specifically prohibiting discrimination against persons with disabilities in employment, education, access to health care, or in the provision of other state services'; the government did not provide sufficient protection for these people. The government did not actively discriminate against persons with disabilities in employment, access to health care, education, or the provision of other state services or other areas, but there were few official resources to assist persons with disabilities. There are no laws mandating accessibility to building, public transportation or government facilities.

A specific disability law remained in draft from as of September 2013. In September 2011, the upper house of parliament approved a proposal drafted following recommendations developed by Leprosy Mission International and the Ministry of Social Welfare in May 2011 for a disability rights law. By June 2013, following a meeting with chairpersons of parliamentary committees, the parliament committed to help to promulgate the disability rights law as soon as possible.

On 7 December 2011, Myanmar acceded to the Convention on the Rights of Persons with Disabilities (CRPD). The convention entered into force on 6 January 2012.

NEL amendment explicitly mentioned that person with disability should have an "equal opportunity" to and education, teacher education programmes should "produce teachers who can teach people with disabilities using appropriate teaching methods" and person with disability should not face barriers to entering the teaching profession.

In 5th June 2015, the government enacted the Rights of Persons with Disabilities Laws.

1. Every person with disabilities shall
 - a) Have the right to access the education on an equal basis with others;
 - b) Have the right to access the education at the schools of government, public, private, and organization-owned schools, courses, institutes, colleges and universities, an private academic schools and vocational schools.
2. The National Committee shall make arrangements cooperating with the Ministry of Education for providing curriculum, accommodation, transportation, and teaching and learning materials for persons with disabilities to pursue the learning from the Basic Education level to the Higher Education level.
3. The National Committee shall bay down the directives to the ministry of Education in order to provide the inclusive education system in which the persons of disabilities can learn in an integrated way, and to include the contents about the rights of persons with disabilities and to learn about the teaching methods based on the different types of disability and the communication techniques at Education Colleges and Universities.
4. Persons with disabilities shall not be rejected from the school enrolment due to the disability except for the requirements in subject matter.
5. Every child with disabilities shall
 - a) Have the right to education opportunities including the Early Childhood Education and Life Long Learning;
 - b) Have the right to free and compulsory education offered by the Ministry of Education at the government schools in the neighborhood or the nearest areas on an equal basis with others
6. The Ministry shall make arrangements for the programs of the Special Education, the Non-formal Education and Vocational Education specifically for the person with disabilities who cannot access the Formal Education. (Union Parliament Law, 2015).

3.3 Children with Disabilities in the Education System

Education has been held in high regard in Myanmar since the earliest days. The tradition of monastic education has significantly contributed to a high level of literacy since the time of Myanmar kings. In this century, education places more emphasis on the formal system with its schools and institutions at primary, secondary, and tertiary levels. The Ministry of Education (MOE) and 12 other ministries provide varied and diverse courses for learning in higher education sector. The MOE is also responsible for the basic education schools for all children.

Education is an important component in ensuring that persons with disabilities know about and can claim their rights. After decades of neglect to the education system, Myanmar has a low overall attendance rate, with about 10 percent of all school-aged children never starting school, according to the United Nations. But the figures for children with disabilities are significantly worse: The government survey showed that 50 percent of all people with disabilities, including physical and intellectual disabilities, had never attended school, largely because they were denied entrance at the government's mainstream public school. The high school graduation rate for people with disabilities was only 2 percent.

In Myanmar, one in every two persons with disabilities has never attended school by the First Myanmar Basic Disability Survey. The integration of children with disabilities in mainstream school known as inclusive education was set off for children who are mentally or physically impairments, and those who have difficulty attended schools or dropped out of school before completing education. This included basic education schools, no-formal primary education school programmes, monastic schools and special schools for children with visual and hearing impairments.

Inclusive education is framed within the context of the UN organizations' agenda of "Education for all" (EFA), originating in 1990 Jomtien Declaration and reinforced by the World Education Forum (2000, Dakar) and the Millennium Development Goals (2000). Education for All (EFA) means that ensure all children have access to basic education of good quality (UNESCO, 2000). In the framework of EFA, inclusive education is a concept that seeks to respond to the needs of a diverse range of learners, including "members of indigenous groups, those with disabilities, homeless, workers, those who living with HIV/AIDS and others" (UNESCO 2000).

The Myanmar government signed the Bali Declaration on Inclusive Development for People with Disabilities in November 2011. Myanmar also ratified

the Convention on the Rights of Persons with Disabilities (CRPD) on December 7, 2011, to improve the lives of persons with disabilities (PWDs). Under this convention, PWDs are afforded equal rights with others in their education, employment, cultural life etc.

Myanmar has endorsed Education for All and the Millennium Development Goals. The Ministry of Education's Review Report (2014) on EFA outlines EFA activities in Myanmar between 2007 and 2014 states that "Myanmar has initiated Inclusive Education for children with disabilities are accepted in basic education schools as well as in the Non-formal Primary Education (NFPE) programme, at monastic schools in addition to special schools for the blind and the deaf. There are eight special schools for children with disabilities, mainly located in Yangon (JICA, 2013). These include schools for children with visual impairments, hearing impairments and training for your people with disabilities. The special schools are managed by both the government, under the DSW of the Ministry of Social Welfare, Relief and Resettlement, community-based organizations and non-governments organizations.

