# Adoption of Assistive Technologies in Academic Libraries: A Case of Margaret Thatcher Library, Moi University

*Langat K. A. and W. Kiprono.*

**email:** *antolang39@gmail.com*

## Abstract

**Assistive technologies are important for students with visual impairment both for totally blind and the partially blind. These assistive technologies help these students to access useful information and materials just like their sighted peers. Accessing quality information resources is necessary for success in their education and self development. This study sought to establish the assistive technologies needed for the visually impaired students (VI) in Moi University, Margaret Thatcher library. There is need for attention to be given to librarians to realize the urgency or acquiring high tech devices and modern technologies to be installed on computers. Modern technology is availing journals, books and coursework in digital format for access by the VI students using, screen reading software, Braille technology and magnification equipments. Barriers to access must be overcome and specialized needs must be included in the library equipments, upgrade plans and others across the board. This research intends to be a descriptive research. The researcher collects data using interviewing visual impaired students, interviewing the library staff and giving questionnaires to the library management. Reflections from this initial study are presented in hopes of changing how visually impaired students are encouraged to relate to digital assistive technologies availed the in the library. It was envisaged that the finding, recommendations and suggestions of this study, would be helpful to VI students, their lecturer, librarians, curriculum developers and policy makers in the area of education.**

**Keywords:** *Assistive technology, Visual impaired, Academic libraries.*

## Introduction

Assistive technologies (ATs) is a term that refers to assistive, adaptive rehabilitative devices, products, or equipment for helping people with disabilities. These improve, increase and maintain the functional capabilities of persons with disabilities. ATs assist individuals in communication, education, work, and recreation; help them achieve greater independence; and enhance quality of life. Assistive technologies offer independence by enabling people with disabilities to perform tasks which they were formerly unable to accomplish. ATs can immensely improve the quality of life of individuals with disabilities by providing better access to information, knowledge, education, healthcare, and employment. (UNESCO, 2006).

## Objectives of the study

(i) Establish the assistive technology available for the blind students in Moi University, Margret Thatcher.

(ii) Establish the awareness of the students about the assistive technology available for them.

(iii) Determine legal policies predetermined to guarantee access of quality instructions by these students.

(iv) Examine how the assistive technology was employed to ensure quality instruction for the blind students in both MU and,

(v) Establish measures taken by MU to improve the utilization of the assistive technology for the blind.

**Statement of problem**

The term 'visually impaired' covers the 'blind' and 'partially sighted'. The most difficult problems for the visually impaired to overcome are reading and writing. The saying 'A picture paints a thousand words' holds true for sighted people but the visually impaired are unable to interpret a picture and rely heavily on words, for which Braille plays an important role.

Significance of the study

The findings of this study may be important to several academic institutions. First, the management of academic libraries may use them to design and develop different educational programmes that may appeal to the VI students. Second, Lectures will gain some knowledge about the relevance of assistive technology in their teachings especially the special students. Third, scholars and researchers interested in the area under study will find the study results useful to them. Lastly, the university management would use the results of this study to equip the learning resource centres with modern assistive technologies for the visually impaired students.

**Literature Review**

Three Approaches to Providing Access

When individuals are unable to interact effectively with the world as it is currently designed, there are three approaches to addressing the problem:

1. change the individual
2. provide individuals with tools they can use, or
3. change the environment (Vanderheiden,1997).

The first approach is to change the individual so that they are able to access and use the environment. This includes surgical intervention, therapy, training, and education to increase their abilities so that they are able to deal with the world as it is currently designed and configured. It also includes teaching the individual tricks or strategies that allow them to maximize the abilities they have. This approach has the advantage that it actually enhances the native capabilities of the individual. These enhanced abilities, skills, and strategies are always with them and can be applied to all of the different devices, systems, and situations encountered. Provide Individuals with tools they can use.

The second approach is to provide the individual with tools that either strengthen, compensate, or

provide a better match between their abilities and those required by the environment. This includes prosthetics, orthotics, and assistive technologies. Assistive technologies have the advantage that they can be custom selected and fitted to meet the particular needs of an individual. They can also be custom adapted to meet the particular needs and abilities of the individual and the constraints of the environment is in which they will be used. Assistive technologies are often expensive compared to their off-the-shelf mass-market counterparts.

Computer, communication, and other electronic assistive technologies are often very expensive.

If custom selection and fitting is required, the expense is even higher. As a result, individuals are

Usually able to secure only some of the assistive technologies they need to address all of their needs.

