

**STRATEGIES FOR ENHANCING ACCESS AND RETENTION OF
LEARNERS WITH VISUAL IMPAIRMENTS IN UNIVERSAL
PRIMARY EDUCATION SCHOOLS IN
SOUTH WESTERN UGANDA REGION**

**ODETTE NIYISABWA
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**A THESIS SUBMITTED IN FULFILLMENT FOR THE AWARD OF
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DECLARATION

This research is my original work and has never been presented in any other university / institution for consideration or any certification. This research has been complemented by referenced sources duly acknowledged. Where text, data (including spoken words) have been borrowed from other sources, including the internet, these are specifically accredited and references cited using current APA system and in accordance with anti – plagiarism.

Signature NiyisabwaDate 17/06/2016**Odette Niyisabwa****E83/EA/22854/2011****SUPERVISORS' APPROVAL**

We confirm that the work reported in this thesis was carried out by the candidate under our supervision as university supervisors.

Signature ChombaDate 17-06-2016**Dr. Chomba Wa Munyi**

Department of Special Needs Education

KenyattaUniversity

Signature JMWDate 20-6-2016**Dr. Jessina M. Muthee**

Department of Special Needs Education

KenyattaUniversity

DEDICATION

This work is dedicated to my dear husband Jonas who lovingly supported my academic endeavor in all possible ways, and endlessly encouraged me throughout the course of this study. To our children Marjorie, Victor and Victoria, who endured my long absence from home. I love you all unconditionally.

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ABBREVIATIONS AND ACRONYMS

ACPET	Australian Council for Private Education and Training
ADL	Activities of Daily Living
AFB	American Foundation for the Blind
CDAs	Community Development Assistants
CDOs	Community Development Officers
DEOs	District Education Officers
EFA	Education For All
ESSAPR	Education and Sports Sector Annual Performance Report
FGD	Focus Group Discussions
ICEVI	International Council for Education of people with Visual Impairment
IEP	Individualized Education Program
Its	Itinerant teachers
LVI	Learners with Visual Impairments
MOES	Ministry of Education and Sports
OCOs	Ophthalmic Coordinating Officers
O&M	Orientation and Mobility
PLE	Primary Leaving Examination
SNE	Special Needs Education
SPSS	Statistical Package for Social Sciences
SSI	Sight Savers International
TASO REC	Taso Research Ethics Committee
UNBOS	Uganda National Bureau Of Statistics
UNCDC	Uganda National Curriculum Development Centre
UNCST	Uganda National Council of Science and Technology

UNEB	Uganda National Examination Board
UNESCO	United Nations Educational Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UPE	Universal Primary Education
WHO	World Health Organization

ABSTRACT

The purpose of the study was to investigate strategies for enhancing access and retention of Learners with Visual Impairments (LVI) in regular Universal Primary Education (UPE) schools in South Western Uganda. The study was conducted in seven districts within South Western Uganda. This area was selected because it had a high concentration of LVI enrolled in regular UPE schools. The study was based on Access theory by Ribot & Peluso (2003), supplemented by Adaptation theory by Sherrill (2008). A mixed method research design was used, which involved both qualitative and quantitative descriptive methods. The study targeted a population of LVI enrolled in regular UPE schools, LVI enrolled in established integrated schools, teachers of LVI, head teachers of schools with large numbers of LVI, and Inspectors of schools in charge of Special Needs Education. A sample of 147 respondents was selected from a population of 498 people. Purposive and systematic sampling procedures were applied. Purposive sampling procedure was applied in selecting the region, districts, schools, LVI enrolled in regular UPE schools, teachers, head teachers and inspectors of schools in charge of SNE. Systematic sampling procedure was applied to select LVI enrolled in established integrated schools. The instruments used for collecting data were questionnaires, interviews schedules, Focus Group Discussion (FGD) guides and observation schedules. To ascertain validity and reliability of the instruments, independent judges were used to review them, test re – test was done and a pilot study was conducted. Data obtained from close – ended items of the questionnaire were analyzed quantitatively, while data obtained from open ended items were analyzed qualitatively. Data collected using interview, observation and FGD was coded, quantified, categorized and analyzed following the themes derived from the research objectives. Findings were presented using descriptive methods. The major finding was that most of the required facilities to help LVI access learning were missing in regular UPE schools. The study concluded that; overall, the strategies for enhancing access and retention of LVI were generally lacking in regular UPE schools. The study recommended that government should guarantee good quality education to LVI in regular UPE schools by providing human and financial resources as a way to reinforce the UPE policy (1997) which gave priority to children with disabilities to access regular UPE schools.

CHAPTER ONE:

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

The study investigated strategies for enhancing access and retention of learners with visual impairments (LVI) in Regular Universal Primary Education (UPE) schools in South Western Uganda. The following sections are presented in this chapter: background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, assumptions of the study, limitations of the study, delimitations of the study, significance of the study, the theoretical framework, the conceptual framework and operational definitions of key terms.

1.2 Background to the Study

Provision of access and retention of children with visual impairments in school has been an area of concern and generally a subject of debate among educators worldwide. It even raises more concern among educators in the area of special needs education when it comes to educating LVI especially within regular school settings. A number of studies globally and in Africa have revealed that the major obstacle in educating these learners in regular schools is limited resources. (McCall 2001; Kristensen, Omagor and Onen 2003; ICEVI 2005; Njoroge 1991; Wamunyi 2008).

In the United States of America, residential schools were the sole settings for the education of LVI throughout the 19th century (Roberts 1986). At that time, it was fashionable for the well – to – do to send their children to boarding schools, and this fact

made it seem logical and desirable to establish more residential schools for LVI. What prompted parents to send their children to the state residential schools at that time was the better equipment that was available there. Later in 1909, Hall cited in Roberts (1986) voiced his concern against the residential segregated settings for LVI. He asserted that:

“.....the method of segregating the blind, keeping them not with the Class with whom they will live after they leave school, cutting them off from society, is the greatest mistake that was ever made.” Pg.27.

He therefore recommended that the public day school is the place to educate children with visual impairment, associating them with the people with whom they would associate when they leave school. This recommendation was supplemented by research by Cutsforth (1933) cited in Roberts (1986) who conducted a study in several residential schools in America regarding the state of children with visual impairment. Results indicated that residential schools for the visually impaired were characterized by personality problems, and recommended that children grew best in their families.

With the above findings, professionals began to advocate for public day schools for the education of LVI. They initiated and modified their programs by providing appropriate resources for their education. As a result of those provisions, the number of LVI in public day schools in the United States of America increased from 10 % in 1948 to 80% in 1980.

In Europe, studies to investigate the possibility of integrating LVI together with the sighted learners into the regular schools were conducted in 1961 by St. Vincent Catholic all – age residential school in Liverpool, cited in Roberts (1986). Results suggested that: With the right level of support, LVI could succeed academically in the regular schools.

However, expertise in educating them was found almost exclusively in special schools, and local education authorities had few local alternatives to offer. Further experiments were carried out. The Warnock report (DES 1978) provided results of government inquiry into the matter, and reinforced the trend towards the education of children with special needs including those with visual impairments in regular schools. The subsequent 1981 Education Act (DES 1981) specified that children with special educational needs including those with visual impairments should normally receive their education in the regular school provided that this was compatible with the effective use of resources. With the availability of resources, education of LVI within the regular schools was reinforced, and as a result, the number of LVI accelerated there.

As far as East Asia and Pacific region is concerned, provision of Education to children with visual impairments in regular schools is a recent development. According to UNICEF report (2003), children with disabilities including those with visual impairments had been for a long time left outside the process of development in the region until the year 2003. Estimates by the report indicate that for the majority of the countries in the region, less than 10 percent of the children with visual impairments were enrolled in school by the year 2002, and in some countries the estimates ranged as low as 1 – 2 percent. However, with the emerging of positive trends towards Inclusive Education, the overall enrolment of children with visual impairments increased in many countries within the region. In 2003, the region had registered some good examples of inclusive Education initiatives in Cambodia, China, Laos, Vietnam and Thailand (UNICEF report 2003)

In Africa, children with visual impairments have continued to be excluded in accessing education. According to UNICEF report 2012, only a few of them were in school by the year 2012, and very few were receiving the adequate inclusive education they needed. The report further states that 25 out of 55 African countries had not yet ratified the convention on the rights of persons with disabilities which stipulates that children with disabilities should be protected against all forms of discrimination, and that they should have access to education among other things. A number of countries in Africa introduced specific legislation, national policies and strategies to respond to the needs of children with disabilities. However when it came to implementing inclusive education programs and allocating adequate resources, many countries lagged behind. (UNICEF report 2012). The report commended Rwanda as one of the countries that invested significantly in specialized education for children with disabilities including those with visual Impairment.

In Uganda where the current study was conducted, education for LVI was introduced in 1952 by Christian missionaries, and it was largely in special residential schools. However as noted by Lynch and McCall (2007), special residential schools can only cater for a small proportion of LVI who require educational support. Instead, local regular schools are the only setting where these children can have a wider opportunity of receiving education in many countries. (International Council for Education of people with Visual impairment report "ICEVI" 2005).

Uganda is one of the countries in Africa that supported international campaigns for inclusive education during international conferences. It is a signatory to a number of

international statutory documents in support of this development, including: The Universal Declaration of Human Rights (1948), the convention on the Rights of the child (1989), the Jomtien Declaration on Education For All (EFA) (1990), the World Conference on Special Needs Education (1994), the United Nations Standard Rules on the Equalization of opportunities for persons with Disabilities (1994) and the Dakar Framework for Action (2000). (The above Statutory documents are cited in UNESCO report 2001.) As an effort to implement EFA (1990), the government of Uganda formulated a national policy on Education; the white paper on Education (1992). It spells out government's commitment to providing primary education to all children irrespective of origin, social groups or sex. It also emphasizes integration of persons with disabilities into regular schools, and commits itself to supporting institutions providing Special needs Education. This national policy was practically implemented through the Universal Primary Education (UPE) program in 1997. MOES UPE Handbook (1998).

UPE is an educational program which was spearheaded by the president of Uganda His Excellency Yoweri Kaguta Museveni. During his presidential campaigns in 1996, he pledged to offer free education to all school age going children of 6 – 12 years within government aided schools. Enrolment was to be done on the basis of four children per family, and priority was to be given to children with disabilities. According to UPE report 2012, this provision attracted many learners with disabilities including those with visual impairments into regular UPE schools. Unfortunately, their learning needs were not met. "MOES" Sector fact sheet 2000 – 2012; UPE report (2012). The fact sheet also revealed that a large number of LVI who were enrolled in UPE schools eventually dropped out due to lack of attention.

Kristensen, Omagor, and Onen (2003) in a study on barriers affecting the education of LVI in Uganda found out that there were insufficient educational facilities, teachers were not actively providing the expected support to learners in the teaching process, there was lack of modifications to allow mobility, overcrowded boarding facilities and unaffordable fees in boarding schools. They suggested that inclusive education would be best achieved if support was available at each level. They further suggested that an approach to providing such support that is well established in economically developed countries was to deploy the services of visiting teachers with specialized training known as peripatetic advisory teachers, or itinerant teachers (ITs) in the East African context.

A similar study was conducted in Uganda in 2005, by ICEVI. The aim of the study was to establish the critical conditions that were required to allow LVI to be successfully educated in local regular primary schools. The conditions established by the study included the need for early identification; provision of appropriate training opportunities for regular classroom teachers; provision of adapted materials and training in their use, as well as better targeting of existing resources to children identified as visually impaired in regular schools. Later, a follow up study was conducted in Uganda by Lynch, McCall, Douglas, McLinden and Bayo (2011). The purpose of the study was to investigate the role of ITs in supporting LVI in Uganda. The study identified challenges in developing support systems to accommodate these learners in their local regular schools, and outlined how one particular support system of ITs can be developed to reduce barriers to learning and development for LVI in the country.

1.3 Statement of the Problem

The background of the study has revealed that local regular schools are the only settings which can provide wider opportunities for the education of LVI in many countries. In Uganda, UPE program which was introduced in 1997 has contributed to the increase in the number of LVI into regular UPE schools. Information from UPE report 2014 shows that the enrolment of learners in UPE schools in the country increased from 3.1 million in 1996 to 8.4 million in 2013. However according to Wamunyi (2008), though mainstreaming is an advanced approach to the desired meaningful social inclusion of learners with special needs, placing them in regular classes without meeting their learning needs in full cannot be considered a step forward in Special Needs Education. Review of Primary Living Examination (PLE) results exhibited by UNEB / SNE records (2008 – 2012) revealed that the educational achievement of LVI has been persistently low, as compared to their sighted counterparts. This is not to underscore other related issues that are affected by lack of access; such as non-starters, complete none attendance, repetition, wastage, among other issues. As reflected in the background of the study, reports and studies conducted on the education provision to LVI in regular UPE schools in Uganda indicate that the kind of education they were receiving was inadequate. (MOES Fact Sheet 2000 - 2012, Kristensen et al 2003, ICEVI 2005, Lynch and McCall 2007, Lynch et al 2011). This resulted into high drop out rate of LVI. UPE report 2012 revealed that 3 out of 10 LVI dropped out of school due to inadequate education facilities.

Despite the studies conducted above, none of them has paid attention to aspects of the curriculum, classroom or individuals who deal directly with LVI. By focusing on the above aspects, this study was initiated to find out ways of increasing access and retention

of LVI within regular UPE schools, with a view to making recommendations to policy makers.

1.4 Purpose of the Study

The study investigated strategies for enhancing access and retention of LVI in regular UPE schools and made recommendations.

1.5 Objectives of the Study

In order to achieve the above purpose, the study sought to:

1. Establish the Braille skills possessed by teachers of LVI in regular UPE schools;
2. Determine the availability of adapted materials, equipment and devices for LVI;
3. Establish the skills that had been acquired by LVI in Activities of Daily Living (ADL) and their skills in Orientation and Mobility (O&M);
4. Establish the physical adaptations that had been put in the environment to facilitate access and retention of LVI in regular UPE schools; and
5. Determine the curriculum adaptations that had been put in place to suit the needs of LVI.

1.6 Research Questions

In order to achieve the research objectives, the study sought to answer the following research questions:

1. What are the Braille skills possessed by teachers of LVI in regular UPE schools?
2. Which adapted materials, equipment and devices are available for LVI?
3. What skills have LVI acquired in ADL and O&M?

4. What are the physical adaptations in the environment to facilitate access and retention of LVI in regular UPE schools?
5. What curriculum adaptations are in place that suit the needs of LVI?

1.7 Assumptions of the Study

This study had assumed that: teachers in regular UPE schools possessed Braille skills; adapted learning materials, equipment and devices for LVI were available; LVI had acquired skills in ADL and O&M; the physical environment was adapted; and that the curriculum had been adapted to suit the needs of LVI. However, none of the above assumptions was realistic as teachers did not possess any Braille skills, only one adapted material was available, LVI had acquired only half of the expected ADL and O&M skills, the schools lacked most of the required environmental adaptations, and there were almost no curriculum adaptations.

1.8 Limitations to the Study

- The study was limited to only one region (South Western Uganda). Since this was only one out of six regions in the country, the results were therefore interpreted within this study setting only. This implies that the findings from the study can not be generalized to the population in other regions in the country as they may not accurately reflect the situation in these regions.
- Due to unpredictable human nature, it was not possible to get 100 percent truthful information from the respondents, which could have limited the validity of the study.
- This study was limited to LVI in primary schools. Though the researcher was aware that the policy provisions may influence access and retention of LVI at other education

levels such as nursery and secondary education, the study did not examine these levels due to limited time. Consequently, the results of this study can not be generalized to nursery and secondary school because the views of these learners were not captured by this study.

1.9 Delimitations of the study

- Time to conduct the study was enough since I was granted study leave of four years by my employer Kyambogo University, and had supervisors who were well versed with the area of study and research methods.
- It was easy to move from one area of data collection to another since the areas selected for data collection were within one region, South Western Uganda.

1.10 Significance of the Study

During the proposal development, the researcher had hope that the results of the study would be used by the stakeholders especially teachers, head teachers and district education officials to improve on their strategies in supporting LVI within the regular UPE schools. The researcher also had hope that the results would further assist policy makers to effectively develop policies that support the field of visual impairment; whereby LVI would access quality education, and release their parents from the burden of taking their children to private special schools which are expensive and in far distances. This hope has increased as the study has established facts on the magnitude of the need to intensify the strategies since the results indicated that; overall, the strategies were lacking.

1.11 The Theoretical Framework

This study was guided by Access theory by Ribot and Peluso (2003), which was supplemented by Adaptation theory by Sherrill (2008). According to Ribot and Peluso (2003), access is the ability or right to derive benefits from things including material objects, persons, institutions and symbols. They further describe the process of access as the use of social relations to focus on natural resources and explore the range of powers that enable individuals to benefit from them. According to Neale (1998), access retains an empirical focus on the issues of who does (and who does not) get to use what, in what ways, and when (that is, in what circumstances). Ribot and Peluso (2003) concluded that: “Access is about all possible means by which a person is able to benefit from things.” Pg. 156.

According to the research problem of this study, factual information revealed that the academic performance of LVI in regular UPE was persistently low and their drop out rate was high. The study assumed; and later proved that this problem was due to limited access to important special educational provisions for LVI which include: Teachers’ Braille skills; adapted materials, equipment and devices; skills in O&M and in ADL, adapted physical environment and adapted curriculum. Having discussed in Access theory by Ribot and Peluso (2003) above that access and retention of LVI in regular UPE schools is a right, and having established that access theory encourages the study to “use all possible means to achieve the right”, the study also applied Adaptation theory by Sherrill (2008) as a strategy to enable LVI access the above stipulated rights. According to Sherrill (2008), adaptation is the art and science of managing variables to achieve desired outcomes. She explains that each variable can

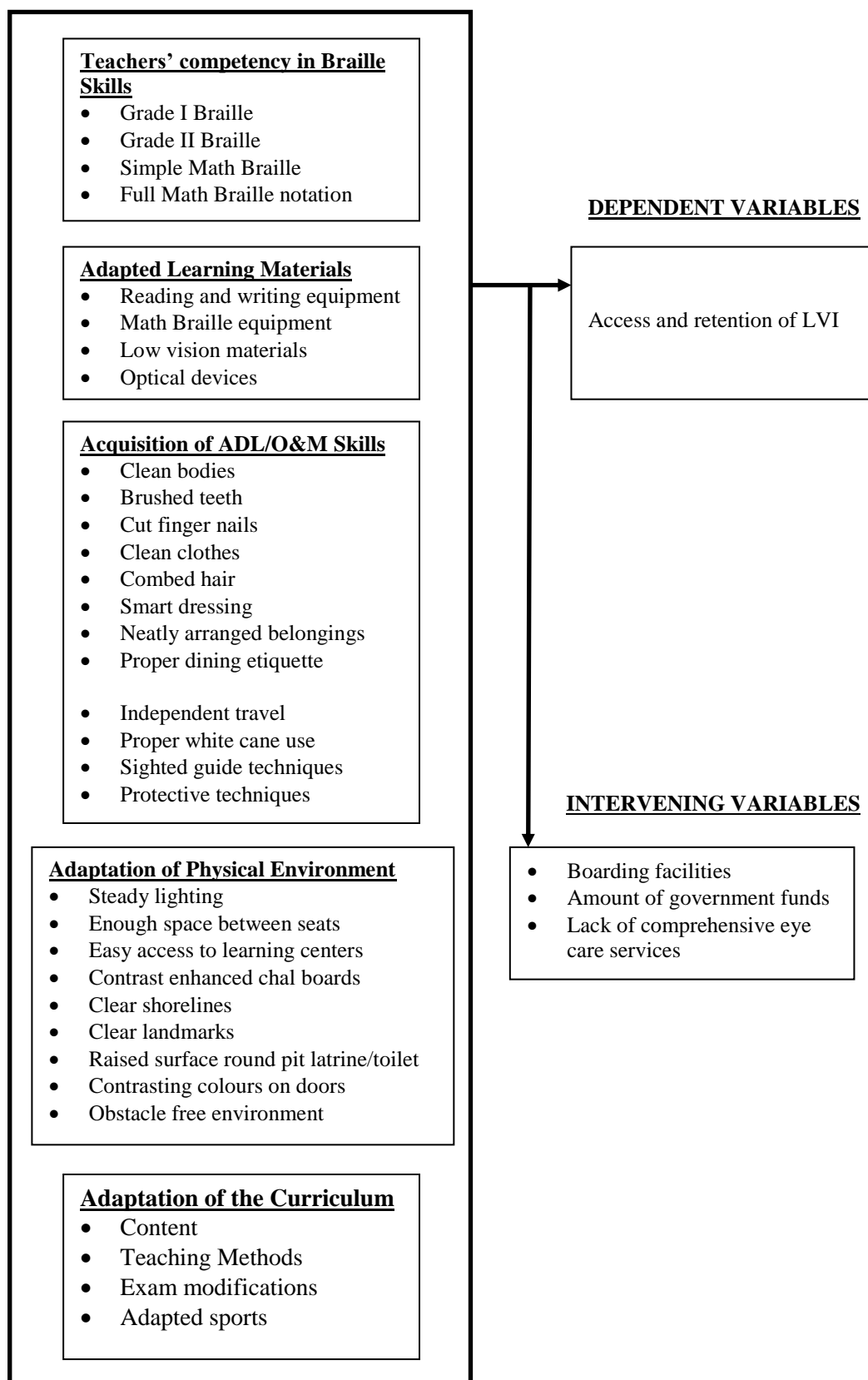
be adapted individually or in group and the adaptation of one area may facilitate the adaptation of another area. According to her, the global adaptation considerations in this theory include: task adaptation, equipment adaptation, environment adaptation as well as instruction and rule adaptation. UNICEF report (2007) has recommended that adaptations should consider individual abilities and functional limitations. This strategy would enable LVI to overcome a host of different barriers that stand between them and their goal in education, enabling them to gain access and retention in regular UPE schools.