In the academic year 2011-2012, 9,738 disable students were registered at basic education primary schools, 11,536 are at basic education middle schools, 47 at basic high school and 1,450 children with impairments were enrolled in special schools. Although there are some legislative provisions, there are many barriers and challenges to receive a proper education because of the lack of technical skills and a lack of qualified special education teachers (UNICEF, 2016).

Teachers in special schools graduate from Education Colleges after undertaking a one year correspondence course about the education of children with disabilities, including training on specific methods. However, there is no training of teachers on inclusive education (JICA 2013b).The Ministry of Education oversees education of regular schools. JICA's report (2013b) states that generally students with mild disabilities attend regular classes in primary school and moderately or severely disabled children receive education in special school. Moreover, students who attend primary level in special schools can move to regular schools at middle school level. An EFA review report states that children with disabilities are accepted in basic education schools. However evidence suggests that access of children with disabilities to schools in Myanmar, including regular schools, is very limited and a high number of children with disabilities are out-of-school.

One of the problems that impact upon the lives of people with disability is that there is hardly any partnership, co-operation or information sharing between international non-governmental organizations (INGOs), non-governmental organizations (NGOs), government organizations (GOs) and community-based organizations (CBOs) in Myanmar. This results in service providers and organizations being ill-equipped to support the disabled, having under-developed conceptualizations on disability. The lack of information sharing leaves organizations with inadequate knowledge to support the necessary foundation of community-based rehabilitation (CBR) programs and projects across all of the different regions of the country.

The majority of service provision for people with disability in Myanmar is based in the Yangon area, and is greatly inaccessible to people with disability living outside of the country, especially in rural areas. Service provision in Myanmar tends to view people with disability through a narrow lens, as beneficiaries and receivers of services, rather than as employees and participants in strategy development and implementation. Inadequate educational provision creates the greatest hurdle to inclusion in society for people with disabilities. To conclude that visual impairment and blindness are major public health problem in rural areas (Bawi, 2012).

3.4 Special Education Schools for Visual Impairments in Myanmar

Myanmar is the largest country in mainland South-East Asia. The International Agency for the Prevention of Blindness (IAPB) at its South East Asia Regional meeting in January 2013 has prioritized support to three countries in the South Asian region, including Myanmar. The Meiktila Eye Study (MES) which was conducted in year 2005 in the Mandalay Divisions, reported that the prevalence of blindness may be as high as 8.1% of the population. The common causes of blindness are cataracts, glaucoma, corneal pathologies, and trachoma.

Myanmar has one of the highest rates of blindness in Asia. According to WHO in 2001, Myanmar had a blindness occurrence rate of 0.9 percent of its population, among the highest in region. Thailand had a blindness prevalence rate of 0.3 percent, while India's was 0.7 percent. Most of eye care services in Myanmar are located in urban areas so it is difficult to access medical care. Rural populations of Myanmar experience visual impairment at higher rates than their urban countries. Most of Myanmar's visually impaired people suffer from avoidable blindness, which can be treated or prevented. Cataracts are the leading causes of blindness, followed by glaucoma, while Vitamin A deficiency causes blindness in children.

In the Vision Alliance Mission to Myanmar Meeting of Stakeholders on 25th September 2012, the Department of Social Welfare (DSW) estimated that about 50000 blind children are expected to be under age 5 and another 20000 blind children are in the age group 5 to 16. Around 90,000-100,000 are to be the age group 17-65, and there are 40,000-50,000 in the age group above 65.

Myanmar's National Disability Survey from 2010 indicates that about 1.2 million people in Myanmar live with a disability, and about 460,000 of them are school-aged children. But according to figure from the Ministry of Education, only about 2,250 students with disabilities were enrolled at the government's mainstream schools or its special schools for the blind and deaf. The government has more than 41,000 basic education schools around the country, but it runs only four of the 15 special education schools for people with disabilities and only three of the seven special vocational training schools, according to Action Aid. Space is also limited, with the government school for intellectual disabilities only able to accept about 300 students per year.

Blind students are attending at the special schools for primary education level and joining the government mainstream schools to continue their secondary education level and higher education level. Massage is the most popular vocation for persons with visual impairment. Little training is available for computer literacy. Small numbers of disabled persons get into government service and in schools for the blind but most of blind persons are unemployed.

Table (3.4) Quantity of Trainees and Schools for Visual Disabilities in Myanmar

Year	No. of Schools		Trainees	
	Public	NGOs	Public	NGOs
2005-2006	2	5	176	497
2010-2011	2	5	163	445
2012-2013	2	6	160	539
2013-2014	2	6	195	494
2014-2015	2	6	210	464
2015-2016	2	6	242	506
2016-2017	2	5	230	433
2017-2018	2	6	226	370

Source: Myanmar Statistical Year Book (2018)

In Myanmar, there are 8 special training schools for visual impairments and these are undertaken by the Department of Social Welfare, community-based organizations and non-government organizations. The Department of Social Welfare (DSW) undertakes 2 special schools in Yangon and Sagaing regions. The non-government organizations (NGOs), international non-government organization (INGOs) and other charity organization undertake 6 training schools in Yangon, Mandalay and Kachin State respectively. The two schools that the Department of Social welfare undertakes are Kyi Myin Dine training school for visual impairments and Yaung Chit Thit training school for visual impairments. The schools use a general curriculum as mainstream school. Table 3.5 describes the list of special school for visual impairments in Myanmar.