Visual impairment, teaching and learning

As far back as 1967, Haring and Schiefelbusch (1967) reported on various issues related to the education of visually-impaired learners. They focused primarily on the importance of vision and the mode of reading, and attempted to illustrate how intelligence manifests itself in blind and visually-impaired learners as compared to the deaf. Their work emphasized the significance of blindness and of available sensory data during learning mediation as

well as the translation of visual stimuli. Freeman (1986) emphasized the importance of visual impairment

as a handicap to gifted learners as follows: the VI conceptual development and abstract thinking seem to be delayed by the absence of visual stimulation or images; cognitive development occurs more slowly, and norms for chronological age groups are invalid". The significant role of visual stimuli as prerequisites for conceptual development in the facilitation of the subject content in general and the life sciences more specifically,

has been recorded by many authors such as Falk (1980), Perkins (1974), Erwin et al (2001) and Fraser et al (1996).

Figure 1 illustrates how multiple tactile stimuli supplement for the loss of sight, allowing learners to perceive size and shape three-dimensionally. However, blind learners are easily overwhelmed by the complexity of very 'full' or 'busy' diagrams and sketches. Blind learners need to be spatially orientated when 'feeling their way through', or reading, sketches and figures. Correction normally occurs when labels in Braille accompany diagrams, pictures, models and sketches.

Wittich and Schuller (1973) argued more than three decades ago that perception remains the foundation of learning. They stressed the fact that without a sufficient conceptual foundation, learning would be severely impaired and thinking would be severely limited (1973). However, it should also be taken into consideration that various developments in technology have significantly contributed, and still do, towards improving the plight of the visually impaired in the facilitation mediation of learning. Disabled learners and in particular blind and visually-impaired learners require and deserve specific strategies that address their unique learning mediation needs during the facilitation of life sciences. Jurmang (2004) noted that the fundamental principles of teaching have not changed; approaches to an individual child must be adapted to take account of that child's special needs. When working with children that have sensory impairment ... the teacher must understand the significance of all these factors and create a favourable climate for learning." On the other hand, Paul (2004) in regard to specialist programmes argued as follows: "(w)e need to look at introducing specialist programmes of these professionals to create a well trained pool of human resource." In instances where specialized education and support systems are not in place, effective advocacy, professional advice and technical assistance will not prevail. Furthermore, the goal of equal participation by blind and visually-impaired learners, and the right to be mediated by educators who fully know and understand them better, cannot be achieved.

## Adapting the curriculum

Any curriculum that is not learner-based and learner-paced will hinder the blind and visually-impaired learner from learning and actively participating in the learning mediation to her or his full potential. Educators are not aware of what should be done to accommodate blind and visually-impaired learners during the acquisition of Science Process Skills and or assessment. Due to that, they discourage blind learners to take or consider science-related subjects as curriculum choices. The following alternative approaches to curriculum adaptation and delivery have been applied to the teaching of blind and visually-impaired learners:

• setting a substitute task of similar scope and demand

• replacing one impossible or unfriendly task with a task of a different kind

• allowing the learner to undertake the task at a later date

• using another planned task to assess more outcomes or aspects of outcomes than originally intended.

## Assistive technologies for Libraries

Assistive technologies that are most appropriate for academic environment have been suggested for libraries in the following. Libraries should setup assistive technologies centers with the following units:

• Computer laboratory with 20–25 workstations (number may vary according to the size of the clientele).

• Talking Book studio.

The computers in the computer laboratory should be equipped with the following software in order to meet the requirements of visually challenged students.

## Enlarging or Magnifying Software

Screen enlarging or magnifying software interfaces with computer graphics output to present an enlarged screen view. It allows people who are visually impaired or partially sighted to read email and perform other text-based tasks. Users can adjust the size of the text and change attributes, such as background color. Some of the examples of enlarging software are include:

• Zoom Text from AI Squared.

• Magic from Freedom Scientific.

• Dolphin's Lunar and Super Nova.

## Screen Reading Software

Screen reading software scans text and reads it aloud using a speech synthesizer.
Some of the examples of screen reading software include:

• JAWS (Job Access with speech) from Freedom Scientific.

• Windows Eyes from GW Micro.

## Methodology

## Research design

This study adopted a descriptive research. Berger (2000) notes that a descriptive research describes the population being studied. The aim of a research is to elicit information which after evaluation results in a profile or

statistical characterization of the population sampled. Survey research is the most commonly used research design by social scientists (Babbie, 1983).

## Population of the study

The population of the study comprised of VI students in Moi University, library staff and library management at Margret Thatcher library. The choice of these individuals as opposed to everyone at Moi University was informed by the researchers' view that these are the concern and affected parties.

## Sampling procedure

The researchers used a sample size of 12 VI students, 6 library staff and, 5 library management serving at different departments in MTL library. This represented 15% percent of the 40 Library staff. This sample size was considered ideal as Mugenda and Mugenda (2003) are of the view that 10-30 percent forms a representative study sample of the population. Proportionate stratified sampling technique was used to select the 12 VI students, 6 library staff and, 5 library management administering at respective departments.

## Data collection procedure

Questionnaires which were used in data collection were mailed to the study participants using the postal addresses of the radio stations they worked for. Personal delivery of the questionnaires was also used for those individuals within the researchers' reach. The respondents voluntarily participated in the study.