1.12 The Conceptual Framework

In this study, strategies for enhancing access and retention of LVI in regular UPE schools were conceptualized around the specialized areas. These areas include: teacher's Braille skills; adapted materials, equipment and devices; skills in Orientation and Mobility and in Activities of Daily Living; adapted physical environment and adapted curriculum. Akyeampong, Djangmah, Oduro, Seidu and Hunt (2007) explain that LVI who attend local regular schools are at a risk of exclusion in such areas that require specialized skills. Hence basing on these areas, the issue of access and retention can be managed in terms of establishing a broad range of possible factors that can influence them. If the above areas are adapted, LVI will get access to teachers with proficiency in reading and writing Braille, and ADL and O&M skills. They will also get access to adapted materials, equipment and devices; adapted physical environment and adapted curriculum. Eventually, LVI would access quality education and be retained in school until they successfully complete the primary education cycle. These aspects are illustrated in the conceptual framework illustrated in figure 1.1:

Figure 1.1: Conceptual framework

INDEPENDENT VARIABLES



Source: Researcher's conceptualization of the study problem

1.13 Operational Definition of Key Terms

Access: According to Sherrill (2008), Access refers to availing learners with suitable requirements and atmosphere to enable them achieve good learning outcomes. In this study, it is used to mean providing LVI with specialized teachers, skills and facilities such as; ADL/O&M; adapted materials, equipment and devices; adapted environment and adapted curriculum to enable them benefit from regular UPE schools.

Activities of Daily Living (ADL): According to Tellevik and Elmerskog (2001), ADL refers to activities for the general body health of an individual, and the surrounding environmental hygiene. In this study, it is used to mean routine activities that an individual must be able to do by him / her self in order to live independently, healthy and socially acceptable. Examples of such activities include: Toileting, wiping the nose, bathing, dressing, brushing the teeth, combing the hair, sweeping the compound; among others.

Blind: According to World Health Organization (WHO) (2015); blindness is complete or nearly complete vision loss. In this study, it used to mean a condition where LVI are unable to see, such that they can only study using Braille for reading and writing.

Established Integrated Schools: According to Hacker (2015) in Mirriam Webster (2015), established integrated schools refer to schools which have been in existence with an integrated system for a long time and therefore recognized and generally accepted. In this study, it is used to mean educational settings which have a boarding facility and unit

for LVI, and have been for a long time recognized by government as official schools where LVI are integrated together with sighted learners.

Itinerant teachers: According to Lynch (2007), itinerant teachers refers to qualified school teachers in Special Needs Education who have had some formal training in the education of LVI, who travel around local mainstream schools to offer advice and support to teachers. In this study, it is used to mean teachers with specialized training in the area of visual impairment, who were appointed and facilitated by Sight Savers International program to make routine visits to primary schools where LVI are enrolled, with the aim of offering support to the teachers regarding the education of LVI.

Learners with Visual impairment (LVI): According to An Azo network (2015), learners with visual impairment are learners who have a limitation of one or more functions of the eye or visual system where the learner's eye sight can not be corrected to a normal level. In this study, it is a general term that describes learners with a wide range of visual function, from low vision to total blindness.

Low vision: According to Takeshit (2008), low vision is a significant reduction of visual function that cannot be fully corrected by ordinary glasses, cataract lenses, medical treatment and or surgery. In this study, it is used to mean a condition where learners have some amount of vision, but which is limited such that it is not sufficient enough to read ordinary print, and may also have difficulties with performing other daily tasks.

Orientation and Mobility (O&M): According to Tellevik and Elmerskog (2001), O&M refer to the awareness of one's position in the environment in relation to objects, and the capacity and readiness to move about safely and independently. In this study, it is used to mean the ability of a person with visual impairment to move safely, independently and effectively from the place where one is, to the place where he / she intends to participate in an activity.

Regular Universal Primary Education (UPE) schools: According to UPE report (2012), regular UPE schools refer to the schools which are meant for providing basic primary education to all Ugandan children of school going age; which is affordable by the government and majority of the citizens. In this study, it is used to mean government aided day schools which do not have a unit and boarding facility for LVI.

Retention: According to Chaluda (2014), retention refers to enrolling of students in school and remain enrolled until they reach a certain grade. In this study, it is used to mean enrolling of LVI in primary school and they remain enrolled until they complete the primary education cycle.

Strategies: According to Wikimedia project (2015), strategies refer to high level plan to achieve one or more goals under conditions of uncertainty. In this study, it is used to mean putting in place ways that can enable LVI achieve quality education within regular UPE schools, and be able to complete the primary education cycle successfully.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter contains related literature and studies conducted globally and in Africa. It particularly focuses on: general strategies for enhancing access and retention of LVI in integrated schools, Braille skills for teachers of LVI, learning materials, equipment and devices for LVI, skills in ADL and in O&M, adaptation of the physical environment and adaptation of the curriculum. It also points out the relationship between the previous studies and the current study, spelling out the gaps that were left in the previous studies which the current study sought to fill.

2.2 General Strategies Enhancing Access and Retention of LVI in Regular

Primary Schools

A number of educators have emphasized the need for laying deliberate strategies to enhance access and retention of LVI in integrated regular schools. (Cheadle 2005, Palat 2008, Cowan 2012, Shelby 2013). These strategies are important because many of these learners do not have a lifetime of visual experiences to draw from. Thus, Australian Council for Private Education and Training (ACPET) Fact sheet (2012) has urged teachers to consider the amount of assumed visual content when designing visual tasks for such LVI.

A study targeting integration of LVI was conducted in ordinary schools in the United Kingdom by Jamieson, Parlett and Pocklington (2000). The purpose of the study was to investigate how well the practice of integration could work. A case study design was

used, whereby an investigation was grounded in the study of both special and ordinary schools where LVI were being educated. The study instruments included interviews and informal talks with head teachers, teachers and pupils, which were linked to observation of teaching and to the study of school documents and records. Case studies of individual children were conducted in the contexts of home and ordinary school to follow up certain groups of ex – pupils, and to make visits abroad to examine different countries’ schemes of integrating LVI. The population for the study included local authorities, advisors, head teachers, inspectors of schools, representatives of national bodies and LVI, those attending school by the time of the study and Ex– pupils. The study observed that the practice of educating LVI in ordinary schools had more disadvantages than advantages. One of the reasons given was that LVI particularly those who are young and of average attainments require very specialized skills that cannot enable them to benefit from the ordinary elementary school. The similarity between the above study and the current study is that both studies were addressing the issues of LVI within integrated school settings. However, the gap between the two studies was that while the previous study was conducted in a developed country, the current study was conducted in a developing country.

In East Africa, Njoroge (1991) conducted a study on factors influencing initiation of successful integration of LVI in Kenya. The purpose of the study was to investigate why integration of LVI had not taken place on a large scale. The study concluded that there was lack of sufficient professional training of teachers of LVI, yet they are considered as critical variables for successful integration of LVI.

In Uganda, a study by International Council for Education of Persons with Visual Impairment (ICEVI 2005) was conducted to investigate the educational inclusion of LVI. The purpose of the study was to establish the critical conditions that needed to be in place to allow LVI get successful educational provision in local integrated schools in Uganda. The study covered six regions of the country. A survey design was used, and the design involved attacking the questions at a number of levels, including: the child level, classroom/school level, family/community level, external support at local, regional and national levels. The target population for the study included LVI enrolled in regular UPE day schools and established integrated boarding schools. Other respondents included parents of LVI, their teachers, and children with visual impairment who had dropped out of school. A total of 109 children were considered for the study. The study concluded that children with visual impairments began school late, had low attendance rates, often dropped out of school and lacked assistive devices. However, the study also observed that most LVI were considered to interact well in inclusive settings.

The similarity of the above study and the current study is that they were both investigating the critical conditions that needed to be in place to allow successful integration of LVI with ordinary learners into regular UPE schools. Both studies also highlighted very critical aspects of access, quality and equality. However, the gap between the two studies is that while the previous study covered the eight different regions of Uganda, the current study covered only one region of South Western Uganda. According to the research questions of the previous study, it looked at a broad range of possible conditions for successful education of LVI in local integrated schools, but this current study focused on the conditions particularly related to learning and teaching.

Another study in Uganda was conducted by Lynch, McCall, Douglas, McLinden and Bayo (2011). The study focused on the inclusive education practices in Uganda through evidencing practices of Itinerant teachers (ITs) who work with LVI in regular integrated schools. The purpose of the study was to investigate the role of ITs in the education of LVI in Uganda. The study was conducted in the three districts of Hoima, Kibaale and Masindi in Bunyoro region, in North Western Uganda. The study was designed within a participatory action research framework, to ensure that the ITs as practitioners had a say in the direction of the research and that their involvement in the research process would contribute to their professional development. A workshop was designed to maximize participation through a combination of small and large group interactive sessions. It was also to share expertise and review the level of knowledge and understanding of ITs' skills in key areas such as assessing vision and teaching Braille. Other respondents for the study included ophthalmologists, Ophthalmic Coordinating officers (OCOs), Community Development Officers (CDOs).

The critical result of the above study was that it identified challenges in developing support systems to accommodate LVI in their regular schools, and it outlined how one particular support system (ITs) can be developed to reduce barriers to learning and development for LVI in Uganda. The relationship between this study and the current study is that LVI being targeted in both studies belonged to regular UPE school settings. However, the gap between the two studies is that while the previous study was conducted in North Western Uganda, the current study was conducted in South Western Uganda. The previous study also considered ITs, OCOs, CDOs, and CDAs as respondents, while

the current study will target people who are directly in the school system. They include: LVI, teachers, head teachers and school inspectors.

(Cheadle 2005, Cowan 2012, Palat 2008, Shelby 2013, and ACEPT Fact sheet 2012) have recommended the following instructional strategies to help LVI in integrated settings: Studying the children's Individual Educational Program (IEP), encouraging active tactile exploration in a wide range of environments; and familiarizing them with a structured routine. Other strategies recommended by the above authors include: conveying in spoken words whatever teachers write, pointing out students' names aloud, reserving the front row seat for the students, explaining a film, pausing on important points; and showing positive attitude towards them. The above strategies can be borrowed to enhance access and retention of LVI in regular UPE schools in Uganda.

2.3 Braille Skills for Teachers of LVI

According to Johnson (1996), Braille is essential for LVI to achieve satisfactory educational progress. He argues that learning to read and write are necessary in order to become self – sufficient in adulthood. This implies that teachers of LVI should be well skilled in Braille before beginning to teach the students. However according to Frieman (2004), school administrators are faced with the challenge of finding competent teachers who have the expertise in Braille to teach LVI. This proficiency is determined by the type of training a teacher gets. Hung (2008) conducted a study to examine teachers' Braille training experiences in Taiwan. The purpose of the study was to find out the educational backgrounds of teachers of Braille. The study concluded that teachers' proficiency in

Braille highly depended on the length of the training term and the intensity of the training content.

In the United States of America, Frieman (2004), conducted a National survey on Braille standards for teachers of LVI. State departments were asked to send a copy of their certification standards for the teachers, and data was collected from all the fifty states. One of the areas that the standards covered was instructional strategies to teach Braille reading and writing. Results of the study revealed that 19 states required graduating from an approved program, and seven states required to have a generic degree in Special Education with no mention of a course or competency in Braille. Here candidates with a Special Education degree had experience and skills in dealing with learners with Special Needs, but did not necessarily know how to teach Braille. Lastly, 24 states required candidates to have taken courses related to blindness. As a result of the study, Principals had no guarantee that a candidate with formal credentials from a state would be fluent in Braille, and hence they had to ensure that every candidate hired to work with LVI had the skills to teach Braille.

A number of studies have revealed that the success of LVI learning to communicate through Braille is determined to a great extent by the teaching expertise that is made available to them. (McCall 2001, Allman, Carol, Holbrook and M.Cay 1999, Amato 2002, Frieman 2004). In particular, Amato (2002) noted specifically that teachers of Braille need to be able to demonstrate proficiency in all the five Braille codes: Literacy, Nemeth (Math and Science), Music, Foreign language and computer. This would imply that the teachers' own enthusiasm for Braille, their knowledge of the code, the perceptual

and the cognitive processes of Braille reading and writing, and their familiarity with techniques for the teaching of reading would be the key factors (McCall 2001).

In addition, Knowlton and Berger (1999) conducted a survey of 51 teachers licensed to teach LVI in Minnesota USA. The study aimed to find out the Braille standards for teachers of students who were visually impaired. The study concluded that teachers had a light knowledge of Braille. They particularly had low abilities for writing with a slate and stylus; and few of them had Braille transcriber certification. However, they only had high abilities when using references to transcribe Braille, producing Braille with Perkins Braille, interlining Braille and using software for Braille transcription. They recommended that teachers should not have light knowledge in Braille, but need to do it independent of references, and should also know how to use all the new computer technologies and equipment that enhance their ability to produce Braille materials. Therefore, in order for teachers to maintain competence, it requires constant refresher courses in Braille. American Foundation for the Blind (AFB) (2013) recommended that Braille reading and writing like any other skill must be practiced to be perfect. The justification given was that the practice helps a teacher of LVI who may have had a case load for several years that does not include any Braille readers to keep Braille skills intact so that they are ready when needed.

In another study, Holbrook and M.Cay (1999) conducted a survey on Braille literacy for teachers in the United States of America. The purpose of the study was to analyze the concerns about Braille literacy that were reflected in Braille Bills in many states. A refresher course for Florida teachers was created in response to the concerns. Analysis of

pre and post data showed that all the 77 teachers improved their Braille skills and reported a high level of confidence in their Braille skills as a result of the course. The above study revealed that lack of consistency in Braille courses may lead to poor standards in Braille literacy skills among teachers of LVI. Similarly, Amato and Sheila (2002) conducted a study on Braille literacy standards for teachers in the United States of America. The purpose of the study was to examine the standards for competency in Braille literacy skills in teacher preparation programs. A survey was conducted with 45 instructors from teacher training programs for teaching LVI. Results of the study indicated that respondents evidenced a strong commitment to Braille literacy and teacher preparation. However, there was lack of consistency in Braille courses with respect to poor standards and criteria for competence in Braille literacy.

Regarding specific areas within Braille, Demario, Norma, Lian and Ming – Gon (2000) conducted a study to examine teacher's competency in the Nemeth code (The Braille code for mathematics.) A survey asked 250 teachers of students with visual impairments to rate their perceived competency in transcribing mathematics materials into the Nemeth code. Results indicated a significant difference between mean rating on competency, and a need for 23 of the 55 listed maths skills.

In East Africa, Nzoka (2011) conducted a study to establish Braille proficiency levels among primary school teachers of LVI in Kenya. The study found out that most of the teachers of LVI had not mastered grade two English Braille to effectively interact with LVI in the teaching and learning. The study thus concluded that teachers lacked Braille proficiency as they scored poorly in the achievement test subjected to them, and also

demonstrated lack of competency in guiding their LVI to use Braille effectively in learning situations.

AFB (2013) has given suggestions for teachers to practice Braille reading and writing. They include reviewing instructional manuals, revising rules and contractions, attending Braille refresher courses, enrolling in the Braille transcribers' course, writing notes and letters in Braille using contractions and practicing reading Braille books. With the above skills of teachers, LVI will be able to reach their full potential in society. (Frieman 2004).

2.3.1. Educating Learners with Low Vision in Regular UPE School Settings

AFB (2015) has observed that approximately 90% of individuals with visual impairments have functional or low vision; and just 10% of them are functionally blind. A number of studies including those conducted in Uganda have indicated that students with low vision are often an ignored majority in the population of children who are visually impaired (AFB 2015, Alenyo 2001, Uyirworth 2008). However according to AFB (2015), every child who meets the criteria of visual impairment in his or her state is eligible to receive services from a certified teacher who is specialized in teaching LVI. AFB (2015) further explains that the specialized teacher is important because when a new student with low vision enters school, it is this teacher who is responsible for assessing the student, determining and aiding in adaptations and modifications as well as creating individualized educational programs. Thus, AFB (2015) recommended that students with low vision too require direct instruction in literacy, visual efficiency, accessing the core curriculum and compensatory skills. However in case the situation does not permit the

specialized teacher to perform all the necessary specialized instruction with a student, the specialized teacher will generally over see or direct the instructional process.

Uyirwoth (2008) conducted a study on interaction of learners with low vision in regular classes in Nebbi district, North Western Uganda. The aim of the study was to investigate the factors that influence the interaction of learners with low vision in social activities in classes within established integrated settings. The study found out that communication among learners with low vision and other students was largely motivated by the need to get help from their sighted counterparts. The study also found out that some sighted peers and teachers dictated notes for LVI, Brailled and transcribed examinations` and located materials for them, but others did not provide such help. Trained teachers for LVI were also inadequate in the school.

2.3.2 Dual Learning for Learners with Low Vision

According to AFB (2015), dual learning (also referred to as dual Media) for learners with low vision refers to a situation whereby students with low vision use both print and Braille simultaneously to read and write. Jennings (1999) has observed that among the group of learners with low vision, there is a small group of children who have sufficient vision but have difficulties with sustained and efficient reading of print. She further explains that these children are reluctant to choose to use Braille because it is so frequently associated with total blindness. She further explains that these children are essentially ‘visual’ but have difficulties with sustained and efficient reading of print. Such learners therefore require dual learning strategy to reading and writing. This strategy has been recommended by a number of authorities: (AFB 2015, Kelly & Anne 2006, Koenig

& Holbrook 2000, Corn & Koenig 2002, Catom, Pester and Bradley 1990, Holbrook & Koenig 1992, Koenig 1996, Alliance for Equality of blind Canadians 2011).

Alliance for Equality of blind Canadians (2011) has provided one of the reasons to determine factors for ascribing to dual learning of learners with low vision. The major reason is to provide learners with the opportunity of experiencing success and the joy of reading in the most exciting, appropriate and easiest way. “If the prognosis is unknown that vision could decrease and if the student is willing, it may be wise to have the student begin Braille so that a visual as well as a tactual image of the Braille formation is developed. For example, if the student has severe nystigmus, print letters may not stay in place for efficient reading, but tactile letters would .” It was emphasized that the decision augment the medium of print with the medium of Braille must be given an individualized approach for each student, basing on each student’s instructional needs. In a study, one of the factors which were found to affect Braille / Print decision was the educational setting. This implies that Learners with severe low vision who are enrolled in school settings where learners use Braille are more likely to choose to use Braille than their counterparts who are enrolled in regular UPE school settings. Jennings (1999) noted that what makes Braille successful for a child with low vision is the child’s inner self confidence. However, it is important that a specialized teacher for LVI should facilitate the implementation of dual media.

2.4 Educational Materials, Equipment and Devices for LVI

To facilitate learning, all children need materials and tools to help them to understand what is being taught. According to Njuki (1995), educational materials are objects that

can be used to make the process of acquiring knowledge and skills more effective. They are developed to meet a wider range of informal and formal educational needs, and the materials need to be adapted to enable LVI access regular classrooms and curricular (Erin, 2003). However, according to Todd (1986), parents and teachers often face challenges in using locally made and concrete equipment and resources to assist LVI.

Because of the limitations of visual impairment, Best (1992) stressed the importance of parents and educators of LVI to create plenty of learning experiences for the children so that they can gain access to the information they need. For this to be effective, Alenyo (1995) has recommended that the teacher should provide an enabling environment and encourage the use of appropriate resources that will encourage maximum benefit of the material. He further explains that since a LVI who is unable to see the material must rely exclusively on the other remaining senses, the material must therefore be designed in such a way that it stimulates the child's tactile, Kinesthetic (body movement), auditory and olfactory senses. In this way, the material will be able to stimulate the child's curiosity and imagination, create a starting point for discussion and understanding, arouse his interest, maintain his attention span, help the child to learn with greater enthusiasm and make learning more concrete (Alenyo 1995).