The students with visual impairments are come from around the country, these schools provide both education and vocational training. As vocational training, these students can learn handicraft cane/bamboo, fancy accessories, woo-knitting, and massage. Massage is the most common for visual impairment in Myanmar. Life skill techniques such as orientation and mobilization (O&M) skills for easy and safe movements, critical thinking and proper living are taught to all blind students. The students are to pursue music instruments as recreation classes. Sports are also provided to the students who are interested. These special schools have computer training for visually impaired student. JAWs software is the most common used computer-based in Myanmar blind schools.

Table (3.5) List of Special School for Visual Impairments

School Name	Region
Kyi Myin Dine Training School for Visual Impairments	Yangon
Kha Wah Chan Training School for Visual Impairments	Yangon
Pyin Oo Lwin School for the Needy Blind	Mandalay
Shae Saung Training School for Visual Impairments in Meik Htee Lar	Mandalay
Pa Kouk Ku Training School for Visual Impairments	Mandalay
Training School for Visual Impairments	Sagaing
Yang Chi Thit Training School for Visual impairments in Mone Ywa	Sagiang
Myit Kyi Na Training School for Visual Impairments	Kachin State

Source: www.dsw.gov.mm/en/rehabilitation/rehabilitation-persons-disabilities

i) Learning aids materials: Braille

The students learn Braille as their primary reading and writing and for their academic learning braille is irreplaceable techniques. The students who are visually impaired are taught braille for two years and after that they are provided with primary education level. The special schools for visual impairment in Myanmar, students with visually impaired are support by braille literacy. Braille products such as braille paper, frame. Slate and stylus are the basic and common materials used for writing. Braille textbooks are also translated from the general textbooks for these visual impairments.

iii) Learning aids materials : Available Instructional Materials

In special schools for visually impaired students, abacus, tactile dice, talking calculators, frame are used for mathematics. For geography and diagram, tactile graphic kit, tactual maps and globes, and tactual diagrams are available for instructional media in Myanmar. Additionally, magnifying glass, telescope, microscope and binocular are also using in the special schools but not very common. Moreover, audio books also known as listening books are accessible for students in the library. All special schools have computer rooms and the students can take computer lesson once a week. They start learning from typing skills with Braille Keyboards. These students used computer with JAWs or NVDA software. The necessary materials in teaching and learning process for these special needs students are not produce inside the country. These special schools are the place to obtain learning aids materials for visually impaired students.

Table (3.6) Number of Students at Special Schools

School	No. of Teacher	No. of Student
Kyi Myin Dine Training School for Visual Impairments	24	111
Kha Wah Chan Training School for Visual Impairments	20	160
Pyin Oo Lwin School for the Needy Blind	42	137
Shae Saung Training School for Visual Impairments in Meik Htee Lar	9	50
Pa Kouk Ku Training School for Visual Impairments	2	17
Training School for Visual Impairments (Sagaing)	18	59
Yang Chi Thit Training School for Visual impairments in Mone Ywa	3	41
Myit Kyi Na Training School for Visual Impairments	15	50

Source: Survey Data, 2019

CHAPTER IV

SURVEY DATA ANALYSIS

4.1 Profile of Yangon Education Centre for the Blind

There are two schools that provide education and trainings specifically for visual impairments in Yangon, Kha Wahi Chan and Kyie Myin Dine training schools for visual impairments. Kha Wahi Chan training school was carried out in this study. Kha Wahi Chan training school is also known as Yangon Education Centre for the Blind or Myanmar Christian Fellowship of the Blind (MCFB). The School provides academic and vocational trainings, and on the Rehabilitation center that creates job opportunities. It is located on Baho Middle Road, Mayangon Township, Yangon. The MCFB is a faith based non-profit organization that provide and organize the services that are required for the purpose of the well-being of the blind people in Myanmar. It was established on 4 August 1975 with fourteen blind Christians, and in order to receive due recognition and support in 1979 it became a part of the Evangelistic work program adopted by Self-Supporting Kayin Baptist Mission Society, Yangon City Church. The MCFB was accepted as a member of the World Blind Union (WBU) in 1996 because of its development and progress. The school accepts every blind between 5 and 25 years around the country.

4.2. Survey Design

The descriptive method was applied to obtain primary data by using structured questionnaires. There are 82 male and 78 female students are studying and 11 staffs and 20 teachers are serving at Yangon Education Centre for the Blind. The study purpose was explained before data collection. The interview was conducted to both teachers and students at the School. The questionnaires consists of three sections. In section A, the general information of students and teachers. Section B consists of the use learning aids materials in the school. The last section is about that impact of learning aids materials on educational achievement.

4.2.1 Survey Sample Size

There are 160 students and 20 teachers are at the school during the survey. For this study, 94 students out of 160 students, 8 teachers out of 20 are selected for the case study. Sample teachers and students were selected by simple random sampling method.

4.3 Survey Results

a) Profile of Students

i) Students Age Distribution

The participants were allocated into four age groups in the survey, which were classified into <15, 16-17, 18-19, 20 and above. The age of learners was important aspect learning process. Table (4.1) shows the percentage distribution of the learner respondents in terms of their age.