## Study variables

The variables used in this study with regard to Establish the assistive technology available for the blind students in Moi University, Margret Thatcher, Establish the awareness of the students about the assistive technology available for them, Determine legal policies predetermined to guarantee access of quality instructions by these students, Examine how the assistive technology was employed to ensure quality instruction for the blind students in MU and, and Establish measures taken by MU to improve the utilization of the assistive technology for the blind.

## Data analysis and presentation

The data collected was analyzed using descriptive statistics. For all questions put under test percentages were used. Tables were used in data presentation.

## Data analysis

Out of 12 VI respondents expected to participate in this study, 10 (83.3 %) responded. The respondent firms' that students are partially aware about the assistive technology available for them in Margret Thatcher library.

## Findings and discussions

## Availability of assistive technologies for the VI students in MU
## MTL library

There are some of the assistive technologies already established and availed in Moi University Margret Thatcher library to assist the VI students. For instances; JAWS (Job Access with speech), *Enlarging or Magnifying Software i.e.* Dolphin's Lunar and Super Nova are a few technologies we identified of being in use in MTL.

*Enlarging or Magnifying Software*; Screen enlarging or magnifying software interfaces with computer graphics output to present an enlarged screen view. It allows people who are visually impaired or partially sighted to read email and perform other text-based tasks. Users can adjust the size of the text and

change attributes, such as background color. Some of the examples of enlarging software are include: Zoom Text from AI Squared, Magic from Freedom Scientific, Dolphin's Lunar and Super Nova.

*Screen Reading Software* Screen reading software scans text and reads it aloud using a speech synthesizer. Some of the examples of screen reading software include; JAWS (Job Access with speech) from Freedom Scientific, Windows Eyes from GW Micro.

**Awareness of the respondents on the assistive technologies availed for the VI students**

The study participants consisted of 12 VI students and 20 physically fit students and 8 out 12 VI (66.7 %) of the VI students. Out of the 20 physically fit students, (25%) were aware a bout the availability of assistive technologies in Margret Thatcher library.

**Table 1: Number of students who responded against level of awareness**

| Number of students | No. Of those aware | Percentage |
|---|---|---|
| VI students | 8 | 66.7% |
| Fit students | 8 | 25% |

**Determination of legal policies predetermined to guarantee access of quality instructions by these students**

MTL management has laid down some policies to ensure VI students are guarantee to quality education and guidance/ instructions regardless of their physical abilities. Some of these policies include the employing the VI skilled personnel to assist VI students in the MTL during their learning sessions. And ensure that equipments or facilities are avail, maintain well and improved regularly to meet current changes made improve their efficiency.

**The way at which the assistive technology has been employed to ensure quality instructions for the blind students in MTL**

The library management through those who respondent commented to have made sure that staffs are train and posses up to date skills to cater for the current and high quality services for the VI students. Also the infrastructure laid down was appropriate and fitting towards the optimum usage of the VI facilities in the MTL.

Measures taken by MTL to improve the utilization of the assistive technology for the blind MTL has shown interest in taking up of tight measures in ensuring that the VI students have access to the following technologies that assist in their learning activities within and even beyond the library as it was stated by management interviewed. Computer laboratory with 20–25 workstations (number may vary according to the size of the clientele), Talking Book studio, and the computers in the computer laboratory should be equipped with the following software in order to meet the requirements of visually challenged students.

Another measure taken by the management is on training of the staff to be equip with relevant skills to assist and guide the disable mostly the VI within MTL academic library. The management stated they concern where they have been increasing funding annually towards the same.

**Conclusion and Recommendations**

Reflections from this initial study are presented in hopes of changing how visually impaired students are encouraged to relate to digital assistive technologies availed the in the library. It was envisaged that the finding, recommendations and suggestions of this study, would be helpful to VI students, their lecturer, librarians, curriculum developers and policy makers in the area of education. The paper surveyed the university libraries of MTL, in order to find out how assistive technologies had been used by them in order to meet the information needs of visually challenged students. The study showed that the use and implementation of assistive technologies. Despite the process in MTL is still in a nascent stage while the libraries in developed countries, such as the United Kingdom, the United States, and Canada are routinely using them. It should be mandatory for the libraries to provide an accessible environment with assistive technologies in order to meet the information needs of the visually challenged. Concerted efforts need to be taken to introduce and maintain these facilities for the visually impaired user community. All stakeholders— government, universities, and libraries—must play a proactive role in providing visually impaired students with the access they need and demand. By taking concerted efforts together all stakeholders can advance and protect the rights of the visually challenged; this way they can be supported and promoted on their information seeking journeys. The responsibility of government and the university management and its machinery is not just limited to providing higher education; it is supposed to play a pivotal, proactive role in identifying and eliminating the hurdles that are encountered by the students enrolled in higher education, and, thus, pave the way for equality of opportunity, access to quality education that is undoubtedly a foundation for developing an inclusive knowledge society.

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