2.4.1 Tactile and Visual Aids

According to Ortega (1999), Tactile and visual aids are models or real objects which are meant to reinforce learning for LVI especially those who are blind. (Todd 1986, Arter, 2001 and Erin 2003) recommended the following tactile aids for use by LVI. They include: Braille books, Braille readiness materials with different textures, measuring

devices such as ruler, compass and protractor with embossed markings, Cranmer abacus; Cubarith Slate for arithmetic computations; and Optical-to-Tactual-converter to transform print sizes and styles to Braille letter configurations. Other tactile aids they recommended include: Paperless Braille to store information on audio cassette tapes, Raised Line Drawing Kit /Sewall to produce raised lines, and Sensory Quill to produce lines by moving a stylus across a page. They further recommended Tactile Graphics Kit for use in tactile drawings, Tactual maps and Globes, Templates and writing guides to enable students write on lines and in specified spaces, Thermoform machine to produce copies of Braille and other raised materials, raised Line Paper to help students write on lines, Slate, stylus, and Perkins' Brailier.

Candiru (2002) has noted that Slate and stylus are one of the most common tools used to write Braille in Uganda. She however recommends that both natural and man made tactile objects should be used so that LVI become familiar with the feel of things around them, and identify them by touch. She listed the tactile objects commonly used in Ugandan schools to prepare LVI for reading readiness. They include seeds of various types, stones, cloth materials and leaves.

According to Todd (1986) auditory aids enable LVI to learn how to utilize hearing and good listening skills. The devices are often used in conjunction with visual aids and / or tactile aids. (Todd 1986, Arter 2001 and Erin 2003) have recommended the following audio devices for use by LVI: Kurzweil reading machine to translate print into synthetic speech, Speech Compressor to produce compressed speech, Computers with speech synthesizers for reading printed material, Standard pocket memo recorders to record only

when a person is speaking, Electronic Travel Aids (ETAs) to adapt to the environment, Talking Calculators, Talking clocks, Tape-recorders and Talking books where information is recorded on tapes. However, the above audio devices are not available in Uganda.

Audio books have been found to be suitable learning materials that can enhance the education of LVI. According to a study by Ozgur, Aydin, Kiray and Huseyin (2007), an audio book project was launched in Anadolu University, in the republic of Turkey. The project was designed and based on individualized learning principles for LVI. The aim of the study was to evaluate audio course books basing on experiences of LVI. The project was to enable the students to study on their own, exempting them from the requirement of studying with someone else, and providing them with the opportunity to study any subjects in the book at their suitable convenience. Three hundred LVI were involved in the project. Access to the subjects was simplified, where by the subjects were distinguished from each other by music and the narration was enriched via emphasizing the important sentences in the topic. Results of the study revealed that by the help of audio books, LVI were able to study more effectively and the learning was long lasting.

Similarly, another study was conducted in Canada by Lockerby, Christina, Breau, Rachel, Zuvella and Biljana (2006). The study was on enhancing digital access to learning materials for Canadians. The study explored the experiences of participants with Digital Accessible Information System) DAISY talking books. The study discovered that people who are blind read DAISY books, and that their perceptions of DAISY were particularly useful in their educational, professional and work related materials. This was because it

allowed students and working – age adults to move easily within a text book or reference manual, and gave them the option of placing bookmarks throughout a document. Participants saw advantages as well in the fact that more than one book can be recorded onto a single CD, and in the digital media's superior navigation and sound quality when compared to analog cassettes. Many participants mentioned that as a result of this project, they were to continue to use DAISY books to ensure better access to the information they required. The above materials could as well be of good use to LVI in UPE schools in South Western Uganda since they were proved to be effective in other countries.

2.4.2 Low Vision Materials, Equipment and Devices

According to Alenyo (1995), low vision materials and equipment are aids which are aimed at stimulating the remaining visual sense as well as other senses of learners with low vision (Alenyo 1995). According to Eschenbach (2011), low vision devices are tools that help people with low vision to maximize their remaining vision. He further explains that using the remaining vision will not cause further deterioration or eye condition, but will train the brain to interpret images more easily. Unfortunately, this study established that many learners with low vision in regular UPE schools did not have access to the above aids. Eschenbach (2011) conducted a study on the benefits of using low vision devices among a group of 530 people, and made the following conclusions: Low vision devices are clinically proven to work, and increase the speed of reading. Before applying them, only 16% of the persons with low vision were able to read, but with the help of low vision devices, the number changed to 94%. The devices fall into one of the three broad categories of optic, electronic and non – optical.

(Todd 1986, Arter 2001, Alenyo 1995, Erin 2003 and Eschebanch 2011) recommended the following low vision materials, equipment and devices for use by LVI. Optical devices recommended include: hand held magnifiers, stand magnifiers, spectacle magnifiers, telescopes, video magnifiers and contrast enhancing filters that fit over glasses. Electronic magnification devices include CCTV / Computer magnifiers like zoom text or zoom ware. Non optical devices recommended include large print books, reading stands and additional source of illumination to help one accomplish what he / she ought to do, real objects in the environment, models, ordinary and tactile pictures.

2.5 Skills in Activities of Daily Living (ADL) and in Orientation and Mobility

(O&M)

2.5.1 ADL Skills for Learners with Visual Impairment

Tellevik and Elmerskog (2001) have observed that deliberate training of LVI in ADL skills is essential. They further explain that this training is essential because many LVI do not have a lifetime of visual experiences to draw from. Thus, they recommended that teachers of LVI should teach them tasks which other learners learn incidentally during their development. Experience has shown that LVI attach value to trainings in ADL and it enables them to live an independent life and to be accepted in society. Unfortunately, this study has demonstrated that skills in ADL were not given priority for training in regular UPE schools. A similar finding was realized by Tellevik and Elmerskog (2001). They conducted a study in Eastern Uganda to investigate the kind of activities that were prioritized for training during the rehabilitation program for LVI. The study revealed that all the spheres of activities were highly prioritized except ADL.

Tellevik and Elmerskog (2001) have observed that transference of ADL skills can be difficult for some children and thus, these skills should be taught in situation whenever possible. For example, feeding skills and table etiquette are best taught at meal times, the selection of clothes at dressing times, among others. They argue that no skills are effectively attained when motivation for learning is lacking. Thus, they suggested that care should be taken to ensure that the activities are developmentally as well as chronologically appropriate, and should be done in accordance with the cultural norms and roles that are associated with that activity. However according to Stone (2001), the demands of time in the home and in school do not always allow teaching in situation to take place. This issue of demands poses even a bigger challenge for LVI in regular UPE schools, as the teacher / pupil ratio is high to the extent of one teacher to eight children (1:80) per class. Stone (2001) however emphasized as principle, that the more relevant the learning situation, the easier it is for children to acquire the skills.

This calls for use of valid instruments to assess whether these skills have been acquired by the learners. Selers, Fisher, Anne, Duran, and Leslie (2001) conducted a study to find out whether motor and process scales were valid for use to evaluate the performance of ADL by LVI. Results revealed that both the motor and process skill scales are valid instruments for assessing the ADL skills acquired by LVI. There is hope that results of this study may influence this kind of assessment among LVI in regular UPE schools.

2.5.2 O&M Skills for Learners with Visual Impairment

Hall (1986) has observed that Orientation involves using senses to establish one's position in the environment, and having an awareness of space and understanding the

situation. Thus, good orientation means that one is able to know where he is, where he wants to go next and how to get there. Whereas according to Stone (2001) Mobility is the capacity, readiness, and facility to move about in one's environment by oneself without coming to any harm.

Orientation and Mobility (O&M) skills have been known to be important in promoting a number of aspects essential for growth and development. They include: independence, positive self-concept, socialization, development of ADL, physical ability and economic development. (Stone 2001, Hill 1986, Tellevik and Elmerskog 2001). Information is available to show that LVI need exposure to a deliberate training in O&M. A study was conducted by Barnes, Stacie, Whinnery, and Keith (2002) to investigate the effects of Mobility Opportunities via Education (MOVE) curriculum on the functional walking skills of five elementary students with severe visual impairment. Repeated measures were taken during baseline, intervention and maintenance phases. Results revealed that all students demonstrated progress in taking reciprocal steps during either intervention or maintenance. This implies that O&M training should be viewed as an integral part of the child's total development and learning. For this to be effective, Stone (2001) has recommended that O&M programs should be a key part of the curriculum of LVI. He further explains that unless children are motivated to move early in their lives, it may be very difficult to motivate them as they grow older. LVI who have been actively encouraged to move, explore, develop and satisfy their curiosity will have willingness to face the challenges that will come later in life. (Stone 2001).

In order for O&M skills to be developed by the LVI, there should be proper facilitation in terms of manpower development and modification of equipment. Chen, Deborah, Smith and Julie (1992) made an experiment for developing O&M skills among LVI. The program was serving 20 students. The program components included training of staff, school environment adaptations and individualized community training techniques. The study reported significant student progress due to the above considerations made. Unfortunately, this study established that deliberate training was lacking in most of the regular UPE schools. Apart from deliberate efforts in teaching O&M skills to LVI, it is also important to reinforce the skills for proper mastery. A study was conducted by Winkler and Williams (1986) on reinforcing Mobility skills on secondary school students with severe Visual Handicap. The project used multiple adaptive methods and teaching procedures to reinforce O&M skills for seven students. Results revealed that students' ambulation became more functional when present skills were reinforced by sequential teaching with daily practice.

Tellevik and Elmerskog (2001) have recommended the following strategies for teaching O&M to LVI: clearing the classroom of excess stuff, informing LVI when objects are moved from their positions, keeping doors fully opened or closed, and avoiding overprotection and unnecessary help by sighted students. According to them, the above practices promote independence and self-sufficiency, which this is important in promoting access and retention as far as this study is concerned.

2.6 Adaptation of the Physical Environment to Facilitate Access by LVI

Adaptating the physical environment is an important service for LVI. Moy (1990) observed that children with disabilities should not be denied access to the school environment because they have the same access needs as their peers, and thus they need equal access to different service centers within the school. She further observed that in order to create an accessible and functional school environment, many requirements and considerations must be incorporated into the school environment.

Brown (2013) observed that variations and characteristics of LVI are related in part to variations in their environmental circumstances. He further explains that a rich physical environment other than a restricted environment, and encouraging LVI to engage the environment rather than being protected from it positively affect their development. However; Stone (2001) noted that though stimulating environments generally present some children with exciting challenges and opportunities to explore, LVI benefit from conditions where there are no distractions and this allows them to give all their concentration to a specific task. She further observed that adaptations are necessary both in the Classroom and outside the classroom environments.

2.6.1 Physical Adaptations Inside the Classroom Environment

(Moy 1990, Barley and Wolery 1992, Doctoroff 2001, Stone 2001, Tellevik and Elmerskog 2001, Erin 2003, Brown 2013) have recommended the following physical adaptations for LVI within the classroom:

Lighting

The kind of lighting provided should be steady. Before considering what kind and amount of light to expose the child to, it is important to first get information on the impact of the child's visual condition on lighting needs. In some visual conditions, more light is not necessarily better as a child may be light sensitive or respond more in dim lighting. In such cases, dimmer switches can be helpful to control lighting. It is usually better for light to come from behind, so the child should be positioned for best natural light. For children who need higher intensity lighting for detail vision, task lighting can sometimes be helpful. Glare should be checked, as looking at positioning of light and changing the angle of how light hits the materials to control glare.

Contrast

Contrasting colors are easier to see. Contrast can be used in providing a contrasting colored background which emphasizes the material visually. There should be contrasting colors on doors, windows, carpets, chalkboards, charts and labels.

Positioning of materials

Materials should be positioned in the visual range of the child. If the child needs to hold materials close to see, the materials should be raised on a slant board or higher surface so that the child does not have to hold his head down to see it. Teachers should position tables and chairs in a way that they act as a straight path of travel. Moving or changing furniture in the room should be done with students' participation to enable them explore the changes.

Arrangement of materials and equipment

A well – organized learning environment is essential for all children, but it is critical for LVI. Consistent placement of materials in the same location is important for fostering independence of the children. Thus, there should be a designated place for particular items within the classroom and children should be made aware of the positions. When materials are added or replaced, the changes should be pointed out and the child thoroughly familiarized with the location of new materials brought into the classroom. Tactile labels should be put on shelves to indicate where materials can be found and where they belong in order to help orient the children to the classroom environment. Materials should be placed on low open shelves to make access easy and immediate. Small loose materials such as manipulative, crayons or markers are best stored in small storage bins, boxes or baskets.

Use of sensory cues and landmarks

Different areas of the classroom should be distinct such that there is different tactile and visual flooring in each area. There should also be different types of shelving to enable LVI differentiate them. Personal locations should be marked, for example Chairs and lockers marked in Braille or other tactile visual cues. In order to provide auditory clues used for goal directed movement, natural auditory landmarks that have stationary sound sources should be used. For example a clock ticking. Natural auditory cues associated with an activity can also be used, for example water running in a sink for the activity “clean up.” Moving sound sources, sound sources that change from day to day and verbal directions should be avoided as they can confuse the child.

Obstacle free environment

There should be enough space for unobstructed travel. Travel areas within the classroom should be free of scattered materials or misplaced equipment that children with poor vision might trip over. If a child can trail a wall or furniture, the routes should be free of clutter. For example, there should be no chairs, tables or any other obstacle against the wall.

2.6.2 Physical Adaptations Outside the Classroom Environment

(Moy 1990, Barley and Wolery 1992, Doctoroff 2001, Stone 2001, Tellevik and Elmerskog 2001, Erin 2003, Brown 2013) have recommended the following physical adaptations for LVI outside the classroom environment:

The environment outside the classroom should be adapted in such a way that a child has the opportunity to travel to different areas within the school. Dangerous objects like broken glasses, thorns, holes, scattered stones and sticks should be removed from the school environment. Clear and permanent object symbols (landmarks) and clear lines of travel (shorelines) should be constructed in routes and the general school compound to enable the child understand where he is going. The pathways should also be free of obstacles. The labels for locations in the school should be consistent. Handrails should also be set up alongside stairs to reduce hazards. Doors and door frames should be painted using contrasting colors to reduce the risk of physical injury. Tactile cues should be put on doors either in Braille or other raised drawings to enable children recognize their classrooms easily, and they should be placed at a height that the children can reach.

2.7 Curriculum Adaptations for Learners with Visual Impairment

Hall and Gevue (2004) defined curriculum ‘adaptation’ as the process of adjusting a curriculum so as to suit the needs of learners for whom it was not designed, at both classroom and wider national level. The AFB (2011) emphasizes the importance of “accommodation” while making adaptations for LVI under integration, as it involves making alterations on the curriculum without affecting the existing educational standard. Heward (2000) expressed the same view and emphasized that the academic curriculum appropriate for students with disabilities is determined by their cognitive abilities; but the goals and objectives set for the students without cognitive difficulties do not need to be changed for a student solely due to the visual problem.

2.7.1 Justification for Curriculum Modifications for LVI in Integrated Settings

According to Koga and Hall (2004), modifying the existing curriculum has been an effective way to create more accessible learning environments to support all students and their teachers in various educational contexts. Switlick (1997) justifies the purpose of modifying curriculum as to enable an individual to compensate for intellectual, physical or behavior challenges, and to create learning environments which allow the individual to use the existing skill repertoires while promoting the acquisition of new skills and knowledge.

Two empirical studies were conducted by Tieso (2001). The studies compared the effect of modified curriculum on general students’ learning performance. In his qualitative study, he involved 12 mathematics teachers from different school sites (where 2 teachers used regular textbook curriculum and 10 teachers used the modified curriculum). From

the classrooms, 6 students from grade 5 through 8 were selected for interviews. During 3 weeks of data collection, Tieso investigated teacher and student perceptions regarding the necessity and effectiveness of modified maths units, and the academic achievements of the students after receiving the modified units. The curriculum was redesigned such that modified units would provide enhanced learning objectives, authentic resourced and assessment techniques, engaging lesson introductions and including an emphasis on the major principles and concepts of the discipline. The existing units of the study were carefully aligned with constructivists teaching and learning activities and the teachers received trainings in curriculum modification. Data were collected through individual interviews, focus groups, observations and examination of students' artifacts. Findings of the study revealed that the teachers perceived the modified unit as more effective in motivating and engaging students. The modified unit also seemed to meet the needs of all students by challenging them and posing high expectations. Based on these results, the study concluded that the modified units were more fun, complex, engaging and challenging than a regular textbook unit. Additionally, the students showed pride in completing their final projects. In summary, the study indicated that the teachers and students preferred the modified unit, which involved hands – on activities, the infusion of writing into the math curriculum, the opportunity of collaboration among students, and the comprehensive and authentic nature of the field project.

Another study on curriculum modification was conducted by Moon and Callahan (2001). It investigated the effectiveness of curriculum modification on general students' learning achievement. In this two year longitudinal study, a mixed method curriculum modification was one of the interventions designs for a project called Support To Affirm

Rising Talent (START). The subjects included 273 elementary students with diverse backgrounds in terms of race, ethnicity and social – economic status. The students were first or second graders from 16 schools in an urban school district and more than half of them were from low – social economic environments. Curriculum modifications involved various components of learning daily classroom activities. Some modification practices included organizing lessons relevant to students’ lives, considering a pattern of classroom interactions and using materials familiar to students from varied cultural backgrounds. During the implementation of this curriculum modification, students’ academic achievements were measured using a standardized norm – referenced measure in basic skills (vocabulary, reading , language and mathematics). The study results were summarized as follows: “In combination with other interventions incorporated in the START project such as family outreach program and mentorship, curriculum modification positively affected the improvement of students’ academic achievement especially that of the students identified as at risk for failure.

The two empirical studies above showed some positive effects of curriculum modification towards students’ learning and their academic achievement. The study by Moon and Callahan (2001) suggested that when the design is student centered and the practice is individually – focused, curriculum modification is effective for all students regardless of their backgrounds. The above two promising studies were of encouragement to the current study. However, it would be more encouraging if the recommendations which were made to that effect were to be effected by the relevant authorities.

A study that focused on curriculum modifications for students with disabilities was conducted by Suk-Hyang; Wehmeyer; Soukup and Palmer (2010). The study investigated whether curriculum modifications predicted student and teacher behaviors related to the general education curriculum, and if there were differences in ecological, student and teacher variables depending on the presence of such curriculum modifications. The study observed 45 high school students with disabilities during instruction in core content areas. Findings indicated that there were significant differences in student and teacher variables depending on the presence of curriculum modifications. When curriculum modifications were provided, students were engaged in more academic – related responses and fewer competing behaviors; and teachers engaged in fewer classroom management activities. Implications and recommendations from these findings were provided pertaining to the importance and implementation of curriculum modifications for students with disabilities in general Education settings.

Bray, Brown and Green (2004) have summarized the importance of curriculum modification for students in regular education settings. They explained that curriculum modification improves the students' academic achievement especially those identified as at – risk for academic failure. Fortunately, in Uganda the National Curriculum Development Centre (NCDC) had played the role of revising the primary school curriculum to include adaptations for learners with special education needs. UNDCD (2011). However, this study established that the training of teachers on how to implement the adaptations had not yet been done.

Eric (2003) has noted that teachers in inclusive classrooms regularly face the difficult task of having to modify the curriculum to reach all of their students, many of whom have special needs. According to him, students with disabilities respond to the curriculum differently from other students. In order to meet the goal of access to the curriculum for everyone, and to enable the student to engage with his or her lessons in a meaningful way, he suggests that teachers must be prepared to provide useful alternatives in terms of both curricular materials and instructional delivery. In order to enable LVI access regular education classrooms and curricular, Erin (2003) has recommended modifications to cater for specialized instruction that is not part of the general curriculum, and should include varied time requirements, and specialized subject areas like O&M training, ADL and instruction in Braille.

2.8 Summary and Gap Identification

The previous studies reviewed in this chapter left the following gaps which the current study filled:

There was a gap of the kind of strategies to apply in enhancing access and retention of LVI in regular UPE schools. Whereas the study conducted in Uganda by Lynch, McCall, Douglas, McLinden and Bayo (2011) recommended the development of one particular support system (IT) to reduce barriers to the education of LVI, it was not applicable to South Western Uganda where this study was conducted. This was because Sight Savers International (SSI) program had never had programs in the region, and thus there were no ITs trained in the area. This study filled the above gap by establishing other possible strategies that could enhance access and retention of LVI in regular UPE schools other

than the IT support system. Secondly, services that were being offered by ITs were not comprehensive enough, in that they did not provide particular services like modifying the school environment, and trainings in ADL / O&M; which were catered for in this study.

This study has filled a gap of the kind of respondents used in this study and the previous studies. One of the major studies conducted in Uganda by Lynch et al (2011) as reviewed in this chapter considered distant stakeholders within the UPE system other than those directly involved within the education system. They include: OCOs, CDOs, CDAs, ITs, local authorities, local advisors, representatives of national bodies and Ex– pupils. Their study missed out stakeholders within the education system who are capable of providing important information regarding access and retention of LVI in regular UPE schools. These include LVI, their teachers, head teachers and inspectors of schools in charge of SNE. This current study filled the gap by including this category of respondents.