Table (4.1) Distribution of Student Respondents' Age

Age (Years)	Frequency	Percentage
<15	27	28.72%
16-17	23	24.47%
18-19	18	19.15%
20 and above	26	27.66%

Source: Survey Data, 2019

The data analysis exposes that the majority (28.72%) of the participants were in the aged of 15 and below, 24.47% of them were age group of 16-17, 27.66% of them were the aged of 20 and above, the rest 19.15% of the student respondents were 18-19 year. From the above table, it can be figured out that most of them were late to join school because of lack of vision.

ii) **Students Grade and Age Distribution**

Table (4.2) Students Grade and Age Distribution

	<15	16-17	18-19	20 and above
Primary	10 (37%)	0	1(5.6)	0
Middle	17 (63%)	19(83%)	11(61.1%)	3(11.5%)
High	0	4(17%)	6(33.3%)	5(19.2%)
University	0	0	0	18(69.3%)
Total	27 (28.7%)	23(24.5%)	18(19.1%)	26(27.7%)

Source: Survey Data, 2019

From Table (4.2), the majority (37%) of the primary students are the aged of 15 and below. At the middle school level, 83% of them are 16-17 years, 63% are >15, 61.1% are of them are 18-19 years, and the rest 11.5% is above 20 years old. In the high school level, 33.3% of participants are in the aged group of 18-19 years, 19.2% of them from 20 and above and the remaining 17% of these participants are 16-17 years. The majority (69.3%) of the learners respondent are from the university students and they are above 20 years old. It can be deduced that most of the learner participants are lately to join school because of their impairments and it has an impact on their education.

Table (4.3) Children with Visually Impaired Students' Dreams for the Future

	Frequency	Percentage
Writer/Singer/Artist/Musician	20	21.3%
Teacher	22	23.4%
Doctor	2	2.1%
Check/Soccer player	5	5.3%
Office worker	2	2.1%
Educated person	3	3.2%
Researcher	1	1.1%
Evangelist	4	4.3%
Owned business	4	4.3%
Audio/ Sound Engineer	5	5.3%
Translator	2	2.1%
Computer expert/ Programmer	15	15.9%
Announcer/ Conselor	3	3.3%
Police	1	1.1%
Dancer	2	2.1%
Lawyer	1	1.1%
Other	2	2.1%

Source: Survey Data, 2019

Table (4.3) describes the students respondents' dream in their future. The study found that visually impaired students have their own dream like ordinary students. Some of the students are interested in teaching and sharing knowledge to others and 23.4% of these students would like to become teacher who teaches visually impaired students. The considerable number (21.3%) of the respondents students would like to become writer, singer, artist, musician. The school also provide music lessons such as violin, keyboards, guitar, flute, vocal training. Some of the students respondents like using modern assistive technology like computer, 15.9% would like to become computer programme to produce useful learning aids devices for visually impaired students. 5.3% of students interested in sound/audio recording and they want to become sound engineer. 3.2% of participants desire to get good quality education and they want to continue their education until to be educated person. The study also

found that, 4.3% of students dream to become business owner. 1.1% of students would like to lawyer and police respectively. There is the only weapon and instrument to really fulfill these student dreams is education. Thus, education for visually impaired is very important to achieve their willingness and well-being.

iii) **Teacher-Student Ratio**

To measure the effectiveness of teaching in the school, the teacher-student ratio is important in the special school. Less the teacher-student ratio will be more effective in the school. The teacher-student ratios are calculated that the number of enrolment students are divided by the number teachers in each level. In the academic year of 2019-2020, there are 82 male and 78 female students are attended in the school and 20 teaching staff. The student-teacher ratio is shown in Table (4.4). The table reveals that teacher-student ratio in Yangon Education Centre for the Blind is 8 students per teacher.

Table (4.4) Teacher-Student Ratio during the Survey

Year	No. of Teacher	No. of Student	Teacher-Student Ratio
2019-2020	20	160	1:8

Source: Yangon Education Centre for the Blind

b) **Profile of Teachers**

i) **Teachers Age Distribution**

The age of the teachers was considered an important part in the teaching learning process. Table (4.5) shows the teachers age distribution. The analysis of teachers respondents age exposes that 39.5% of the teacher participants are in the age group of above 50 years, 37.5% of them are aged 31-40 years, the aged of 20-30 and 41-50 of them are 12.5% respectively. According to the results, the majority (39.5%) of the participants is the aged above 50 years, it can be say that the experienced human resource in this school is adequate because the teachers may have necessary experienced to teach students with visual impairments.

Table (4.5) Teachers Age Distribution

Age (Years)	Frequency	Percentage
20-30	1	12.5%
31-40	3	37.5%
41-50	1	12.5%
Above 50	3	39.5%

Source: Survey Data, 2019

ii) Teachers Participants Qualification

The teacher academic qualification is show in Table 4.6. It reveals that 87.5% of the teacher participants who responded in the study have bachelor degree in Myanmar, History, Psychology, English, International Relationship.

Table (4.6) Teacher Participants Qualification

Qualifications	Frequency	Percentage
Bachelor	7	87.5%
Middle	1	12.5%

Source: Survey Data, 2019

iv) Teachers Training Distribution

The most important educational resource is people – teacher, and the quality, experiences are very important for this educational resource. Teachers can be more qualified and perform well by training. Without training, teachers cannot adapt with student needs. The teachers trained to teach visually impaired students is one of the important aspects in teaching learning process. In the survey, the teacher respondents (100%) are trained on teaching these students to meet their special needs. Thus, the teachers on the Yangon Education Centre for the Blind are adequately trained to be able to teach students with visual impairment which include more of practical activities. Table (4.7) exposes the teacher training distribution as visual impairment at Yangon Education Centre for the Blind.