There was a gap of the kind of factors that were focused while establishing strategies of enhancing access and retention in school. A study by ICEVI (2005) which was conducted in six regions of Uganda including the target region for this study did not consider aspects of the curriculum and classroom. Instead, the study considered general conditions like factors within the child, family, community, and external support at local and regional levels. This study filled the gap by considering the aspects of the curriculum and classroom which had not been focused in any other study.

Studies reviewed in this chapter regarding strategies for enhancing the education of LVI in regular schools by Hill (1990), Jamieson et al (2000), and Frieman (2004), present a

gap of having been conducted in developed countries. Other studies reviewed were conducted in the North Western and Eastern regions of Uganda. None of them was conducted in South Western Uganda, yet the region has a large number of LVI enrolled in regular UPE schools. This study has filled this gap by considering South Western Uganda as the study area.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents a description of the research design and methodology which includes the research design and locale, population, sampling techniques and sample size determination, research instruments, data collection and Data analysis

3.2 Research Design and Locale

3.2.1 Research Design

The study used a mixed method research design which involved both qualitative and quantitative descriptive methods. According to Harwell (2011), mixed methods research is where the researcher combines two approaches into a single study as an attempt to legitimate the use of multiple approaches in answering research questions. Mixed methods were valuable for this study because they capitalized on the respective strengths of each approach. (Curry, Ingrid, Nembhard, Elizabeth & Bradley 2009).

Qualitative methods were applied during data collection where by interviews, FGD and observation guides were used. This approach was selected because it is naturalistic, interactive and descriptive. It enabled the researcher to gain a holistic perspective in each phenomenon studied. (Gall, Borg & Gall 1996). Quantitative methods were applied when presenting findings using descriptive numerical representations. These included percentages and tables. Data collected through these different approaches were combined to realize dependability and trustworthiness of the study findings (Miles & Huberman, 1994).

Philosophical paradigm that guided the choice of the design

The choice of the study design was guided by the philosophical paradigm of pragmatism by James (1907); cited in Plato (2013). They hold the view that Pragmatism is a mediating philosophy which combines the views by two extremists of qualitative and quantitative ways of thinking. According to Plato (2013), Pragmatism accounts for the normative standards which we should follow in arriving at beliefs about the world in terms of how we can make inquiries in a disciplined, self controlled way. Pragmatism also provides rich accounts of the capacities which we must possess in order to inquire well, and the guiding principles that we should adapt. To further explain the concept of pragmatism, Peirce in his classic paper: “The fixation of belief “cited in Kerns (2011) emphasized that: “Pragmatism is the only method of inquiry that can make sense of the fact that we are disturbed by inconsistent beliefs and that we should reflect upon which methods are correct – is the method of science”. Therefore, pragmatists emphasize on the activity of inquiry and the richness of experience. In summary, pragmatism is a philosophy that encourages conducting experiments to prove people’s beliefs.

Research Variables

According to Cherry (2009), a variable is a characteristic of interest that a researcher would like to handle, observe or manipulate in the research. There are two types of variables; independent and dependent variables. An independent variable is one that influences or causes change in another variable, whereas a dependent variable is one that is influenced or changed by one or more variables. (Mugenda & Mugenda 2012). Since the independent variable is the presumed cause of the dependent variable, the

independent variables for this study were: “Teachers’ Braille skills, adapted learning materials and equipment, learners’ skills in ADL and in O&M, adapted physical environment, and adapted curriculum.” The dependent variables were: “Access and retention of LVI”

3.2.2 Study Locale

The study was conducted in South Western Uganda. This particular region was selected because according to Uganda Education Statistics abstract 2009, the region had the highest concentration of LVI enrolled in regular UPE schools compared to other regions in the country as reflected in table 3.1.

Table 3.1: Prevalence of LVI in UPE schools per region

Region	No. of children with disabilities	No. of LVI	Percentage of LVI
Central	35,347	10,604	30%
Eastern	61,035	28,076	46%
North Southern	2,801	980	35%
Northern	57,831	19,663	34%
South Western	22,572	12,415	55%

NB: Adapted from Uganda Education Statistics abstract 2009.

The high concentration of LVI in the region was largely due to bacterial conjunctivitis, a common eye condition in the region that is caused by various bacterial agents especially in dusty / windy areas. The region usually experiences dusty drought seasons which last for five months every year. A recent study by Agaba

and Bazira (2014) concluded that there was a high prevalence of bacterial conjunctivitis in South Western Uganda. Patient information (2013) has reported that conjunctivitis is the third most common cause of blindness worldwide.

The region is made up of fourteen (14) districts. (See Appendix 1). According to Education and Sports Sector Annual Performance Report (ESSAPR) Financial Year (2011 / 2012), the region had a total of 17,341 primary schools altogether. 12,961 of them were government aided schools, out of which three were established integrated schools while 12, 958 were regular UPE schools. The region had a total of 999,089 learners enrolled in primary schools. Out of this number, 851,889 of them were enrolled in government aided UPE schools, whereby 425,446 of them were boys and 426,443 were girls. The region had a total of 21,747 teachers. 15,786 were in government aided primary schools, whereby 9, 313 were male and 6,473 were female.

3.3 Population

There are two types of population. Target population and study population.

3.3.1 Target Population

Target population according Malmstrom (2009) refers to the entire group of individuals or objects which a research is interested in, the group about which the researcher wishes to generalize the conclusions. It usually has varying characteristics and it is also known as the theoretical population. Thus, the target population for this study was 2,295 respondents. They included: LVI enrolled in established integrated schools in upper primary section (N = 97); LVI enrolled in regular UPE schools in

upper primary section, (N = 1,344). Other respondents included teachers of LVI in established integrated schools (N = 69); teachers of LVI in regular UPE schools where LVI had been enrolled in large numbers (N = 736); head teachers of established integrated schools (N = 3); Head teachers of regular UPE schools with large numbers of LVI (N = 32); and inspectors of schools in charge of SNE within the region (N = 14). (ESSAPR financial year report 2011 /2012, UNBOS 2012).

3.3.2 Study Population

Study population refers to the population in research to which the researchers can apply their conclusions. Castillo (2009). This population is a subset of the target population and is also known as the accessible population. It is from this population that the researchers draw their samples. Thus, the study population for this study was 498 respondents. They included: 97 LVI enrolled in established integrated schools in upper primary section, 156 LVI enrolled in regular UPE schools in upper primary section, 69 teachers of LVI from established integrated schools, 159 teachers of LVI from regular UPE schools with large numbers of LVI, 3 head teachers of established integrated schools, 7 head teachers of regular UPE schools with large numbers of LVI; and 7 inspectors of schools in charge of SNE from districts where large numbers of LVI had enrolled within regular UPE schools.

3.4 Sampling Techniques and Sample Size Determination

3.4.1: Sampling Techniques

According to Jacobs (1997), sampling is the process of selecting a number of individuals for a study in such a way that the individuals represent the larger group from which they

were selected. Both purposive and systematic sampling procedures were applied. Purposive sampling is when we use our best judgment to decide which elements are most representative of the population and include them in the sample (Judd, Smith & Kidder 1991). Purposive sampling procedure was used in selecting the region, districts, schools, teachers, head teachers, school inspectors and LVI particularly those who were studying from regular UPE schools. Systematic sampling according to Doshi (2013) involves selecting members from a larger population using a constant interval between selections. Systematic sampling procedure was used to select LVI particularly those who were studying from established integrated schools.

South Western Uganda region was purposively selected because according to UNBOS (2012), the region had a large number of LVI enrolled within regular UPE schools. Seven (7) out of fourteen (14) districts in the region were purposively considered for the study, and they were: Mitooma, Rukungiri, Ntungamo, Isingiro, Mbarara, Kabale and Kisoro. The first four (4) districts were selected because they had unique challenges of large numbers of LVI enrolled in regular UPE schools, while the last three (3) districts were selected because they hosted established integrated schools. Two of these districts also hosted regular UPE schools with large numbers of LVI as well (see table 3.1).

Seven regular UPE schools were purposively selected basing on the fact that they had enrolled the highest numbers of LVI. The three established integrated schools were also purposively selected because they were the only schools that had facilities for LVI in the region, and facilitated the study with resource information. Purposive sampling strategy was used to select ten (10) head teachers of the above ten sampled primary schools, and

fifty (50) teachers of LVI . (Five teachers of LVI were selected from each of the ten selected schools). Seven (7) Inspectors of schools in charge of SNE were also purposively selected because they were working in the seven (7) districts where LVI had enrolled in regular UPE schools in large numbers.

Purposeful sampling procedure was also used to select fifty six (56) LVI from the seven (7) selected regular UPE schools, using an average of eight (8) learners in upper primary section per school. The LVI who were selected were those who seemed to present the most severe levels of visual impairment, and they were selected with the help of their class teachers.

Systematic sampling procedure was used to select twenty four (24) LVI enrolled in established integrated schools, using an average of eight (8) learners per school. Two lists of names of LVI in upper primary classes were compiled; one comprising of names of learners who were blind (Braille users), and another one with names of learners with low vision (Print users). These lists were used to select every second student. The first interval had a random start (Doshi 2013.) This systematic procedure was taken to avoid bias among other LVI who were not selected for the study. Four (4) of the learners selected from one list were blind (Braille users), while the remaining four (4) who were selected from the second list had low vision (print users). The number of LVI in both categories was enough to allow this selection.

3.4.2 Sample Size Determination

Yount (2006) has encouraged researchers to use a sample that is as large as possible. He further explained that the larger the sample, the better it represents the population. Gay cited in Yount (2006) suggested that researchers with large sizes of study populations between 101 and 1,000 should have a sample of 10%, while those with small percentages should have a sample of 20% as minimums.

However, Yount (2006) in his ruling referred to as “the rule of thumb” argued that the minimum number of subjects needed for a study depends on factors of accuracy, homogeneity of the study population, cost, type of population and the kind of study. He thus advised that the student should be left to weigh the above factors and determine the best sample for his / her study. This study based on “the rule of thumb” by Yount (2006) to determine the sample size for the study. The study population was 498 participants, and the sample size was 147 participants which is 30% of the study population. The sample size was presented in the tables 3.1 and 3.2 below:

Table 3.2: Sample size

Area	Target population	Study popn.	Sample size
Districts	14	7	7
Government aided schools with LVI	35	10	10
Established integrated schools	3	3	3
Regular UPE schools with many LVI	32	7	7
Respondents			
Item	Target population	Study popn.	Sample size
LVI from established integrated schools	97	97	24
LVI from regular UPE schools	1,344	156	56
Sub - total	1,441	253	80
Teachers of LVI in Establi. integrated schools	69	69	15
Teachers of LVI in regular UPE schools where LVI had been enrolled in large numbers	736	159	35
Sub - total	805	228	50
Head teachers of Establi. Integrated schools	3	3	3
Head teachers of regular UPE schools with large numbers of LVI	32	7	7
Sub - total	35	10	10
Inspectors of schools in charge of SNE	14	7	7
Total	2,295	498	147

Table 3.3: Districts and schools selected for the study

Type of school		Established integrated schools	Regular UPE schools
District	No. of schools		
Isingiro	1	0	1
Kabale	2	1	1
Kisoro	2	1	1
Mbarara	2	1	1
Mitooma	1	0	1
Ntungamo	1	0	1
Rukungiri	1	0	1
Total	10	3	7

Inclusion Criteria

The schools included in the study were regular UPE schools which had enrolled large numbers of LVI; and established integrated schools which had units, boarding facilities, specialized materials and specialized teachers for LVI within South Western Uganda. Though the study focused on enhancing access and retention of LVI in regular UPE schools, the established integrated schools were included for purposes of facilitating the study with resource information. It was considered important to draw lessons of successful integration of LVI basing on the experiences of established integrated schools. The respondents included in the study were LVI enrolled in established integrated schools, and LVI enrolled in regular UPE schools within South Western Uganda. Other respondents included teachers of LVI in established integrated schools, teachers of LVI in regular UPE schools; and inspectors of schools in charge of SNE in the districts selected for the study.

Exclusion Criteria

The study excluded schools which had not enrolled large numbers of LVI. The study also excluded learners who were sighted, teachers who did not have LVI in their classes, head teachers who did not have LVI enrolled in their schools and inspectors of schools from districts that had not enrolled a large number of LVI in regular UPE schools.

3.5 Research Instruments

Instruments for the study were questionnaires, interview schedules, Focus Group Discussion (FGD) guides and observation schedules. Both questionnaire and interview were used in order to complement each other, and to remove biases of one method. The observation schedule for the study was adapted from Rabari (2011).

3.5.1 Methods of Collecting Data

The methods that were used for collecting data were: Questionnaire, interview, FGD and observation. This triangulation of methods was important as it made it possible to obtain detailed information important for the study. (Gall, Borg & Gall 1996). The research instruments that were designed for collecting data are presented under the research methods below:

Questionnaire

One set of questionnaire was designed for teachers of LVI. (see Appendix 3). The questionnaire was divided into five sections covering the thematic areas of the objectives. Kothari (2004) commends the suitability of questionnaire in data collection for being cheap to administer, can be used with a large number of respondents, is bias - free and enables respondents to provide answers at their own pace. For this study, questionnaire was selected because it was a convenient means of obtaining data from the large number of teachers.

Interview

Two sets of semi - structured interview schedules were designed. One set was meant for collecting data from head teachers (see Appendix 4) and another set was meant for inspectors of schools in charge of SNE (see Appendix 5). According to Mack, Woodsong, MacQueen, Guest and Namey (2005), interviews are effective in giving human face to research problems. They further explain that interviews offer an opportunity to participants to express their views as the person being interviewed is considered the expert, while the interviewer is considered the student.

Focus Group Discussion (FGD)

According to Mack, Woodsong, MacQueen, Guest and Namey (2005), Focus Groups is a qualitative data collection method which is effective in helping researchers learn the range of perspectives within a community or subgroup, and they are often used to determine the service which a particular population would like to have. According to Kombo and Tromp (2006), a FGD is composed of a small group between 6 and 8 people who share certain characteristics relevant to a study. Some of the key advantages of FGDs is that they yield a large amount of information over a relatively short period of time, and also access a broad range of views on a specific topic. Mack, Woodsong, MacQueen, Guest and Namey (2005). One set of FGD guide was designed for two categories of LVI; those from regular UPE schools and those from established integrated schools (see Appendix 6). The FGD schedule was designed to collect data on the kind of challenges experienced by LVI while studying from regular UPE schools, the kind of services they would like to have to enable them access quality education within regular UPE schools, and strategies for improvement. Stewart and Shamdasani (1990) have noted that FGDs

allow the participants to agree or disagree with each other so that it provides an insight into how a group thinks about an issue. The method was suitable for this group of learners because it enabled deeper exploration of their views through probing and sharing of experiences.

Observation

One set of structured observation schedule was designed for observing learning situations surrounding the LVI in regular UPE schools and the LVI in established integrated schools (see Appendix 7). It was designed to cover the following areas: teachers' Braille skills, the presence of adapted learning materials and equipment, and learners' skills in ADL and in O&M. Other areas catered for in the observation schedule were the presence of adapted physical environment, and adaptation of the intended curriculum.

3.5.2 Validity and Reliability Determination

For study results to be accurate and consistent, the major methodological issues to be addressed are its validity and reliability. In this study, validity and reliability of the instruments were focused.

Validity

Validity of instruments according to Kombo and Tromp (2006) refers to how well an instrument measures what it is supposed to measure. Professional Testing INC (2006) further explains that on a test with high validity, the items will be closely linked to the test's intended focus. However if the test has poor validity, then it does not measure the competences it ought to; and there is no justification for using the test results for their

intended purpose. In other words, validity is established using a panel of experts and a field test. (Radhakrishna 2014).

To ensure validity of the instruments for this study, content validity was obtained from three independent judges (appendix 13); and later a pilot study. The researcher consulted the independent judges (who were specialists in the area of visual impairment) at the university where she works besides the supervisors to judge the validity of the research instruments. The independent judges reviewed the content areas of all the tools intended for the study. The items which they identified as being inadequately matched to the study objectives were either revised or dropped from the instruments. All the three independent judges indicated that the items had taken care of all the data that was needed to be gathered from the respondents. They also indicated that the items of the instruments had the appropriateness and language that could easily enable the respondents to give the correct information. Furthermore, a pilot study was conducted with people of the same characteristics and setting as those intended for the study, but who were not part of the study participants. Piloting the instruments helped to adjust the instruments to make them more clear. Where some questions were not clear, corrections were made to ensure validity of the instruments.

Reliability

Phelan and Wren (2006) have defined reliability as the degree to which an assessment tool produces stable and consistent results. According to Mugenda and Mugenda (2012, 2014), the same results must be achieved as far as possible, regardless of who is doing the measuring. They summarized the concept of reliability as having to do with: consistency,

stability and repeatability. Reliability of the instruments was tested using test- retest method. Relevant research instruments were administered to 20 people who were not included in the main study, and one school. They were administered to them as follows: Two inspectors of schools (Interviews); Three head teachers (interviews); five teachers (questionnaires); five LVI (FGD guide); and one school, and five LVI (were subjected to the observation schedule). After a period of two weeks, the same instruments were administered the second time to the same people and the school. The scores of the two occasions (T1 and T2) were then correlated through calculation using SPSS computer program. The instruments were considered to be reliable as they presented a coefficient of stability of 0.841.

Pilot study

According to Teijlingen and Hundley (2002), pilot study refers to mini versions of a full – scale study also called feasibility studies. A pilot study was conducted with people of the same characteristics and setting as those intended for the study, but who were not part of the main study participants. All the instruments including the questionnaires, interview schedules, FGD guides and observation schedules were piloted with LVI, teachers, head teachers and inspector of schools. The purpose of the pilot study was to pretest the instruments intended to be used during the main study to ensure their compliance with the purpose for which they were designed, and to facilitate considerations for their validity and reliability. The findings of the pilot study were used to aid the full scale research processes.

3.6 Logistical and Ethical Considerations

As part of the procedures for conducting research in Uganda, application for permission to conduct research was sought from Uganda National Council for Science and Technology (UNCST) before collecting data. (Refer to appendix 10). Thereafter, the Council referred me to to The Aids Support Organization Research Ethics Committee (TASO REC); one of the research ethics committees instituted by UNCST. After reviewing the procedures in relation with the National guidelines for research involving humans as research participants, TASO REC granted approval and recommendation for registration of the study by UNCST. (Refer to appendix 11). The documents which TASO REC approved included: the study protocol, informed consent and assent documents, data collection instruments, a letter of introduction and approval of research proposal from Kenyatta University. (Appendices 3, 4, 5, 6, 7, 9 a and 9 b.) The study was then approved and registered by UNCST, Registration Number: SS3628 (refer to appendix 12). In the districts, permission to conduct the study in schools was sought from the district education officers (DEOs) (Refer to appendix 14). Consent and assent forms were issued to Head teachers, Inspectors of schools, teachers and parents of LVI, (Appendices 8a, 8b, 8c, and 8d).

3.7 Data Collection

Procedure for administering Questionnaires

The researcher delivered the questionnaires to the teachers herself in all the schools where teachers were participating in the study. Permission was sought from the head teachers to meet the teachers of LVI who were participants in each school. In some schools, the meetings were conducted in the staff room, while in other schools the

meetings were held in a classroom which was free. The researcher explained to the teachers the purpose of the consultation and highlighted the significance of the study towards improving the education of LVI. Thereafter, each of the teachers was issued with a copy of the consent form to read and then sign after accepting to participate in the study. Questionnaires were distributed to the teachers and sufficient time was given to them to fill them before handing them back to the researcher.

Procedure for Administering Interviews

The interviewees in this study were head teachers and inspectors of schools. They were briefed about the purpose and the amount of time scheduled for the interview, and asked for permission to record them. Thereafter, they were presented with a copy of the consent form to read and then sign after having accepted to participate in the study. The researcher then conducted the interviews herself. Each interview session lasted approximately 45 minutes, but the time was extended for very few cases with the consent of the interviewee and depending on the need. Some respondents needed enough time to reveal some important information for the study, while others came up with irrelevant issues which consumed more time than was expected. The manner and the order in which the questions were asked was based on the interviewer's discretion and the interview situation. The interviews were recorded by an audio recorder. In addition, written notes about each question were made to cater for reflective information during the interview sessions.

Procedure for FGD

LVI from each school formed a focus group. Separation of the different groups during FGD was based on gathering objective data from the respondents. Before conducting the FGDs LVI in each school were briefed about the purpose and amount of time required for completing the exercise (approximately one hour). Thereafter, they were presented with the ascent form which they studied with the help of their teachers. After accepting to participate in the study, they appended their thumb prints on the form to represent a signature, and their teachers as well appended their signatures on the consent forms. The FGDs were conducted and the discussions recorded on audio recorder. Notes were also recorded using a notebook.

Procedure for Observation

Consent and appointments were sought from the teachers to observe their lessons and classroom settings for a number of days. Non participant observations were made, and the lessons were observed from the start to the end (approximately 40 to 45 minutes) depending on the class. The areas that were focused during observations included the availability of adapted learning materials and equipment, and adaptation of the classroom environment. Permission was also sought from headteachers to observe the general school environment including the toilets/dip latrines, dormitories and the general school compound, plus the ADL and O&M skills of LVI. Descriptive and reflective notes were taken.

3.8 Data Analysis

As earlier mentioned in 3.2, the study used a mixed methods research design involving both qualitative and quantitative descriptive methods. Raw data was obtained through questionnaires, interviews, observation and FGDs. This data from the multiple methods and sources was organized under the relevant research objectives. Thematic analysis and descriptive statistical analysis were applied.

Objective one sought to establish the Braille skills possessed by teachers of LVI in regular UPE schools. The data needed for this objective was obtained from teachers of LVI through questionnaires. The specific Braille skills required were identified as: Grade I English Braille, Grade II English Braille, Simple mathematics Braille and Full mathematics Braille notation. The researcher based on the percentage of teachers who possessed skills in each of the above specific Braille skills to determine the scores for a particular school. To determine whether a particular school had teachers with sufficient skills in Braille, the scores were to add up to 60% or more. The schools which obtained scores that were less than 60% were considered to be below standard. The percentage 60 was considered as the pass mark after realizing that the situation of facilities for LVI was still lacking even in the established integrated schools, and therefore considered to take a fairly moderate assessment percentage to determine a pass mark for this study.

Objective two sought to determine the availability of adapted learning materials and equipment for LVI. The data needed for this objective was obtained from teachers and LVI through questionnaires, FGDs and observation. The adapted materials and equipment required were grouped into two different categories, and the first category was identified

as: ***Basic Braille learning materials and equipment which included:*** (slates, styluses, cubes, cube flames, Braille paper, Perkins Brailleurs, Marburg, English Braille text books pupil's copies, English Braille text books teachers' copies, Braille readiness materials, Drawing kits, abaci, tailor flames, tailor types, measuring devices "rulers, compasses, protractors", mathematics Braille text books teachers' guide, and shapes). The second category was identified as: ***Basic low vision materials, equipment and devices which included:*** (large print text books, felt – tip / thick pens, large beamed hats, contrast enhanced chalkboards, magnifying glasses, telescopes, lenses / spectacles, and contrast enhanced glasses). The researcher based on the percentage of the items which were available against the items that were required in order to determine the average scores of a school. To determine whether a particular school possessed sufficient adapted materials and equipment, the scores were to add up to 60% or more. The schools which obtained scores that were less than 60% were considered to be below standard.

Objective three sought to establish the skills that had been acquired by LVI in **ADL** and in **O&M**. The data needed for this objective was acquired through observations and FGDs from LVI. The skills needed in **ADL** were identified as ability to have: clean bodies, brushed teeth, cut figure nails, clean clothes, combed hair, smart dressing, neatly arranged belongings, and proper dining antique. The skills needed in **O&M** were identified as: Independent travel, proper application of: Long cane techniques, sighted guide techniques, and protective techniques. The items were rank ordered and allocated them scores in order of their importance; according to the most crucial item as far as skills in ADL and in O&M are concerned.

In **ADL**, the ability to have: “Clean bodies” was ranked the most important with a maximum score (8), followed by “brushed teeth” with a maximum score (7), followed by “cut figure nails” with a maximum score (6), followed by “clean clothes” with a maximum score (5), followed by “combed hair” with a maximum score (4), followed by “smart dressing” with a maximum score (3), followed by “neatly arranged belongings” with a maximum score (2), and lastly “proper dining antique” with a maximum score (1). The above maximum scores were used to guide the allocation of scores for each of the items. In **O&M**, “Independent travel” was ranked as the most important with a maximum score (4), followed by “proper use of white cane” with a maximum score (3), then “sighted guide technique” with a maximum score (2), and “protective techniques” with a maximum score (1).

The sum of the obtained scores for the eight areas of **ADL** and four areas of **O&M** were got and divided by the sum of the minimum score expected, then multiplied by 100 to get the average score per school.

$$N = \frac{\sum \text{scores of items per school}}{\text{Total sum of maximum scores}} \times 100$$

To determine whether the LVI in a particular school possessed the sufficient ADL & O&M ADL skills, their scores obtained were to add up to 60% or more. The schools where LVI obtained score less than 60% were considered to be below standard.

Objective four sought to establish the extent to which the physical environment had been adapted to facilitate access by LVI. The data needed for this objective was obtained through observations of the school environment, and FGDs from LVI. The adaptations necessary were identified as: steady lighting, enough space between seats, easy access to learning centers, free space for demonstrations, clear shorelines to major places, clear landmarks, raised surface around the latrine / toilet hole, contrasting colors on doors / windows, and obstacle free environment". The researcher rank ordered these nine items and allocated them scores in order of their importance; according to the most crucial item as far as environmental adaptations are concerned. "steady lighting" was ranked the most important with a maximum score of (9), followed by "enough space between seats" with a maximum score of (8), followed by "easy access to learning centers" with a maximum score of (7), followed by "contrast enhanced chalkboards" with a maximum score of (6), followed by "clear shorelines to major places" with a maximum score of (5), followed by "clear landmarks" with a maximum score of (4), followed by "raised surface around the latrine / toilet hole" with a maximum score of (3), followed by "contrasting colors on doors" with a maximum score of (2), and "obstacle free environment" with a maximum score of (1). The above maximum scores were used to guide the allocation of scores for each of the items above.

The sum of the obtained scores for the nine elements in each school was got and divided by the sum of the minimum score expected, then multiplied by 100 to get the average score per school.

$$n = \frac{\sum \text{scores per school}}{\text{Total sum of maximum scores}} \times 100$$

To determine whether a particular school possessed sufficient environmental adaptations, the obtained scores were to add up to 60% or more. The schools which obtained scores less than 60% were considered to be below standard.

Objective five sought to determine the extent to which the curriculum had been adapted to suit the needs of LVI. The data needed for this objective was obtained from teachers, head teachers, inspectors of schools and LVI through questionnaires, interviews, and FGDs and observations. The curriculum elements required were identified as: *Content* which included the item (Content modified for LVI); *teaching methods* which included the items (remedial lessons in unit, Braille / large print reference information and excursions); *examination modifications* which included the items (Brailled questions, large print questions, extra time provided); and **adapted sports** which include the items (goal ball, show down and adapted athletics). The above ten items were rank ordered and allocated scores in order of their importance; according to the most crucial item as far as adaptations of curriculum elements were concerned. “Content modified for LVI” was ranked the most important with a maximum score of (10), followed by “remedial lessons in unit” with a maximum score of (9), followed by “Braille / large print reference information” with a maximum score of (8), followed by “excursions” with a maximum score of (7), followed by “Brailled questions” with a maximum score of (6), followed by “large print questions” with a maximum score of (5), followed by “extra time provided” with a maximum score of (4), followed by “goal ball” with a maximum score of (3), followed by “show down” with a maximum score of (2), and “adapted athletics” with a maximum score of (1). The above maximum scores were used to guide the allocation of scores for each of the items. The sum of the obtained scores for the ten items in each

school was got and divided by the sum of the maximum scores expected, then multiplied by 100.

$$\frac{n = \sum \text{scores per school}}{\text{Total sum of maximum scores}} \times 100$$

To determine whether a particular school possessed sufficient curriculum modifications, the scores were to add up to 60% or more. The schools which obtained scored less than 60% were considered to be below standard.

CHAPTER FOUR:

PRESENTATION OF FINDINGS, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents findings, interpretation and discussion of data that were obtained during the study. The study sought to determine strategies for enhancing Access and retention of LVI in regular UPE schools in South Western Uganda. Both qualitative and quantitative analysis methods were used. The contents were presented within the framework of the Objectives that the study sought to address. The chapter was arranged following the themes: Demographic characteristics of teachers and LVI, Braille skills possessed by teachers of LVI, Availability of adapted learning materials and equipment for LVI, Skills acquired by LVI in ADL and in O&M, Adaptation of the physical environment and Adaptation of the intended curriculum.

4.2: Demographic characteristics of teachers and LVI

Demographic data were collected from teachers and head teachers of LVI. The demographic characteristics were analyzed along the following variables: Years of teaching experience, Period the LVI have been enrolled in school, number of specialized teachers, number of LVI who are blind, and number of LVI with low vision. The demographic characteristics are summarized in figure 4.1 and table 4.1 below:

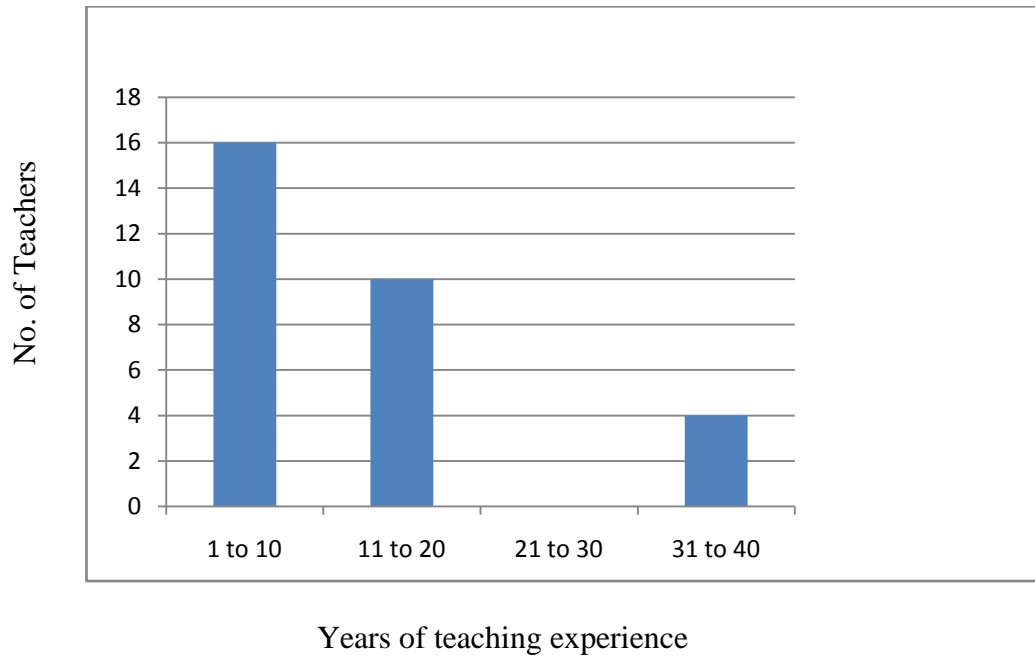
Figure 4.1: Years of teaching experience of teachers involved in the study

Figure 4. shows the years of teaching experience categorized under 1 – 10 years, 11 – 20 years, 21 – 30 years and 31 – 40 years. This categorization was based on the argument that the longer the period of teaching, the more likely the teacher would acquire skills of teaching LVI. The table indicates that more than half of the teachers who participated in the study had little experience in teaching as they had taught for 10 years or less. Less than half of the teachers had 11 – 20 years of teaching experience, and only very few teachers had more than 30 years of teaching experience.

Table 4.1: Demographic characteristics of teachers and LVI

School type	Established integrated schools			Regular UPE schools						
	A	B	C	D	E	F	G	H	I	J
Total No. of teachers per school	23	23	23	25	16	24	23	25	23	23
No. of teachers involved in study	5	5	5	5	5	5	5	5	5	5
No. of specialized teachers	4	5	5	0	0	0	0	0	0	0
Percentage of specialized teachers	17%	22%	22%	-	-	-	-	-	-	-
Years LVI had been in school	5	44	46	NS	NS	NS	NS	9	NS	NS
No. learners who were blind	11	21	22	0	0	0	0	0	0	0
No. learners with low vision	13	10	20	23	15	24	5	51	16	17
Total No. of LVI	24	31	42	23	15	24	10	51	16	17
No. of LVI involved in the study	8	8	8	8	8	8	8	8	8	8

KEY: NS = Not sure

Table 4.1 shows that only less than a quarter of the teachers who participated in the study had special education qualifications, and they were all teaching in established integrated schools. None of the teachers with special education qualifications was teaching in regular UPE schools. The table also shows that all the learners who had been categorized as being blind were enrolled in established integrated schools and learners with low vision were enrolled in both school settings. LVI had been enrolled in established integrated schools B and C for more than 40 years, and 5 years in school A. Head teachers from almost all the seven regular UPE schools were not sure of how long the LVI had been enrolled in their schools.

4.3: Braille Skills Possessed by Teachers of LVI

The study sought to establish the Braille skills possessed by teachers of LVI in regular UPE schools. Teachers were asked to indicate their Braille skills. After analysis, the findings were summarized in table 4:2:

Table 4.2: Teachers' Braille skills

School Type	Established integrated schools			Regular UPE schools						
	A	B	C	D	E	F	G	H	I	J
School code										
Total No. of teachers	23	23	23	25	16	24	23	25	23	23
No. teachers involved in study	5	5	5	5	5	5	5	5	5	5
Teacher's level of English Braille										
Grade I English Braille	4	5	5	0	0	0	0	0	0	0
Grade II English Braille	3	4	4	0	0	0	0	0	0	0
Teacher's level of mathematics Braille										
Simple Maths Braille	3	4	4	0	0	0	0	0	0	0
Full Maths Braille Notation	1	2	2	0	0	0	0	0	0	0

The findings revealed that less than half of the teachers who participated in the study possessed some Braille skills. Findings also revealed that all the teachers who possessed Braille skills were teaching in established integrated schools, and there were no teachers with Braille skills in all the seven regular UPE schools. This finding is in agreement with Frieman 2004 who noted that school administrators are faced with the challenge of finding competent teachers who have expertise in Braille to teach LVI. Findings also revealed that all the teachers who possessed Braille skills had skills in Grade I English Braille. More than three quarters had skills in Grade II English Braille and simple mathematics Braille. However, less than a half had skills in full mathematics Braille notation. This finding was different from the finding by Nzoka (2011) which concluded that majority of the specialized teachers in Kenya lacked proficiency in Grade two English Braille. The finding however confirms findings of a study by Demario, Norma, Lian and Ming – Gon (2000) who conducted a study to examine the competency of teachers in Full mathematics notation, and found out that the teachers lacked competency in more than a half of the required

mathematics skills. The concern of lack of proficiency in some aspects of Braille skills by teachers was expressed by the Inspector of schools in charge of SNE in district A. During an interview, he expressed his opinion about lack of specialization of teachers trained in Special Needs Education in Uganda with effect from the year 2000. He commented that:

Since 2000, teachers who were graduating in Special needs Education are mixed up. They do not have sufficient knowledge in a particular area because they did not specialize. For example a graduate with a diploma in Special Needs Education is assumed to have acquired knowledge in all special Needs areas of Sign language, Braille and Learning disabilities. However, studying all the areas without specializing in a particular area leaves a teacher with limited knowledge in all the areas.

This finding exposed a dire need for exposure to a full Braille course for teachers of LVI in regular UPE schools, and refresher courses in full mathematics Braille notation for teachers of LVI particularly in established integrated schools. The necessity for teachers to go through a specialized and comprehensive Braille training course has been recommended by literature reviewed in this study by (Amato 2002; Frieman 2004; Hui Ying Hung 2008, Johnson 1996, McCall 2001, Allman, Carol, Holbrook and M.Cay 1999, Knowlton and Berger 1999).

4.4 Availability of Adapted Materials, Equipment and Devices for LVI

The study sought to determine the availability of adapted learning materials, equipment and devices for LVI. Teachers were asked to indicate the number of adapted materials, equipment and devices available in their classes and the number that was required. The findings were summarized in tables 4.3 and 4.4:

Table 4.3: Basic Braille materials and equipment

Established integrated Schools	A			B			C		
Type of material	No. of children/ materials required	No. of materials available	Situ - ation	No. of children / materials required	No. of materials available	Situ - ation	No. of children/ materials required	No. of materials available	Situ - ation
Basic Reading and Writing Braille Equipment									
Slates	11	20	+9	21	30	+9	20	36	+16
Styluses	11	7	-4	21	12	-9	20	24	+4
Cubes (sets)	11	00	-11	21	8	-13	20	9	-11
Cube flames (sets)	11	00	-11	21	8	-13	20	9	-11
Braille paper (reams)	11	15	+4	21	23	+2	20	30	+10
Perkins Braille	11	5	-6	21	10	-11	20	15	-5
Marburg	11	00	-11	21	2	-19	20	3	-17
English Braille text books pupil's copies	11	00	-11	21	00	-21	20	00	-20
English Braille text books teachers' copies	5	4	-1	5	4	-1	5	6	+1
Braille readiness Materials (sets)	11	00	-11	21	2	-19	20	1	-19
Drawing kits (sets)	11	9	-2	21	18	-3	20	23	+3
Basic Mathematics Braille Equipment									
Abaci	11	6	-5	21	9	-12	20	24	+4
Tailor flames	11	00	-11	21	8	-13	20	6	-14
Tailor types (sets)	11	00	-11	21	8	-13	20	6	-14
Measuring devices (Rulers, compass, protractor) (sets)	11	10	-1	21	19	-2	20	23	+3
Maths Braille text book teachers' guide	5	00	-5	5	00	-5	5	00	-5
Shapes (sets)	11	5	-11	21	10	-11	20	24	+4

The findings revealed that **slates** and **Braille paper** were the most available items in the three established integrated schools, with more than enough items available than the required numbers. Findings also revealed that **English Braille textbooks teachers' copies**, **Drawing kits** and **measuring devices** were almost the required numbers in all the three schools. This finding indicated that the three items were fairly sufficient basing on the fact that the items were the type that could be easily shared by both the teachers and the LVI.

Findings also indicated that **Styluses, abaci and shapes** were more than the required numbers in school C, while they were far less than the minimum numbers required in schools A and B. This finding gave an indication that these three items were sufficient in school C, but not sufficient in schools A and B. Data from LVI during FGDs revealed that the styluses often got blunt when used for a long time until they could no longer be used any more. LVI from school C revealed that the school had managed to maintain more than the required numbers of styluses, shapes and abaci by ordering for the locally made ones from local workshops. The learners also shared their experience of using locally made styluses, and they reported that they preferred to use the locally made ones than the imported ones because the imported ones easily got blunt and produced faint dots.

Perkins Brailers were less than half of the required numbers in A and B; and were almost the required number in school C. Though the available Perkins Brailers in school C were a percentage that was higher than the recommended minimum amount for this study, this particular item was still regarded insufficient in the school because it cannot be shared by two students and it is used in most of the learning activities. This was also the only item that attracted the highest demand from all LVI from all the three schools, yet findings revealed that it was among the most expensive items of all. A head teacher of school C expressed her disappointment over the high costs of Perkins Brailers. During an interview, when asked about availability of basic materials and equipment, she said that:

“The biggest challenge we have is that Perkins Brailers are very expensive. The last time I purchased a Perkins Braille for the school two years ago, it cost me two million Uganda shillings; an amount that our schools cannot easily afford”.

Findings from FGDs revealed that most of the LVI preferred using Perkins Braille writers to slates. The reasons given included: that Perkins Braille writers were faster and less tiring to use than slates that when styluses were used for a long time, they hurt the fingers by tearing them to the extent of bleeding, and that styluses kept getting blunt from time to time. LVI also emphasized that styluses were difficult to use during examinations since there was too much writing involved. However, information from LVI and head teachers of all the three schools revealed that Perkins Braille writers frequently got mechanical problems and they took long to get fixed. During an interview, the head teacher of school A complained that:

LVI prefer using Perkins Braille writers but when they break down, we keep them in the store for almost a year without getting repaired. Most of the teachers in this school do not have skills of repairing Perkins Braille writers. There is only one teacher who has some skills of repairing them, but he is not a full time staff. Even when he attempts to repair them, he is usually limited by lack of spare parts.

The above findings revealed the need for training a member of staff on how to fix mechanical problems of Perkins Braille writers, and to solicit for help from well wishers to donate new Perkins Braille writers as well as spare parts for use in fixing the old ones.

The findings further revealed that schools B and C lacked enough **cubes/ tailor flames** and **tailors / tailor types** as the numbers available were less than half of the required numbers, and the four items were completely lacking in school A .” Findings further indicated that **Braille readiness materials** and **Marburg’s** were in very small quantities in schools B and C, and were completely lacking in school A.

English Braille text books pupils' copies and mathematics Braille text books teacher's guide were the most lacking items, with no item in all the 3 established integrated schools. During an interview, the headteacher of school C reported that:

The only copy of mathematics Braille notation that is available is an unpublished manual, and specialized teachers have always complained that some concepts are not practically applicable when teaching mathematics to LVI. Recently, one of them expressed his wish to get in touch with the author of the unpublished manual so that they could edit the book.