Table (4.7) Training Distribution of Teachers

	Frequency	Percentage
Yes	8	100%
No	0	0%
Total	8	100%

Source: Survey Data, 2019

v) Teaching Experience for Visually Impaired Students

Table (4.8) Teachers' Experience in Teaching Visually Impaired Students

Teaching Experience (Years)	Frequency	Percentage
Less than 1 year	0	0%
1-5	3	37.5%
6-10	0	0%
11-20	2	25%
Above 20	3	37.5%

Source: Survey Data, 2019

The above table shows that the teacher experience of teaching visually impaired students. The experience of teachers has an impact on the education of students achievement. The teacher can understand and well known about visually impaired student needs and the best teaching technique through teaching experience. From these findings, 37.5% of teachers who have experience in teaching between 1 to 5 years, another 37.5% have above 20 years of experience while the remaining 25% have 11-20 years of experience to teach visual impairment. It can be summarized that the teachers in Yangon Education Centre for the Blind have satisfactory experience.

4.3.1 Use of Modern Learning Aid Materials/ Assistive Technology

According to the study, a number of modern learning aid materials are used during the teaching learning process in Yangon Education Centre for the Blind. All the participants both teachers and students responded that the school has a computer room and 12 computers are there. The majority 88.3% of the student participants have computer lessons in the school once per week. The students have computer lessons from middle education level. The technology in the computers are adapted to fit the

needs of students with visual impairment. All (100%) the respondents of teachers are strongly agreed that technologies in the computer room are well-adapted to meet the needs of students with visual impairment. In the computer room, they are learning about computer devices basically and starting from typing lessons. They university students can borrow computer from the Headmistress.

According to the students responded, 80.9% of them endorsed that braille materials such as braille paper, slate and stylus are the most common used in their learning process. 9.6% of these students use smartphone for spelling check, dictionary. The students respondents (5.3%) also used computer in the teaching learning process. The rest 4.5% of students participants use other assistive materials like audio recorder, glasses. In their free time, most students use Audio Player, Radio for listening to music and stories. Some of them surfing internet, using Facebook and reading news. 100% of students respondents strongly believe that assistive technology can enhance their education.

i) Types of Materials Used in Reading and Writing

The percentage of the student respondents is shown in Table (4.9) in order to identify the items used in reading and writing by the visually impaired students in Yangon Education Centre for the Blind.

Table (4.9) Use of Assistive Technology by Students Respondents in Reading during their Free Time

Items	Frequency
Braille and slate and stylus	51
Talking books	42
Computer	1
Internet(Facebook, U-tube)	5
Other	15

Source: Survey Data, 2019

Table (4.9) reveals that a number of equipment used by students in the process of reading and writing. It shows that braille paper and slate and stylus are most frequently used by students 51 of them used it in reading during their free time. Talking books are also used, 42 of them used it frequently. It can be deduced that

braille and talking books are common and popular in the school. However, the use of computer is not common and only 1 of them used in reading and writing. According to the study, 5 of them used internet. These students surf the internet for using Facebook and You tube for entrained. The reminding 15 of them used others such as Braille books to read and write in their free time.

ii) Learning Aids Materials Available in Classroom

The analysis of the teacher response on the instructional media available in the classroom is shown in Table (4.10). The survey findings reveal that a variety of instructional media, which refer to devices, material and software utilized in teaching learning process are being used by the teachers in classroom. The table of percentage frequencies on teachers’ response is developed in order to set up the institutional media available for students with visual impairment in Yangon Education Centre for the Blind.

Table (4.10) Instructional Media Available for Students with Visual Impairments

Instructional/Teaching material	Frequency (%)
Braille writers	37.5%
Braille books	87.5%
Braille paper	87.5%
Braille rulers/ compass	100%
Cramnier abacus	100%
Slate and stylus	87.5%
Sound balls	0%
Tactual maps and globes	62.5%
Tactile graphic kit	37.5%
Tactual diagrams	12.5%
Templates and writing guides	0%
Telescope, microscope and binocular	25%
Talking calculators, clocks	50%
Tylor frame and types	75%
Magnifying glass	37.5%
3-D material	0%

Source: Survey Data, 2019

Instructional media covers all the materials and physical means an instructor might use to implement instruction and facilitate students' achievement of instructional objectives. This include that traditional materials such as blackboard, slides, real objects and videotape or film as well newer materials and methods such as computers, DVDs, CD-ROMs, the internet, television, and projectors. However, the teaching media for visually impaired students are differs depending on the nature of their disability.

In the survey, the use of braille rulers, compass and crammier abacus are the most prevalent teaching media used in Yangon Education Centre for the /blind, these two instructional media are sufficiently available for the students. The other materials mostly frequently used in classrooms are braille books, braille papers, slate and stylus, in seven out of eight (87.5%) of these materials are available for learners. Tylor frame and types is availed to students in 75% of the instructional media. Talking calculators and clocks are accessed to half (50%) of the instructional media. The finding of the survey shows that sound balls, templates and writing guides, and 3-D material are not accessible in the School.