This expression revealed how desperate the teachers of mathematics were as far as the mathematics reference books were concerned.

This study revealed that of all the three established integrated schools, school C had the highest percentage of all the adapted materials and equipment required. According to data collected from the head teacher through interviews, acquisition of most of the adapted materials was through donations from well-wishers. Findings further revealed that of all the 3 established integrated schools, school A was the most affected as it lacked most of the required adapted materials for LVI, in that most of the available materials were less than half of the required numbers, and some of them were completely lacking. This could be attributed to the few years it had been established, five years as compared to the two other schools which had been established for over 40 years. The important finding of this objective was that even the established integrated schools lacked some of the Basic Braille materials and equipment for LVI.

Table 4.4: Basic Low Vision materials, equipment and devices

Type of school	Established integrated schools						Regular UPE schools													
	A		B		C		D		E		F		G		H		I		J	
school code	NR	NA	NR	NA	NR	NA	NR	NA	NR	NA	NR	NA	NR	NA	NR	NA	NR	NA	NR	NA
Major materials / equipment for low vision																				
Large print textbooks	13	0	10	0	20	0	23	0	15	0	24	0	5	0	51	0	16	0	17	0
Felt-tip/thick pens	13	0	10	0	20	0	23	0	15	0	24	0	5	0	51	0	16	0	17	0
Large beamed hats	2	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
Contrast enhanced chalkboards	7	5	7	4	7	5	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Major optical devices																				
Magnifying glasses	13	13	10	10	20	20	23	0	13	0	24	0	5	0	51	0	16	0	17	0
Telescopes	13	13	10	10	20	20	23	0	15	0	24	0	5	0	51	0	16	0	17	0
Lenses/spectacles	1	1	2	2	3	3	NS	0	NS	0	NS	0	NS	0	NS	0	NS	0	NS	0
Contrast enhanced glasses	13	13	10	10	20	20	23	0	15	0	24	0	5	0	51	0	16	0	17	0

NR	Number required
NA	Number available
NS	Not sure

The findings from table 4.4 revealed that all the seven regular UPE schools had enough **contrast enhanced chalkboards**, but the three established integrated schools did not have enough. Findings also revealed that the three established integrated schools had enough of the required optical devices (**Magnifying glasses, telescopes, lenses/spectacles, contrast enhanced glasses and large beamed hearts**). The above findings indicated that the low vision devices available in established integrated schools were largely optical devices. However, all the seven regular UPE schools did not have any optical device, yet a big number of LVI in the schools were in need of

them. This finding contradicts the recommendation by Eschenbach 2011; Erin 2003; and Arter 2001; who recommended the use of low vision devices to help students maximize their remaining vision in order to train the brain to interpret images more easily. The study further revealed that LVI from the regular UPE schools did not have access to the optical devices because they were not entitled to comprehensive eye care services which were being offered by a project that was based in the area of study. The project provided eye care services to only LVI enrolled in established integrated schools (schools which had units); leaving out the regular UPE schools. The comprehensive eye care services which the project provided included: Diagnosis of eye conditions, assessment of visual functioning, treatment, provision of optical devices, and training teachers on how to help the children use the optical devices provided. This finding exposed the educational benefits which the LVI from regular UPE schools were missing by not being able to access the above services, particularly the optical devices. As confirmed in a study by Eschenbach (2011) which examined the benefits of using optical devices, they were clinically proven to work, and increased the speed of reading of almost all the study participants.

Findings also revealed that **Large print text books** and **felt – tip /thick pens** were lacking in all the ten participating schools including the established integrated schools. This finding indicated that other educational materials of learners with low vision apart from optical devices were not being taken into consideration. During FGDs, learners with low vision gave their views on other materials which they preferred to use. The materials included: Hand held magnifiers and large books to enable them write large print and thick writing materials.

4.5 Skills Acquired by LVI in ADL and in O&M

The study sought to establish the skills acquired by LVI in ADL and in O&M. Before presenting the findings for this objective, the level of preparedness to implement the skills is presented in table 4.5, and later the findings were summarized in tables 4.6 and 4.7.

Table 4.5: Level of preparedness to implement ADL and O&M skills

Type of school	Established integrated			Regular UPE						
	A	B	C	D	E	F	G	H	I	J
School code										
No. of teachers specialized in VI	3	3	4	-	-	-	1	-	-	-
No of teachers specialized in ADL / O&M	-	-	-	-	-	-	-	-	-	-
ADL training offered to LVI	Y	Y	Y	-	-	-	-	-	-	-
O&M training offered to LVI	-	-	-	-	-	-	-	-	-	-
ADL reflected on time table	Y	-	-	-	-	-	-	-	-	-
O&M reflected on time table	-	-	-	-	-	-	-	-	-	-

Key

-	Nil
Yes	Yes

Teachers from the ten participating schools indicated that they did not have specialized training in ADL / O&M; yet each of the two areas is different and required specialized training. This information revealed that the areas of ADL and O&M were not covered exhaustively in a general course which the teachers who

participated in the study covered, and exposed a dire need for the teachers to have specialized training in the two areas.

The study further revealed that there was no deliberate training in O&M that was being offered by teachers to LVI in the ten participating schools. Even in the three established integrated schools where some training in this area was deliberately done, it was being implemented by matrons who were not trained. According to the head teachers and LVI, O&M training was being done by matrons during the first two weeks of orientation, when LVI had been enrolled in the schools.

The new curriculum for Primary schools in Uganda by National Curriculum Development Centre (UNCDC) (2011) included provision for adaptations for learners with special education needs including LVI. However, this study revealed that O&M was not reflected on the class time tables in all the ten participating schools. Only ADL that was reflected on the timetable of school A. The rest of the schools did not have ADL and O&M reflected on their time tables. Therefore there was need to have the two subjects included on the timetables of all the ten participating schools.

4.5.1: Skills Acquired by LVI in O&M

Table 4.6: Scores obtained by LVI in O&M skills

School type	Established integrated			Regular UPE							
School code	A	B	C	D	E	F	G	H	I	J	
Proper use of O &M skills											
Mobility skills	Skill value	Scores obtained									
Independent travel	4	1	3	4	3	3	3	3	3	3	
Long Cane techniques	3	0	0	0	0	0	0	0	0	0	
Sighted guide techniques	2	0	1	1	1	1	1	1	1	1	
Protective techniques	1	0	0	0	0	0	0	0	0	0	
Total score	10	1	4	5	4	4	4	4	4	4	
Percentage	100%	10%	40%	50%	40%	40%	40%	40%	40%	40%	

NB: Ranking of O&M skills adapted from Tellevik and Elmerskog 2001.

The findings in table 4.6 indicates that the overall situation of O&M skills of LVI from the ten participating schools were poor as they were below the set standard required for this study. This finding was attributed to lack of specialized teachers in the area of O&M; as reflected in table 4.5 above. This finding agreed with the finding of a study by Chen, Deborah, Smith and Julie 1992; which reported significant student progress in O&M skills due to staff training in that area. The finding also agreed with the findings of a study by Barnes, Stacie, Whinnery and Keith 2002, which concluded that all the students with visual impairment who were on O&M training course demonstrated progress in taking reciprocal steps during intervention and maintenance, and recommended O&M programs to be a key part of the curriculum for LVI. Findings also indicated that LVI from school A had the poorest overall skills in O&M compared to LVI from other schools, as they obtained the lowest mark.

The study further revealed that majority of the participating LVI practiced independent travel skills as the score for that item in nine schools was above average. Findings revealed that LVI from school A were not among those who practiced independent travel skills, as it obtained a score that was less than half of the minimum scores required by this study. In school A, four – six LVI could move while holding each other's hands; which was not the case for LVI from the rest of the schools. According to Tambartun Resource Centre (2001), the method of walking together while holding each other's hands did not enable them to follow any shoreline, could easily lead them to bump into obstacles, and in case one of them bumped into an obstacle, all of them could be affected.

Results further indicated that none of the LVI from the ten participating schools was using a long cane within the school premises. Information gathered from FGDs also indicated that a large number of LVI did not have access to the long canes. The few long canes which were available were the imported ones. Some LVI had got them through donations and others were got as gifts when they participated in long cane day celebrations which took place once every year in Uganda. Unfortunately, even the few who had them preferred to move without them. Yet, data gathered from observation revealed that many LVI often experienced several mobility challenges within the school compound and inside the classrooms. Some of these challenges included: Getting lost, falling down, frequent knocking toes on scattered stones, ditches, cording with people coming from the opposite direction, knocking of desks and tables; among others. These findings confirm the findings of a study reviewed in chapter two by Tellevik and Elmerskog (2001) who conducted a study on availability

of white canes among Persons with Visual impairment in Eastern Uganda, and established that many Persons with visual impairment were not moving independently due to lack of long canes. In addition, they found out that the few long canes which persons with visual impairment had were imported, and were quite expensive on the outside market. They concluded that the “rural cane” could be produced using wood anywhere in the country for no cost at all, and that the wooden material should satisfy the following criteria: It had to be light in weight, straight, hard – wooded, and the length was to be at the breast bone level of the user. The finding of this study revealed the need to sensitize LVI, their teachers and parents on the need to use the locally available materials to produce long canes at no cost. The most common locally available material in the area where the study was conducted was wood.

The findings of the study further showed that majority of the participating LVI obtained average scores in sighted guide techniques; implying that they had sufficient skills in the techniques. LVI from school A however did not obtain any score in this item. This finding was due to the negative practice of moving in a group while holding each other’s hands without following any shoreline or without using any sighted guide. This however is not to underscore the fact that LVI from the three established integrated schools had more need for services of sighted guides (since majority were blind); than those from regular UPE schools (since majority had low vision).

Findings also indicated that all the participating schools did not obtain any score in protective techniques. The study revealed that the kind of protective techniques that

were being applied by LVI were by stretching both of their hands straight forwards. This method was criticized by Tambartun Resource Center (2001) which gave caution against using this method, as it could easily lead the person applying it into a dangerous accident of knocking the face region into obstacles. Tambartun Resource Centre (2001) recommended that protective techniques could be applied by placing one of the hands across their chest region, and another one across the body region.

4.5.2: Skills Acquired by LVI in ADL

The skills acquired by LVI in ADL skills were reflected in table 4.7:

Table 4.7: Scores obtained by LVI in ADL skills

Type of school	Established integrated schools	Regular UPE schools									
School code		A	B	C	D	E	F	G	H	I	J
ADL Skills	Skill value	Scores obtained									
Clean bodies	8	6	6	7	3	3	4	3	4	4	4
Brushed teeth	7	6	6	6	2	2	3	3	3	3	3
Cut figure nails	6	5	5	5	2	2	3	3	3	2	3
Clean clothes	5	3	4	4	2	2	3	3	3	3	3
Combed hair	4	3	3	3	1	1	2	2	2	2	2
Smart dressing	3	2	2	2	1	1	1	1	1	1	1
Neatly arranged belongings	2	2	2	2	1	1	1	1	1	1	1
Proper dinning antique	1	0	0	0	1	1	1	1	1	1	1
Total score	36	27	28	29	13	13	18	17	18	17	18
Percentage	100%	75%	78%	81%	50%	36%	36%	47%	50%	47%	50%

NB: Ranking of ADL skills adapted from Tellevik and Elmerskog 2001.

The findings in table 4.7 indicates that the overall total scores for ADL skills for LVI from the three established integrated schools were above average, while the scores of the seven regular UPE schools were below the standard set for this study. This finding indicated that the ADL skills of LVI in established integrated schools were

sufficient while they were not sufficient in regular UPE schools. ADL was the area in which the three established integrated schools obtained the best performance among the areas considered for the study. Yet, it is the area where the teachers were not participating in training LVI, but the training was being done by the matrons. Even in school A where ADL appeared on the timetable, there was no teacher who was involved in training LVI in the skill. This finding confirmed to the finding of a study by Tellevik and Elmerskog (2001) who conducted a study in Eastern Uganda to investigate the kind of activities that were prioritized for training during the rehabilitation program for LVI; and concluded that all the spheres of activities were highly prioritized except ADL. This implied that ADL skills were not regarded to be important. Tellevik and Elmerskog (2001) emphasized that deliberate training of LVI in ADL skills was very essential because many of them did not have a lifetime of visual experiences to draw from. This finding revealed the need for teachers of LVI to get training in ADL to equip them with skills of training LVI in the skill.

Findings also revealed that LVI from school C obtained the highest overall score in ADL skills while LVI from schools E and F obtained the lowest score. Findings further revealed that LVI from regular UPE schools obtained higher scores in the skill of proper dining antique while LVI from established integrated schools did not obtain any score in that skill.

The study further indicated that LVI from the 3 established integrated schools obtained average scores in the skills of maintaining clean bodies through bathing, brushing the teeth, cutting fingure nails, maintaining clean clothes through washing,

combing the hair, dressing smartly and arranging personal belongings. However on the contrary, their counterparts from regular UPE schools obtained scores that were below average in the above ADL skills. It was only in the skill “maintaining clean clothes through washing” that schools F, G, H, I and J obtained an average score.

The study also established some difficulties that LVI experienced while participating in ADL, which included: Pricking fingers while knitting, pricking the wrong place while removing jiggers, cutting themselves when peeling bananas, among others. The above difficulties would be handled if the LVI were given comprehensive training in ADL skills by specialized teachers.

4.6 Adaptation of the Physical Environment

This study sought to establish the extent to which the physical environment had been adapted to facilitate Access and Retention of LVI in regular UPE schools. Observations of the physical environment were made in all the ten participating schools. Findings were presented in table 4.8:

Table 4.8: Adaptation of the physical environment

School type		Established integrated			Regular UPE						
School code		A	B	C	D	E	F	G	H	I	J
Adaptations	Value										
Steady lighting	9	8	8	7	5	4	4	4	4	3	4
Enough space between seats	8	7	6	6	3	3	3	4	4	3	3
Easy access to learning centers	7	5	6	6	2	2	2	2	2	2	2
Free space for demonstrations	6	3	3	3	3	3	3	4	6	4	3
Clear shorelines to major places	5	2	2	4	2	4	3	4	4	4	3
Clear landmarks	4	2	2	4	1	3	3	3	4	3	3
Raised surface around latrine/toilet hole	3	2	3	3	0	0	0	0	0	0	0
Contrasting doors / windows	2	1	2	1	1	1	1	1	2	1	1
Obstacle free environment	1	0	0	1	0	0	0	0	1	0	0
Total element score	45	31	32	35	17	20	19	22	27	20	19
Percentage	100%	67%	71%	78%	38%	44%	42%	49%	60%	44%	42%

NB: Ranking of items was adapted from the environmental checklist for developing independence, by Brown 2013; (a program specialist).

Table 4.8 indicates that the overall total scores for adaptation of the environment in all the three established integrated schools A, B and C were above average. In regular UPE schools it was only in one school H, where the scores were above average, but the rest were below average. These findings implied that all the three established integrated schools possessed sufficient adaptations, while only school H possessed sufficient adaptations among the regular UPE schools. This finding differs from the recommendation by Stone 2001 who emphasized the need to have adaptations in the environment in order to allow LVI access both the inside and outside environments in school.

The study findings indicated an outstanding performance by two of the established integrated schools B and C in the element: “Raised surface around the Latrine / toilet”; whereby all the physical adaptations required were available. The findings revealed that the brick raised surface surrounding the pit latrine hole was meant to act as a guide for the LVI while toileting. Findings also indicated that the latrines were specifically meant for LVI, and were regularly cleaned by students. School A obtained a score that was above average in this item. In school A, LVI were using water born toilets specially constructed for them as they were in the boarding section, and their sighted colleagues who were day scholars were not permitted to use them. The water born toilets were moderately clean, and the water was flowing including a big tank around the compound. However, the toilets lacked a raised surface surrounding the hole surface for LVI to recognize the area for directing the excreta. Findings revealed that LVI complained of fearing to touch the excreta while cleaning the toilets. All the regular UPE schools did not obtain any score in this item. This finding indicated that the three established integrated schools had sufficient adaptations on the pit latrines /toilets as their scores were above average in the element. Findings also indicated that all the regular UPE schools did not have any adaptation for the latrines as they never obtained any mark. Findings from FGDs indicated that latrines in all the seven regular UPE schools were often dirty, and were not accessible for the LVI especially those with severe low vision. Findings also revealed that there were no separate latrines meant for LVI, and also few facilities were being shared by a large number of students.

Findings further indicated high scores for the three established integrated schools A, B and C in the elements: **steady lighting, enough space between seats** and **easy access to learning centers**. The scores for each of these items were above average. The scores were increased by the fact that the three established integrated schools had units with better conditions compared to the conditions in the general classrooms where the LVI joined the sighted learners for integration in general subjects. Findings from observation revealed that in the classrooms where integration was taking place, the learners from both school settings were so congested that they could hardly move to their seats easily. However, the situation was worse in regular UPE schools due to the fact that they did not have units and did all the work from the main classroom. Findings indicated that all the seven regular UPE schools obtained scores below average in the three elements mentioned above. During FGD, one of the LVI from school D explained the circumstances they experienced as a result of congestion. She said that:

“I usually copy notes from my friends even when the work they have written has mistakes because the class is so congested that I can not pass to crosscheck on the chalkboard”.

This finding indicated that adaptation in the above areas was sufficient in established integrated schools, and lacking in regular UPE schools.

Regarding the element: **“free space for demonstrations”**; findings indicated that schools H, G and I obtained scores that were above average; and the rest of the schools did not obtain scores that were below average including all the three established integrated schools. This finding indicated that the H, G and I had made provisions for enough space for demonstrations, while the schools A, B, C, D, E, F

and J had not made provisions of enough space for demonstrations as their scores were below the percentage of the standard set for this study.

Findings further indicated that schools, C, E, F, G, H, I and J obtained scores that were above average in the item: “**clear shorelines to major places**”, while the scores of schools A, B and D were below average. Findings revealed that in schools A and B, the shorelines were filled with several stones and other dangerous obstacles which made them not to be clear. In school B, the shorelines which had been created by the missionaries who established the school in the early 50s had not been well maintained and were unrecognizable by the LVIs. This finding implied that schools C, E, F, G, H, I and J had made sufficient adaptations in terms of shorelines as their scores measured up to the percentage set for the study, and that schools A, B and D had not made sufficient adaptations in this item, as their scores were below the percentage set.

Findings also established that schools C, E, F, G, H, I and J obtained scores that were above average in the item: “**clear landmarks**”; while the scores of schools A, B and D obtained were below average. The landmarks in schools A and B were equally unrecognizable as the shorelines because they were affected by poor shorelines, since shorelines usually lead to landmarks. This finding implied that schools C, E, F, G, H and J had made sufficient adaptations in terms of landmarks, as the score they obtained was above the recommended percentage; and that schools A, B and D had not made sufficient adaptations in terms of landmarks, as the score they obtained was less than the percentage set for the study.

Findings further indicated that only schools B and H obtained an outstanding score in the item “**contrasting doors / windows**” as they had made excellent adaptations on the doors and windows. The rest of the schools did not obtain satisfactory scores as per the standard set for this study. Findings also indicated that schools C and H had made excellent adaptations in the item: “**obstacle free environment**”. The rest of the schools did not obtain any mark in this item indicating that their environments had a lot of obstacles. The findings from FGD indicated that LVI from school D complained of grass which was deliberately tied by sighted learners on several occasions. This finding indicated negative attitudes of sighted learners towards their counterparts with visual impairment.

4.7 Adaptation of the Intended Curriculum to Suit the Needs of LVI

This study sought to determine the extent to which the intended curriculum had been adapted to suit the needs of LVI. Teachers were asked to allocate scores on the curriculum modifications which were being made in their classes / schools. Findings were presented in table 4.9:

Table 4.9: Adaptation of the intended curriculum

School type		Established integrated schools			Regular UPE schools						
School code	Element score	A	B	C	D	E	F	G	H	I	J
Content											
Content modified for LVI	10	6	7	8	0	0	0	0	0	0	0
Teaching methods											
Remedial lessons in unit	9	7	9	9	0	0	0	0	0	0	0
Braille/Large print reference information	8	4	5	6	0	0	0	0	0	0	0
Excursions	7	2	3	3	2	2	2	2	3	2	2
Examination modifications											
Braille questions	6	5	5	5	0	0	0	0	0	0	0
Large print questions	5	2	2	2	0	0	0	0	3	0	0
Extra time provided	4	3	3	3	0	0	0	0	3	0	0
Participation in adapted sports											
Goal ball	3	2	2	2	0	0	0	0	0	0	0
Show down	2	1	1	1	0	0	0	0	0	0	0
Adapted athletics	1	1	1	1	0	0	0	0	0	0	0
Total element score	55	33	38	40	02	02	02	02	06	02	02
Percentage	100%	60%	69%	72%	4%	4%	4%	4%	11%	4%	4%

NB: Ranking of curriculum content areas adapted from UNESCO / MOES (2011):
Life skills curriculum for Primary School teachers in Uganda

Table 4.9 indicates that the overall total scores for curriculum adaptations in all the three established integrated schools A, B and C were above average. The scores obtained by all the regular UPE schools were far below average. This finding implied that LVI from all the three established integrated schools had made sufficient curriculum adaptations since their scores were above average, and that all the regular UPE schools had not made sufficient curriculum adaptations since their scores were far below the percentage set for the study.