The special necessary materials in the classroom are presented in Table (4.11). The special needs in the classroom are differ depending on the opinion of the student respondents. According the student responded, the considerable number of participant (29.9%) revealed that Braille textbook is necessary and it is important to have textbooks before the school opens and have enough books for all subjects. In the study, 23.4% of the students respondent described that computer is necessary for their learning process in the classroom. For the low vision students (3.2%), eyeglasses are crucial for their academic and daily life. 21.3% of the students who participated also endorsed that audio recorder is necessary in the classroom to follow the literature.

Table (4.11) Special Needed of Students

Special Materials Needs	Frequency (%)
Braille Frame	9.6%
White Cane	1.1%
Braille Textbook	29.9%
Computer	23.4%
Smartphone	12.8%
Eyeglasses	3.2%
Audio Recorder	21.3%
Assistive materials for graphic	1.1%
Others	14.9%

Source: Survey Data, 2019

iii) Kind of Assistive Technology Used in Yangon Education Centre for the Blind

The study identifies the kind of assistive technology available in Yangon Education Centre for the Blind because assistive materials are important aspect for these students in their daily life and education. The use of assistive technology in teaching learning process have a great impact on education achievement and able to live independently.

According to the findings of the study, JAWs (Job Access with Speech), the screen reader and talking books are the most popular assistive technology used in the School. 100% of the teachers who participated in the survey endorsed that Jaws programme and talking books are available in Yangon Education Centre for the Blind and frequently used. Jaws programme is a screen reader and developed for computer users whose vision loss prevents them from seeing screen content or navigating with mouse.

The study also found that Non-Visual Desktop Access (NVDA) Daisy book can access 87.5% in the School for the blind. NVDA is a free and open-source screen reader for the Window Operating System, the blind and visually impaired people can be able to use their computer with less cost than the computer and operating system itself. Besides, 87.5% of the teachers who are participated in the study revealed that Braille Keyboards is also used in the School. The study also described that some of

the equipment such as Mega dots. Window eyes intellitalk, micro computers with speech, braille inputs and output devices, and speech compressor are not using in the School.

4.3.2 Challenges Faced by Teachers and Students with Visual Impairments

a) Challenges Faced by Teachers

According to the findings of the study, the lack of adequate resources is a great obstacle in teaching learning process. The major challenge faced by the teachers is that difficult to identify the specific needs of students with visual impairments. The students' understandable level is different, the teachers have a challenge to teach all the students with visually impaired to understand the subjects which they taught. The teachers (25%) who participated in the study tells that learning aids materials like textbooks, modern assistive technology are not sufficiently available and this make the teaching learning process is not effective as it should be. Other 25% of the teachers who participated in the study reveals that the students cannot focus in the lesson, their concentrate on the study is drop off, thus, the teachers challenge to motivate these students inspiration.

b) Challenges Faced by Students

The findings of the study reveal that the majority (38.3%) of the students are struggle in practical subjects like mathematics, geography. This is because these students cannot learn through vision like sighted peers, they learn through hearing and tactile materials. The adequate and modern assistive materials are still lack in the School. A good considerable number (30.9%) of the learners cannot follow text reading/writing in the classroom. In the survey, 7.4% of the students who are participated in the study described that mobility in the classroom and public places is difficult. According to the inclusive education system, from middle to high students have to learn with sighted peers and 3.2% reveals that they are discriminated in the school. The others (8.5%) of major difficult for the students are tutorial, unable to get braille textbooks. In Table (4.12) the challenges faced by the students in teaching learning process is computed by percentage frequencies.

Table (4.12) Challenges Faced by the Students

Challenges of student	Frequency (%)
Cannot follow text reading/writing	30.9%
Mathematics and graphics	38.3%
English	8.55
Mobility	7.4%
Discriminated	3.2%
Heavy assistive accessories	3.2%
Others	8.5%

Source: Survey Data, 2019

4.3.3 Impact of Assistive Technology on Educational Achievement of Visually Impaired Students

The impact of assistive technology on educational achievement of visually impaired students is investigated by exploring the impact of AT assemble, items are drawn concerned with important part of the impacts of assistive technology measurements. The Likert-scaled type of questions was applied, in which teacher and students participants have to choose from 4-point score; strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD). The teachers response are shown in Table (4.13).

Table (4.13) Impact of Assistive Technology in Teachers' Responses

Item	SA (%)	A (%)	D (%)	SD (%)
Technology is the best approach.	87.5	12.5	0	0
A great deal of work is covered to extend that educational programme is concerned when utilizing assistive technology equipped ICT facilities.	37.5	62.5	0	0
There high level interrelationship between learning material, students themselves and instructor through the help of assistive technology is developing potential outcomes in practical subjects like geography, mathematics, etc.	50	50	0	0
By using assistive technology, visually impaired students are able to collect more information in the curriculum freely.	87.5	12.5	0	0
Visually impaired students are stimulated to select practical subjects and perform them well by adopting assistive technology.	25	12.5	62.5	0

Source: Survey Data, 2019

According to the above table, the majority 87.5% of the teacher respondents are strongly agree on the use of assistive technology is the best approach, the remaining 12.5% of them agreeing on that opinion of the use of it should be improved in the School. In the study findings, the use of assistive technology has great benefit on the curriculum achievement or completion, thus, it has positively impact of educational achievement of students with visual impairments. 62.5% of the teacher respondents are agreed with a great of work is secured as far as educational programme is concerned when utilizing assistive technology equipped ICT facilities. Another 37.5% of them are strongly agreed that a lot of work is secured when modern material is used.

In this study, four out of eight (50%) are strongly agree and the rest 50% of teacher respondents are also agree in the statement that there is high level of interaction between learning material, students and instructor themselves by the assistance of assistive technology. The study observed that 87.5% of the teacher respondents are strongly agreed that By using assistive technology, visually impaired students are able to collect more information in the curriculum freely. 12.5% of the respondents are also agreed on that statement.

On the statement of assistive technology encourage students to select practical subject and perform them well, a large number (62.5%) of the respondents are disagree. 25% of them are strongly agreed and the other 12.5% of the respondents are agreed on assistive technology stimulate these students to take science subject and perform them well.

According to the students responded on impact of assistive materials on educational achievement, the students described that since they used assistive devices to access information, 46.8% of these students known how to link up with outside society, 36.2% gained self-esteem, 3.2% of students respondents are improved in most subjects areas, 2.1% of students participants can do assignment independently, and 11.7% of these students are not using assistive devices such as computer and smartphone. Table 4.14 reveals that the impact of assistive material for students responded. 100% of student strongly agreed that assistive materials can enabling them to enjoy and exercise human rights on equal basis with other individuals.

Table (4.14) Students Responded on Impact of Assistive Materials

Item	Frequency
Improved in most subjects	3.2%
Gained self confidence	36.2%
Can do assignment independently	2.1%
Able to link up with outside community	46.8%
Dropped in most subjects	0%
Others	11.7%

Source: Survey Data, 2019

To summarize the findings, Braille is the primary literacy in Yangon Education Centre for the Blind. The School still widely used low- and medium-tech

devices in learning teaching process such as Braille books, rulers, etc. At the computer laboratory, the students learn typing with braille keyboards and some high-tech devices such as screen reader software (JAWs, NVDS). Although, the primary students are not trained computer training, they are only used low- and medium-devices in their curriculum.

CHAPTER V

CONCLUSION

5.1 Findings

This paper studied the use of learning aids materials and its impact on educational achievement for people with visually impaired at Yangon Education Centre for the Blind. Learning aids materials including low-tech, medium-tech, high-tech can support group of visual impairment (including students who are blind or have low vision) in all academic areas and daily life. It has positive impacts on the lives of individuals with visual impairment.

At the Yangon Education Centre for the Blind, every student has computer lessons once a week from the middle school level. All the students and teachers who participated in the study revealed that the school has a computer laboratory and 12 computers are in the computer lab. These computers are adapted to meet the need of students with visual impairment. 80.9% of the students who participated responded that Braille materials such as Braille paper, slate and stylus, Braille ruler are the most commonly used assistive devices in their learning process. Some of them use modern devices such as smartphone, audio recorder, computer for their educational attainment. To read and write in their free time, 51 students who participated in the study use Braille, slate and stylus, 42 used Talking books to read, only 1 student uses a computer.

The instructional media such as Braille compass, rulers and Crammer Abacus are 100% available and used in the classroom by teachers at the school. The pens/pencils called slate and stylus, Braille paper, Braille textbooks are accessible in the school according to the teachers' respondents (87.5%). The devices such as 3-D materials and sound ball are not used at all as instructional media in the classroom. Moreover, the computer-based technology such as JAWS and Non-Visual Desktop Access are also installed and accessible in the school.

The teachers have challenges/difficulties in subjects that include visual presentation such as Mathematics, Geography, Symbols. The difficulty level of

students' understandable and to motivate students who have visual impairments for their education are the most challenges for teachers in the School. Not having enough assistive materials is one of the major obstacles to teach these students effectively. The same as teachers, 38.9% of the students are struggle in subject like Mathematic, Geography because of not having modern assistive devices. When these students are the classroom, the noises of the classroom interrupt their listening and concentration, thus, 30.9% of the students cannot follow text reading/writing. 3.2% of students who attended in the mainstream school suffer discriminated.

There is a great impact on educational achievement by assistive technology. According to the students and teachers involved in the study, the assistive devices provide a better alternative way of students to access information and knowledge independently, quickly, easily. By using assistive technology, the students get more self-confidence, more able to do assignment independently. It come out that the use of assistive technology has vast contribution toward curriculum exposure and completion, thus, assistive technology is positively influence on educational achievement for visually impaired students. The last implication is that the potential of modern assistive devices are supreme and immeasurable in achieving quality education of students with visual impairments.

The students of visually impaired used the braille materials, abacus, white cane, slate and stylus as major equipment of assistive technology. Current technology involve computers, smart braille machine, smartphone, tablets that are more effective, time saving and reliable are uncommon and not well used by students due to lack of the legal framework and policy to guide the teaching of such technology and lack of financial assistance most of these students are from low-income level.

5.2 Suggestion

Education is a powerful tool to achieve a country's economic growth. Everyone who is disable or not disable education is important. In the education learning process, assistive materials are necessary because they help easy to understand and efficient for both learners and teachers. These learning aids materials are more essential for impair students. Learning aids materials including assistive technology are the most important for these special students to enhance their living students. The most benefit from using assistive technology is visual impairments.

Thus, providing and protecting disable students can enhance their education, living standard and these students can also become a skilled labour force for the country.

Many students across Myanmar cannot benefit fully from a traditional educational program because they have a disability that impairs their ability to participate in a typical classroom environment. A person who can understand and cheer up them is very important for disabled students. The skills and cooperate of teachers are very crucial for disabilities student in their school environment, thus, training to teachers for inclusive education is necessary.