Regarding the curriculum element: **“Content”**; findings for the item: “Content modified for LVI” indicated that the three established integrated schools obtained

scores that were above average. The seven regular UPE schools did not obtain any score in this element. This finding implied the three established integrated schools had made sufficient adaptations in the item since the scores they obtained measured up to the percentage set for the study. It also implied that the regular UPE schools had not made any adaptations in the item since they did not obtain any score.

Regarding the curriculum element “**teaching methods**”, data for the item “**remedial lessons in the unit**” revealed that all the three established integrated schools obtained scores that were above average, implying that LVI were given sufficient time to study from the unit. However all the seven regular UPE schools did not obtain any score in this item, implying that there were no units in the schools. In established integrated schools, specialized lessons were taught to LVI from the units. The most common lessons that were conducted from units included: pre - reading activities, reading, writing Braille and Braille mathematics lessons. The rest of the lessons were conducted within the integrated setting where LVI could study together with their sighted counterparts. However, information obtained from LVI through FGDs revealed that LVI from school A were not taught mathematics from the unit. Instead, they were studying it from the general integrated classroom setting together with the rest of their sighted counterparts. LVI from this school had a lot of complaints regarding this, as they preferred to study mathematics from the unit. The head teacher of school A had the same view as the LVI. He attributed the problem to staff ceiling set by the government. He expressed his disappointment regarding the staff sealing which was limiting them from getting a teacher of mathematics to cater for mathematics remedial lessons in the unit. He said:

The only specialized Braille mathematics teacher who would teach the LVI from the unit is not on pay roll. He is a teacher with visual impairment and is very committed. However, he kept coming to teach with hope that one day the district would put him on pay roll, but when he was not paid for many months, he got frustrated and left us. Up to now he keeps checking on us to find out whether there could be some chance for employment but in vain.

This information from the head teacher confirmed the information which was gathered from the inspector of schools in charge of SNE in the district where this school was located. During an interview, when asked whether there was some considerations for the district to post an extra specialized teacher in the established integrated school A to cater for mathematics, he said:

We have a challenge of inadequate funds. The district is still lacking enough teachers to teach in ordinary schools in general. We have not yet got enough funds to pay all the 1,500 teachers who are on the district ceiling. We have only managed to get funds for 1,400 teachers, and that is the number which is on payroll at the moment. Actually a number of schools do not have enough teachers for their schools, but at least the school you are talking about has enough teachers basing on the established staff ceiling. We are still lacking funds to pay 100 teachers to cover the number recommended for the staff ceiling for the district. I understand the need for an extra teacher to cater for remedial lessons in the unit, but I have always found it very difficult to convince the district officials to give priority to an extra teacher for a school which is regarded to be having enough teachers according to the ceiling recommended for the school.

This information revealed that district officials were using the same criteria to allocate the number of teachers for the ordinary schools and for established integrated schools. However in practical terms, the two settings required different numbers of teachers since there was a unit facility which did not exist in other ordinary schools. There was need to sensitize district officials to consider relaxing the staff ceiling for established integrated schools with units, and other regular UPE schools which had enrolled LVI.

Regarding the items: “**large print / Braille reference information**” findings revealed that among the three established integrated schools, schools B and C obtained scores

that were above average; an indication that they had made sufficient modifications for this item. School A and obtained scores that were below average, which was an indication that it had not made sufficient modifications for the above items. All the regular UPE schools did not obtain any score, an indication that they had not made any adaptations in the above items at all. Findings also revealed that none of the ten participating schools obtained sufficient scores in the item: “**excursions**”; implying that they had not made sufficient excursions while teaching LVI.

Findings regarding the curriculum element “**examination modifications**” revealed that all the 3 established integrated schools obtained scores that were above average in the item “**Brailled questions**”, implying that they had sufficiently provided LVI with Brailled questions during examinations. Findings revealed that Brailled questions were provided to LVI in all the three established integrated schools during National examinations, end of term examinations and in specialized subjects which were conducted from the units. Braille questions were however not provided to LVI in other tests or exercises conducted on daily basis. During FGDs, LVI reported that their sighted counterparts dictated for them the questions during the daily class sessions. All the seven regular UPE schools D, E, F, G, H, I and J did not obtain any score in the above item, implying that they had not made any attempt to make Brailled questions.

Almost all the regular UPE schools obtained scores that were below average in the items “**large print questions**”, and “**extra time provided during exams**” implying that they had not provided large print questions, and extra time was not being

provided to the LVI during examinations. Among the regular UPE schools, only school H obtained an average score in the above items. Findings revealed that large print materials were usually provided to schools A, B, C and H only during the Primary Leaving Examinations (P. L. E) which were done at the national level. Data gathered from FGDs revealed that LVI kept struggling on their own throughout the rest of the period spent in school. The situation was worse for LVI from most of the regular UPE schools D, E, F, G, I and J. They were not being provided with any large print questions at all, not even during National examinations; as their visual conditions were not registered by the Uganda National Examination Board (UNEB). There was need to sensitize head teachers of LVI in regular UPE schools to provide large print questions to LVI; and to register them with UNEB so that they could be provided with large print questions during PLE.

Findings regarding the curriculum element: “**Participating in adapted sports**” revealed that all the three established integrated schools obtained excellent scores in the sporting activity “**adapted athletics**”; scores that were above average in the adapted sporting activity “**Goal ball**”; and scores that were below the set standard for this study in the adapted sporting activity “**show down**”. All the regular UPE schools did not obtain any score in the above items. These findings implied that LVI from all the established integrated schools had made sufficient participation in the sporting activities “adapted athletics” and “Goal ball”; and that they had not made sufficient participation in the activity “**show down**”.

Findings obtained from head teachers through interviews revealed that LVI from schools B and C had been participating in adapted sports even at National level competitions for the last 15 years since 1999. According to Tellevik and Elmerskog (2001), this was the period when sports activities and competitions for the LVI were initiated in primary schools in Uganda, through a project implemented under the National Mobility and Rehabilitation program. Data from the head teacher of school A also revealed that LVI in the school had not taken long since they started participating in sporting activities. However, it was surprising that they managed to obtain the same scores with their counterparts from schools A and B. Findings also indicated that none of the seven regular UPE schools obtained any score in any of the three sporting activities as they were not participating in adapted sports, revealing the need to introduce adapted sports to LVI within regular UPE schools.

The gaps in curriculum adaptations were attributed to failure by the officials from Uganda National Curriculum Development Center (UNCDC) to sufficiently implement the training of teachers in curriculum adaptations for Learners with Special Educational Needs including those with visual impairment. Findings from head teachers and teachers revealed that training in all the participating districts was half way done. District officials were trained as trainers of trainees from a central level, and were expected to train teachers in all schools after the course. However, the findings revealed that the teachers were not trained, and thus they did not know how to go about curriculum adaptations for LVI. Hence, they continued teaching using the old curriculum that was not modified to suit the needs of LVI. This finding agreed with the findings of two empirical studies by Tieso 2001; and by Moon & Callahan

2001. Both studies compared the effect of using modified curriculum on students' performance, and concluded that the modified curriculum proved to be more effective in motivating, engaging, meeting the needs of all students; and hence positively affected the improvement of students' academic achievement especially those identified as at risk for failure. Thus, there was need for a comprehensive training for teachers of LVI in curriculum adaptations.

The positive effects of curriculum modifications were presented in a study reviewed in chapter two by Moon and Callahan (2001) who investigated the effectiveness of curriculum modification on general students' learning achievement. Their study showed positive effects of curriculum modifications on students' attitudes towards learning and their academic achievement. Positive effects of curriculum modification on learning achievements were also reflected in other studies by (Tieso 2001; Suk – Hyang, Wehmeyer and Palmer 2010).

CHAPTER FIVE:

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This final chapter presents a summary of findings of the study. It also gives conclusions and recommendations on how the study could be useful. The chapter concludes with suggestions for future research.

5.2: Summary

The following section looks at a summary of the main findings derived from the study, in line with the study objectives.

The purpose of the study was to investigate strategies for enhancing access and retention of LVI in regular UPE schools in South Western Uganda. The study had five objectives stated as follows: to establish the Braille skills possessed by teachers of LVI in regular UPE schools; to determine the availability of adapted materials, equipment and devices for LVI; to establish the skills that had been acquired by LVI in ADL and their skills in O&M; to establish the extent to which the physical environment had been adapted to facilitate access and retention of LVI in regular UPE schools; and to determine the extent to which the intended curriculum had been adapted to suit the needs of LVI. A mixed method research design was used, which involved both qualitative and quantitative descriptive methods. A population of 498 was targeted from which a sample size of 147 was selected, and purposive and systematic sampling procedures were applied. Four research instruments were developed for the study and they are: questionnaires, interviews schedules, FGD

guides and observation schedules. The study indicated that; overall, the strategies for enhancing access and retention of LVI were generally lacking in regular UPE schools. The findings were presented as follows:

5.2.1: Braille Skills Possessed by Teachers of LVI

Objective one sought to establish the Braille skills possessed by teachers of LVI in regular UPE schools. To achieve this objective, question ii of section C in the questionnaire required teachers to indicate the level of their Braille skills under the variables: Grade I English Braille, Grade II English Braille, Simple mathematics Braille; and Full mathematics Braille notation. The study established that there was no teacher who possessed any Braille skills in all the seven regular UPE schools. The study also established that all the teachers who possessed Braille skills were teaching in established integrated schools, and they all possessed skills in Grade 1 English Braille. Majority of them possessed skills in Grade II English Braille and Simple mathematics Braille, and very few of them possessed skills in full mathematics Braille notation.

5.2.2 Availability of Adapted Materials, Equipment and Devices for LVI

Objective two sought to determine the availability of adapted materials, equipment and devices for LVI. To achieve this objective, Data was collected through questionnaires, FGDs and observation. Section D of the teachers' questionnaire asked teachers to indicate the number of adapted materials, equipment and devices available in their classrooms and the number required.

Findings indicated that the only adapted equipment that was available in all the seven regular UPE schools was Contrast enhanced chalkboards. The study further established that the materials for learners with low vision that were available in all the three established integrated schools were optical devices and large beamed hats. Large print text books and felt – tip /thick pens were the lacking in all the ten participating schools. Other low vision materials were generally lacking in both school settings.

The study established that there were no basic Braille materials available in all the seven regular UPE schools, and that there were some available in the three established integrated schools.

5.2.3 Skills Acquired by LVI in O&M and in ADL

Objective three sought to establish the skills that had been acquired by LVI in ADL and in O&M. To achieve this objective, data was collected through observation and FGDs. Section D of the observation schedule was designed to guide in observing the skills that had been acquired by LVI in ADL and in O&M. The specific skills that were observed in O&M were: Independent travel, proper application of: Long cane techniques, sighted guide techniques and protective techniques. The specific skills that were observed in ADL were: Clean bodies, brushed teeth, cut fingur nails, clean clothes, combed hair, smart dressing, neatly arranged belongings and proper dining antique.

The study established that the overall skills in O&M of LVI from regular UPE schools and established integrated schools were below the set standard for this study.

The study also established that majority of the participating LVI possessed sufficient skills in “**Independent travel techniques**” and “**Sighted guide techniques**”; and that all of them lacked skills in “**Protective techniques**” and “**Cane techniques**”.

Findings further indicated that the ADL skills possessed by LVI from the regular UPE schools were: “**dining antique**”, and “**washing**”. The ADL skills possessed by LVI in the three established integrated schools were: **bathing, brushing the teeth, cutting fingur nails, washing, combing the hair, dressing smartly and arranging personal belongings**.

5.2.4 Adaptation of the Physical Environment

Objective four sought to establish the extent to which the physical environment had been adapted to facilitate access to basic education by LVI. To achieve this objective, data was collected through observation and FGDs. Section E of the observation schedule was designed to guide in observing whether the physical environment had been adapted to facilitate access by LVI. The specific items that were observed in the physical environment were: Steady lighting, enough space between seats, easy access to learning centers, free space for demonstrations, clear shorelines to major places, clear landmarks, raised surface around the latrine / toilet hole, contrasting colors on doors / windows and obstacle free environment.

Findings indicated that the physical adaptations that had been put in place in all the regular UPE schools were “**clear landmarks**” and “**clear shorelines to major**

places”. Most of these schools lacked adaptations in: **Steady lighting, enough space between seats, easy access to learning centers, free space for demonstrations, raised surface around the latrine / toilet hole, contrasting colors on doors / windows and obstacle free environment.**

Findings also indicated that the three established integrated schools had made sufficient adaptations in: **Steady lighting, enough space between seats, easy access to learning centers and raised surface around the latrine / toilet hole**”. However, they lacked adaptations in: **free space for demonstrations, clear shorelines to major places, clear landmarks, contrasting colors on doors / windows and obstacle free environment.**

5.2.5 Adaptation of the Intended Curriculum

Objective five sought to determine the extent to which the curriculum had been adapted to suit the needs of LVI. To achieve this objective, data was collected through questionnaires, interviews and FGDs. Section G of the questionnaire for teachers sought to examine the extent to which the curriculum elements had been adapted to suit the needs of LVI. The curriculum elements that were considered were: Content, teaching methods, examination modifications and sporting activities. Findings were summarized below:

Findings indicated that almost all the regular UPE schools had not made any curriculum adapted activities in most of the curriculum element items. The only adapted item which they involved in was **“excursions”**; and the scores obtained were

far below average. The schools had not made any adaptations in the rest of the curriculum element areas: **Content modification; teaching methods Examination modifications and adapted sports.**

All the three established integrated schools had made sufficient curriculum adaptations in most of the curriculum element items: **Content modification, teaching methods, “Examination modifications” and Participation in adapted sports.** Findings however, indicated that the established integrated schools had not made sufficient participation in the sporting activity **“Show down.”**

5.3 Conclusions

Basing on the objectives and the analysis of the research findings, the study arrived at the following conclusions:

5.3.1 Braille Skills Possessed by Teachers of LVI

The teachers of LVI in all the seven regular UPE schools lacked Braille skills; and the teachers who possessed Braille skills were teaching in established integrated schools. All of them had skills in Grade 1 English Braille, while majority of them had skills in Grade II English Braille and Simple mathematics Braille. Very few of them had skills in full mathematics Braille notation.

5.3.2 Availability of Adapted Materials, Equipment and Devices for LVI

The only adapted materials that were available in all the seven regular UPE schools were contrast enhanced chalkboards. The materials that were sufficiently available in

the three established integrated schools were largely optical devices. The regular UPE schools lacked optical devices because they were not beneficiaries of the eye care project which was donating comprehensive eye care services including optical / low vision devices, and that parents of LVI in these schools were so poor that they could not afford to buy these devices. Other low vision materials were generally lacking in both school settings.

All the seven regular UPE schools lacked basic Braille materials and equipment. Some basic Braille materials were available in the three established integrated schools but most of them were not enough, and some of them were completely lacking.

5.3.3 Skills Acquired by LVI in ADL in O&M

The overall skills of LVI in O&M were poor in both settings of regular UPE schools and established integrated schools. This was due to lack of specialized training of teachers in the two areas. The learners had acquired skills in only a half of the expected areas. The use of white canes within the school premises was lacking in both school settings, and a large number of LVI did not have access to long canes as they were imported and thus expensive, and even the few who had them preferred to move without them.

The overall ADL skills of LVI from regular UPE schools were poor; as they had acquired skills in only a half of the expected areas. The ADL skills of LVI in the established integrated schools were good; as they had acquired skills in most of the expected areas.

5.3.4 Adaptation of the Physical Environment

The environmental adaptations that had been put in place in most regular UPE schools were very few; and a big number of the required adaptations were lacking. Only one regular UPE school had made more than half of the expected adaptations. The established integrated schools had more than a third of the required environmental adaptations, and lacked more than a half of the required environmental adaptations. The study concluded that both regular UPE schools and established integrated schools lacked most of the required adaptations to enable LVI easily access the learning facilities and the general school environment.

5.3.5 Adaptation of the Intended Curriculum

The study concluded that there were almost no curriculum adaptations made in the regular UPE schools due to the fact that officials from the Uganda National Curriculum Centre (UNCDC) and officials from the District Education Office had not done enough towards training teachers in the new curriculum adaptations for LVI. The established integrated schools had made sufficient curriculum adaptations in almost all the curriculum content areas.

In view of the above conclusions, it is clear that the study achieved its purpose which were stated in five objectives as shown in chapter one and analyzed in chapter four. The study gaps were further filled by the information obtained from the research instruments namely: questionnaire, interview schedules, Focus Group Discussion guides and observation schedules. The study indicated that overall, the strategies for enhancing access and retention of LVI were generally lacking in regular UPE schools.

This finding implied there was need to guarantee good quality of education to the learners, which would only be achieved through the provision of human and financial resources to support their educational needs and the needs required for independent living skills.

5.4 Recommendations

Based on the conclusions made for the study, the following recommendations were made:

5.4.1 Policy Recommendations

Braille skills possessed by teachers of LVI

The study concluded that teachers of LVI in all the seven regular UPE schools lacked Braille skills. The study also concluded that the teachers who possessed Braille skills were teaching in established integrated schools, and all of them had skills in Grade 1 English Braille, while majority of them had skills in Grade II English Braille and Simple mathematics Braille. Very few of them had skills in full mathematics Braille notation. Considering the fact that the UPE policy (1997) encourages learners with disabilities including those with visual impairment, the study therefore recommended a full Braille course for teachers of LVI in regular UPE schools; and refresher courses in Full mathematics Braille notation for teachers in established integrated schools. The implementation of the above trainings should be taken up by the District Education Office (Inspector of schools incharge of Special Needs Education).

Adapted materials, equipment and devices for LVI

The study concluded that all the seven regular UPE schools lacked **optical devices**, and **Basic Braille materials** and **equipment** because they were not beneficiaries of the eye care project which was offering comprehensive eye care services to LVI; and that parents of LVI in these schools were so poor that they could not afford to buy these devices. Based on the above conclusion, two recommendations were made relevant to this issue:

- The study recommended that the government through the Ministry of Health should reinforce the policy of “normalization” and provide comprehensive eye care services. In the normalization policy, it is the responsibility of ministry of health to ensure that health care services are given to all children in the country including those with disabilities. To be effective, the services should be taken to the respective regular UPE schools through mobile clinics. The comprehensive eye care services recommended by this study included: Diagnosis, visual assessment, provision of optical / and other low vision devices, training teachers in the use of optical devices and provision of other low vision devices plus Basic Braille materials.
- The study also recommended that government through the Ministry of Gender, Labour and Social Development should use the existing established workshops that were established for the rehabilitation of persons with disabilities in the country to produce **styluses**, **Abaci** and **shapes** for LVI at low or no cost.

ADL / O&M skills training for teachers and LVI

The study concluded that the overall skills of ADL and in O&M were poor in regular UPE schools due to lack of specialized training of teachers in the two areas; and that long canes were generally lacking in both established integrated schools and regular UPE schools. Basing on this conclusion, the study made three recommendations:

- The study recommended a short course training in ADL / O&M for both teachers and matrons of LVI in established integrated schools and regular UPE schools as part of reinforcing the UPE policy (1997) provisions for children with disabilities. Implementation should be a responsibility of the District Education Office (Inspector of schools incharge of Special Needs Education).
- The study recommended that O&M and ADL be indicated on the school time tables of both regular UPE schools and established integrated schools in order to reflect the adaptations for the newly modified curriculum by UNCDC (2011).
- The study also recommended that through the Ministry of Gender, Labour and social development, long canes for LVI in schools be produced in the existing established workshops meant for the rehabilitation of persons with disabilities using locally available materials at low or no cost to enable all LVI access and use them.

Adaptation the physical environment

The study concluded that both regular UPE schools and established integrated schools lacked most of the required adaptations to enable LVI easily access the learning

facilities and the general school environment. The study recommended that the Ministry of Education through the department of SNE organizes sensitization to the school administrators of regular UPE schools and established integrated schools, to aggressively put in place the physical adaptations that were required in order to create accessible physical environments for LVI. This should be done as a way to reinforce the requirements of the provisions of the UPE policy (1997) for children with disabilities.

Adaptation of the intended curriculum

The study concluded that there were almost no curriculum adaptations made in the regular UPE schools, and this was attributed to the fact that officials from the Uganda National Curriculum Centre (UNCDC) and officials from the District Education Office having not done enough towards training teachers in the new curriculum adaptations for LVI. The study also concluded that the established integrated schools had made sufficient curriculum adaptations in almost all the curriculum content areas. Basing on the above conclusions, the study recommended that as way to reinforce the provisions of the UPE policy (1997) for children with disabilities in regular UPE schools;

- A comprehensive training by UNCDC for teachers of LVI in curriculum adaptations for LVI through short courses. This should be implemented by the District Education Office (Inspector of schools incharge of Special Needs Educaton).
- Teachers from regular UPE schools should regularly make educational tours to the established integrated schools in order to draw some lessons concerning

curriculum adaptations for LVI. This should be implemented by the school administrators.