The school for students with visual impairments should be equipped with modern devices which are less bulky, quick, easier to use and motivating independence studying. The best assistive material is the one that can support the student with a specific disability to access the general curriculum and be independent in general functioning in the society.

Assistive technologies are used by disabilities in order to perform functions that might be difficult or impossible. It improves the quality of life. Thus, it is imperative the training of assistive technology should be integrated with education of children with visual impairment for better adaptability and greater independence in the society.

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APPENDICES

Appendix 1

Questionnaire for Teachers of Visually Impaired Students

Section A

Information of the Teacher

Name of School _____

Tick [√] in the bracket or write answers in the spaces.

1. What is your age range?
 - a) 20-30 years []
 - b) 31-40 years []
 - c) 41-50 years []
 - d) Above 50 years []
2. What is your academic qualification?
3. How long is your teaching experience for the visually impaired students?
 - a) Less than 1 year []
 - b) 1-5 years []
 - c) 6-10 years []
 - d) 11-20 years []
 - e) Above 20 years []
4. Are you trained to teach visually impaired students? Yes [] No []
5. While you teach the visually impaired students, what kind of challenges/difficulties do you faced?

Section B

Learning Aids Material Used in the School

1. Does the school have computer room? Yes [] No []
2. How many computers are in there?
3. Is the technology in the computer room adapted to fit the needs of the students with visually impaired? Yes [] No []

4. If the answer in number 2 is 'Yes' , please tick [√] on the following column whether learning aids technology is available or not

Assistive technology Available	Accessible	Not Accessible
Jaw Programme		
Talkback		
Non visual desk to access NVDA daisy book		
Talking books		
Speech Compressor		
Megadots		
Micro computer with speech synthesis and Braille input and output devices		
Braille translation software		
Window eyes intellitalk		
Braille keyboards		

5. In the classroom, what is the major instructional media accessible for learners with visual impairments? Please tick[√]in the appropriate column

Instructional Media	Accessible	Not Accessible
Braille writers		
Braille books		
Braille papers		
Braille rulers, compass		
Cramnier abacus		
Slate and stylus		
Sound balls		
Tactual maps and globes		
Tactile graphic kit		
Tactual diagrams		
Templates and writing guides		
Telescope, microscope and binocular		
Talking calculators, clocks		
Tylor frame and types		
Magnifying glass		
3-D material		

Section C

Impact of Assistive Technology in the Education of the Visually Impaired Students (Using the Likert Scale)

1. Technology is the best approach.
 - a) Strongly agree []
 - b) Agree []
 - c) Disagree []
 - d) Strongly disagree []
2. A great deal of work is covered to extend that educational programme is concerned when utilizing assistive technology equipped ICT facilities.
 - a) Strongly agree []
 - b) Agree []
 - c) Disagree []
 - d) Strongly disagree []
3. There high level interrelationship between learning material, students themselves and instructor through the help of assistive technology is developing potential outcomes in practical subjects like geography, mathematics, etc.
 - a) Strongly agree []
 - b) Agree []
 - c) Disagree []
 - d) Strongly disagree []
4. By using assistive technology, visually impaired students are able to collect more information in the curriculum freely.
 - a) Strongly agree []
 - b) Agree []
 - c) Disagree []
 - d) Strongly disagree []
5. Visually impaired students are stimulated to select practical subjects and perform them well by adopting assistive technology.
 - a) Strongly agree []
 - b) Agree []
 - c) Disagree []
 - d) Strongly disagree []

Appendix 2

Questionnaire for Students who Learn at the School

Section A

Personal Information

Name of School _____

Age _____

What is your mode of reading?

1. Please tick[√] the items that you use in reading and writing in your leisure time

a) Computer []

b) Internet []

c) Braille, Slate and stylus []

d) Talking books []

Any other (specify) _____

2. What are your major challenges in your learning process?

Section B

Access Learning Aids Technology and Use

1. Do you have computer lessons? Yes [] No []

2. Does your school have a computer training room? Yes [] No []

3. How many times do you visit the computer room in a week? _____

4. In the computer room, what kinds of activities did you do? Please tick [√] in the bracket

a) Chat in facebook []

b) Link to email or gmail []

c) Access the news []

d) Link to You tube []

e) Play games []

Any other (specify) _____

5. What kind of assistive material/technology do you use in the teaching learning process? Please tick [√] in the bracket

- a) Computer []
- b) Smartphone []
- c) Audio recorder []
- d) Slate and stylus []

Any other (specify) _____

6. In your free time, what material do you use most, please tick [√]

- a) Computer []
- b) Smartphone []
- c) Radio []
- d) Television []

Any other (specify) _____

7. Do you believe that the internet through assistive technology can benefit your academic?

Yes [] No []

If your answer is "No", please give some reasons

Section C

Impact of Assistive Materials on Education of Visually Impaired Students

1. Since I knew how to access information in computer/smartphone I have -----
 - a. Improved in most subject areas []
 - b. Gained self confidence []
 - c. Can do assignment independently []
 - d. Known how to link up with outside community []
 - e. Dropped in most subject areas []
2. Assistive material is enabling us to enjoy and exercise human rights on equal basis with other individuals. Using Likert Scale
 - a. Strongly agree []
 - b. Agree []
 - c. Disagree []
 - d. Strongly disagree []
3. What material has a great impact on your studying?
4. Which material is a special need for you teaching learning process?