5.4.2 Recommendation for Further Research

Teachers with Visual impairment

The current study did not distinguish between sighted teachers and visually impaired teachers. Some participants in the study who were identified to have outstanding knowledge in Braille happened to be Braille users themselves. Confidence in their Braille knowledge may derive from their similar disability experiences with their learners, which would be particularly valuable for future research. A study comparing how teachers who are visually impaired and those who are sighted teach Braille to the LVI can help researchers to learn more about teachers' viewpoints and strategies for braille instruction.

Visual assessment

The study revealed that the LVI in established integrated schools had been assessed and categorized as "blind" and others as having "low vision " and their instruction strategy had been streamlined. Those in regular UPE schools had been neglected, and their visual conditions had never been diagnosed and assessed to determine the category of the visual impairment and the instruction strategy. A study on visual assessment of LVI enrolled in regular UPE school within South Western Uganda could be of great help in determining their visual status for better educational intervention.

Specialized teachers

The study revealed that the number of teachers who had specialized training in visual impairment were lacking in regular UPE schools; and were not enough in the established integrated schools. A tracer study to assess the number of teachers who specialized in visual impairment and are teaching in South Western Uganda would help make proper placement of the teachers in schools that enrolled large numbers of LVI within the region.

Modern materials, equipment and devices

The study revealed some uncommon materials which were proved to be important for the education of LVI. They included: tactile maps, recorders, projectors and computers, Raised line drawing kit, raised line paper, sensory quill, tactile graphics kit, optical – to tactile converter, templates, thermophom machine, embosser and audio books. A study to investigate how effectively they could be applied to LVI in South Western Uganda would help LVI to benefit from them since they were being used by LVI in other developed countries.

REFERENCES

- ACPET – Fact sheet (2012). Teaching strategies for students with vision impairment. Australia: UniAbility series.
- Agaba, M. & Bazira, J. (2014). *The etiology and antibiogram of bacterial causes of conjunctivitis among patients attending the eye clinic at Rugarama hospital in South Western Uganda*. *Ophthalmology Research: An International Journal* 2 (6): 378 – 383, international www.sciencedomain.org. 5TH September 2015
- Akyeampong, K., Djangmah, J., Seidu, A., Oduro, A., & Hunt, F. (2007). *Access to Basic Education in Ghana: The evidence and the issues*. CREATE country Analytic Review. Winneba /Brighton: The University of Education at Winneba / CIE University of Sussex.
- Alenyo, D. (1995). Educational Aids for children with visual impairment. In Harknett S. (Eds). (1995). *Educational Aids: An issue in schools today*. Uganda National Institute of Special Education. Kampala – Uganda.
- Alenyo, D. (2001). *The quality of teaching children with low vision in regular classrooms in Uganda*. (Master's Thesis.) University of Oslo – Norway.
- Alliance for Equality of Blind Canadians (2011). When to Augment print with Braille for the student with low vision. Kelowna: VIY 9H2
- Allman, C.B., & Holbrook, M.C. (1999). *Providing a Braille refresher course for teachers with visual impairments and Blindness*. *Journal of Visual Impairment and Blindness*. 93 (12), 770 – 777.
- Amato S. (2002). *Standards for competence in Braille Literacy skills in teacher preparation programs*. *Journal of Visual Impairment and Blindness*, 97(4) , 240 – 243.

- Amato S. (2002). *Expanding possibilities for people with vision loss*. Journal of Visual Impairment and Blindness. 96 (3), 143 - 53.
- American Foundation for the Blind (2013). *Development of an employment integrated program for people who are visually impaired in Quebec, Canada*. Journal of Visual Impairment and Blindness. 107 (6) 481 – 495.
- American Foundation for the Blind (2015). *Family connect for parents of children with visual impairments: How students with low vision read and write*. Journal of Visual Impairment and Blindness. New York: JVI
- American Foundation for the Blind (2015). *Educational interventions for students with low vision*. Journal of Visual impairment and Blindness. Newyork: JVI
- An Azo network (2015). Centers for disease control and prevention. Antlanta: CDC
- Arter, C., (2001). The special curriculum. In Mason H., McCall, S., Arter C, McLinden and Stone J. (2001). *Visual impairment: Access to Education for Children and young people*. London: David Falcon Publishers.
- Barley, D.B., & Wolery, M. (1992). *Teaching infants and preschoolers with disabilities*. (2nd ed.) Engle wood Cliffs, NJ: Merrill.
- Barnes, S. B., Whinnery, K, W. (2002). *Exceptional Children*. Effects of Functional Mobility Skills training for Young Students with Physical Disabilities. Institute of Education Sciences. Vol. 68,3; PP.313 – 324
- Best, A. B. (1992). *Teaching children with visual impairments*. Open University Press. Philadelphia.
- Bray, M., Brown, A. & Green, T.D.(2004). *Technology and the diverse learner: A guide to classroom practice*. Thousand Oaks CA:Corwin Press, INC.

- Brown, C. (2013). *Environmental checklist for developing independence*. Texas school for the Blind and Visually Impaired. Austin, TX: Texas school for the Visually Impaired.
- Candiru, E.G. (2002). Techniques for teaching reading and writing Braille. In Okot D. and Olwol G. (Eds). 2002. *Working with persons with communication difficulties*. Uganda National Institute of Special Education. Kampala
- Castillo, J.J. (2009). Research population. Explorable.
[https://explorable.com/population – sampling](https://explorable.com/population-sampling) Retrieved June 14th 2015.
- Catom, H., Pester, E., & Bradley, E. J. (1990). *Reading again: A Braille program for adventitiously blinded print readers*. Louisville, K. Y: American Printing House for the blind.
- Chaluda, A. (2014). Long Path to Achieving Education for All: *School Access, Retention and learning in 20 countries*. Education Policy and Data center. Washington: EPDC.
- Cheadle, B. (2005). Special Issue: Low vision and Blindness: Twelve tips for classroom teachers. *The National Federation of the Blind for Parents and Teachers of Blind children*. 24 (3)
- Chen, Deborah, Smith & Julie (1992). Developing Orientation and Mobility Skills in Students who are Multi handicapped and visually impaired. Institute of Educational Sciences. ERIC
- Cherry, K. (2009). Researcher's replicate: Milgram's Famous obedience experiment. *International journal*. (US published).40 (3) pp.13
- Cohen, L., & Marion L. (2007). *Research Methods in Education*. London and New York: Routledge Taylor & Francis Group.

- Corn, A.L., & Koenig, A. J. (2002). Literacy for students with low vision. A framework for delivering instruction. *Journal of visual impairment and blindness*. 96, 305 – 321.
- Cowan, C. (2012) Tips for working with Blind students. Texas: Texas school for the Blind and Visually impaired.
- Curry, L.A., Ingrid, M., Nembhard, Elizabeth, H., & Bradley E. H. (2009). Qualitative and mixed methods Provide unique contributions in research. Yale school of Public Health: New Haven.
- Cutsforth (1933), in Scholl, G.T. (Ed.) 1986. *Foundations of Education for blind and visually handicapped children and youth: Theory and practice*. New York: American Foundation for the blind. INC.
- Demario, Norma, C., Lian, & Ming – Gon, J. (2000). Teachers' perceptions of need for competency in transcribing Braille materials in the Nemeth code. *Journal of Visual impairment and Blindness*. 96 (1), 7 – 14
- Doctoroff, S. (2001). Early childhood Special Education. *Adapting the physical environment to meet the needs of all young children to pray*. Orono: Maine.
- Doshi, N.R. (2013). Sampling methods: Systematic sampling. Auditing through sample techniques. *Dubai. UAE, Company formation*. 14(14), 532-550.
- ERIC, E. C. (2003). The *ERIC Clearinghouse on Disabilities and Gifted Education*. <http://eric.hoagiesgifted.org>. Retrieved 5th June 2015
- Erin, J.N. (2003). Educating students with visual impairments. *Eric Clearing House on Disabilities and Gifted Education* (ERIC EC), Digest
- Eschenbach (2011). *The benefits of using low vision devices*. USA: Optik America.

ESSAPR FY (2011 / 2012). The Education and Sports Annual Performance Report covering the period of 1st July 2011 – 30th June 2012. Addressing learning outcomes for enhanced competences. Education planning and policy analysis department, Kampala : Ministry of Education and Sports.

Foundation for Fighting Blindness (2015). Literacy for students with low vision:

Visions 2015: 1046/(800)683 – 5555

Frieman, B.B., (2004). State Braille standards for teachers of students who are blind or visually impaired. A National survey. NFB's publication. *The Braille Monitor*.

Gall, M. D., Borg, W.R., & Gall, J. P., 1996; *Educational Research. An introduction*.

(6th ed.) New York: Longman.

Hacker (2015). In Merriam – webstar.com. Retrieved May 8th 2011 from

[http://www.merriam – webstar.com / dictionary/hacker](http://www.merriam-webstar.com/dictionary/hacker).

Hall A. (1986). Psycho educational assessment. In Scholl, G.T. (Ed.)

Foundations of Education for blind and visually handicapped children and youth: Theory and practice. New York: American Foundation for the blind. INC.

Hall, G.T. (ed.) (1986). *Foundations of Education for blind and*

visually handicapped children and youth: Theory and practice. New York: American Foundation for the blind. INC.

Hall, T.,& Gevue (2004). *Curriculum modification. Center on assessing the general curriculum*. Bostone: Silver College.

Harwell, M.R. (2011). Research design: *Qualitative / quantitative and mixed methods*.

Inc. Conrad & R.C. Serlin (eds). *The sage handbook for research in*

- Education: Pursuing ideas as the keystone of exemplary inquiry.* (2nd ed.) Edition). Thousand Oaks. CA: Sage.
- Heward, W. L. (2000). *Exceptional Children: An I introduction to special Education.* (6th ed.) Upper Saddle River, NJ: Prentice Hall.
- Hill, E.W. (1986). Orientation and Mobility, In Scholl G.T. (1986). *Foundations of Education for Blind and Visually Handicapped Children and Youth. Theory and Practice.* New York: American Foundation for the Blind. INC
- Hill, J.L. (1990). Mainstreaming Visual Impairment and Blindness: *The need for modifications.* *Journal of Visual Impairment and Blindness.* Institute of Education sciences. Eric
- Holbrook, M.C., & Koenig, A. (1992). Teaching Braille reading to students with low vision. *Journal of Visual Impairment and Blindness.* 86, 44 – 48.
- Holbrook, M. C. (1999). *Foundations of Education. History and Theory of teaching Children and Youths with Visual Impairments.* Colombia: AFB Press. American Foundation for the Blind.
- Hung, H.Y. (2008). *The state of Braille literacy in Taiwan. (Doctoral thesis.)* Ohio State University. USA.
- ICEVI (2005). *An investigation into the Educational Inclusion of children with visual impairment in Uganda.* Kampala: The International Council for Education of people with Visual impairment. Ministry of Education and Sports.
- Ingber, J. (2012). Technology news for people who are visually impaired: From the American foundation for the blind. *AFB Access world magazine. National Library service for the blind and physically Handicapped.* 800 – 424 – 8567.

- Jacobs R.M., (1997). Educational research: *Sampling population*. The American Educational Research Association.
- James, W., (1907). Pragmatism: A new name for some Old Ways of Thinking; in Dewey, J., (1999). *The Essential Dewey*. Bloomington: Indiana University Press.
- Jamieson, M., Parlett M., & Pocklington (2000). Towards integration. A study of Blind and partially sighted children in ordinary schools. *A report of the national foundation for educational research in England and Wales*. Windsor: NFER publishing company LTD
- Jennings, J. (1999). Decision – Making in the choice of the Primary Literacy Medium for pupils with severe Visual Impairments. *British Journal of Visual Impairment*. 17 (1), 11 – 15.
- Johnson, L. (1996). The Braille Literacy crisis for children. *A journal of visual impairment & Blindness*.90, 276 – 278.
- Judd, C.M, Smith & Kidder (1991). *Research Methods and social relations*. (6th ed), New York. Harcourt Brace Jovanovich College Publishers.
- Koenig, A.J., & Holbrook M.C. (2000). Assuring quality literacy instruction in Braille literacy programs. *Journal of Visual Impairment and Blindness*, 99, 677 – 694.
- Koga, N., & Hall, T. (2004). Curriculum Modifications. Wakefield M.A: National Centre on Accessing the Genera Curriculum.
- Kelly, E., Lusk, & Anne, L.C. (2006). *Learning and using print and Braille: A study of Dual – media learners, Part 2*. New York : JVIB.

- Kristensen, K., Omagor, L. M., & Onen, N. (2003). The inclusion of learners with barriers to learning and development into ordinary schools settings: A challenge for Uganda. *British journal of Special Education*, 30 (4), 194 – 201.
- Kombo, D. K. & Tromp, D. L. (2006). Proposal and thesis writing. Mukuyu Kenya: Don Bosco Printing Press.
- Knowlton, M., & Berger, K. (1999). Competences required of Braille teachers. *RE: View: Rehabilitation Education for Blindness and Visual Impairment*. REFBVI. 30(4) 151 – 160
- Koenig, A. J. (1996). Selection of learning and literacy media for children and youths with low vision. In Corn A.L. & Koenig A. J. (Eds). *Foundations of low vision: A clinical and functional perspective*. (PP. 246 – 279). New York: AFB Press.
- Kothari, C.R. (2004). *Research methodology*. (2nd ed.) New Age Int. Publishing.
- Lynch, P. & McCall S. (2007). The Itinerant Teachers' Role in Educational inclusion of children with low vision in Local schools in Africa. *The Educator*. 20 (62) 26 – 27
- Lynch, P., McCall, S., Douglas, G., & Bayo, A. 2011. Inclusive Education practices in Uganda – Evidencing of Itinerant teachers who Work with children with visual impairment in local mainstream schools. *International Journal of Inclusive Education*. 15 (10), 1 – 6.
- Lockerby, C., Breau, R., Zuvela & Biljana (2006). Enhancing Digital Access to Learning Materials for Canadians with Perceptual Disabilities: A

- Pilot Study - Research Report. Journal of Visual impairment and Blindness.*
- Canada. ERIC Number: EJ745983.
- Mack, N., Woodson, C., Macqueen, K.M., Guest, G., & Namey, E. (2005).
Qualitative research methods. A data collector's field Guide. Family Health
International.
- Malmstrom, T.K. (2009). *Population and sampling*. Saint Louis University.
- McCall S., (2001). Historical perspectives. In Mason, H., McCall, S., Arter, C.,
McLinden, M., & Stone, J. (2001). *Visual impairment: Access to Education
for Children and Young people*. London: David Fulton Publishers.
- Miles, M.B. & Huberman, A.M. (1994). *Qualitative data analysis*. London:
Sage Publications.
- Ministry of Education and Sports (1998). *UPE handbook: An outcome of the
National conference on UPE programme*. Kampala: Centre for Applied
Research in Development (CARD)
- MOES (2009). *Uganda Education Statistics Abstract*. Kampala: MOES
- MOES Sector fact sheet (2000 – 2012). The republic of Uganda. Kampala: LDC
Publishers Printing Press.
- Moon, T. R., & Callahan, C. M. (2001). Curricular modifications, family outreach and
a mentoring program: Impacts on achievement and gifted identification in
high-risk primary students. *Journal for Education of the Gifted*. 24(4), 305-
321.
- Moy, P. (1990). *Libraey Media Centre design considerations for physically disabled
students. Accessibility for disabled children*. New York: Department of
Education, Resource Education Centre.

- Mugenda, G., & Mugenda, O.M. (2012). *Research methods Dictionary. Applied research and training Services*. Nairobi, Kenya. ARTS Press.
- Neale, W. C., (1998). Property: Law, Cotton – Picking Hands, and Implicit Cultural Imperialism. Pg. 47 – 66 in R.C.Hunt & G.L.Antonio (eds.) *Property in Economic Context*. New York: University Press of America
- Njoroge, M.C.N., (1991). *Factors influencing initiation of successful mainstreaming of visually handicapped students in Kenya. (Doctoral dissertation.)* University of Texas AT AUSTINE.
- Nzoka, S.M. (2011). *Establishing Braille proficiency levels among primary school teachers of learners who are blind in Kenya. (PhD Thesis.)* Kenyatta University.
- Njuki, E.P. (1995); The role of educational aids in improving the quality of education. In Harknett S. (Eds). *Educational Aids: An issue in schools today*. Kampala: Uganda National Institute of Special Education.
- Ortega, B. (1999). *Visual and Tactile learning styles*. Demand Media; INC.
- Ozgur, Aydin, Z., Kiray, & Huseyin, S. (2007). *Evaluating Audio Books as Course Materials in Distance Education: The Experiences of blind learners*. Turkey. ERIC 6(4) Article 2.
- Phelan, C., Wren, J. (2006). (n.d.) *Exploring reliability in academic assessment*. UNI office of academic Assessment. Retrieved September 16, 2014 from <https://www.uni.edu/chfasoa/reliabilityandvalidity.ht>.
- Palat, C. (2008). Educating Blind and Visually Impaired students. *Creating a positive relationship with your child's teacher or tutor / developing your child's inner genius*. TutorFi.com Wikipi Media Commons.

- Patient information (2013). [http://patient.info/doctor/infective – conjunctivitis – pro](http://patient.info/doctor/infective-conjunctivitis-pro)
- Plato (2013). Pragmatism. <http://plato.stanford.edu/entries/pragmatism> Retrieved 3rd, June 2015
- Professional testing INC (2006). [www.proftesting.com/test_quality - reliability pdf](http://www.proftesting.com/test_quality-reliability.pdf). Retrieved 16th May 2014
- Rabari, J. A. (2011). *Creativity Extent, Perceptions, Correlations and differences among secondary school physics students in Nairobi province, Kenya*. Kenyatta University. Doctoral thesis.
- Radhakrishna, R.B. (2014). *Tips for developing and testing questionnaires /instruments*. The Pennsylvania State University. Brr100@psu.edu Retrieved 19th Jan 2015
- Ribot, J.C. & Peluso, N.L. (2003.) A theory of Access. *Rural sociology* 68 (2). The rural sociological society. *Rural Sociology*: 143 - 181
- Roberts, F.K. (1986). Education for the visually handicapped: A social and educational history. In Scholl, G.T. (Ed.) *Foundations of Education for blind and visually handicapped children and youth: Theory and practice*. American Foundation for the blind. INC. New York.
- School of Education, Kenyatta University (2013). *Revised guidelines for writing academic research proposals and thesis in the school of education*. Nairobi: Kenyatta University.
- Selers, Sarah, W., Fisher, Anne,G., Duran, & Leslie, J. (2001). Validity of the Assessment of Motor and Process Skills with Students Who are Visually Impaired. *Journal of Visual Impairment & Blindness*. 95(3) 164 – 67

- Shelby, A. (2013). *Teaching disabled students. Instructional strategies to help students who are blind or visually impaired*. Morris: Walters State Community
- Sherrill, C. (2008). *Adapted physical activity: Recreation and Sport Cross disciplinary and lifespan*. Boston: McGraw – Hill.
- Stewart, D.W., & Shamdasani, P.N. (1990). *Applied social research methods book 20. Shaping policy and development*. Uk: 1st Edition, Sage Publications.
- Stone, J. (2001). The pre – school child. In Mason, H., McCall, S., Arter, C., McLinden, M., & Stone, J. (2001). *Visual impairment: Access to Education for Children and young people*. London: David Fulton Publishers.
- Suk – Hyang, L., Wehmeyer, M.L., Soukup, J.H., & Palmer, S. B. (2010). Impact on curriculum modifications on Access to general Education curriculum for students with disabilities: *Exceptional children*. Council for Exceptional children.
- Switlick, D.M. (1997). Curriculum Modifications and adaptations. In Bradley, D. F., King – Sears, M. E. & Switlick, M.D. (Eds). *Teaching students in inclusive settings*. (PP: 225 – 239). Nedham Heightd, M.A: Allyn & Bacon.
- Takeshita, B. (2008). *Developing your child's vision: A guide for parents of infants and young children with visual Impairments*. Whilshire, Los Angeles: AFB Family Connect.
- Tambartun Resource Centre (2001). Mobility techniques. *Teachers' guide*. Tyrkkerihuset skipnes, Trondheim: Tambartun Resource Centre.
- Tashakkori, A., & Teddlie, C.H. (2009). Integrating qualitative and quantitative

- approaches to research; in Rog & Brichman (Eds.) *Handbook of applied social sciences*. Texas: USA Sage publications.
- Teddy, C. & Tashakkori, C. (2009). *Foundations of Mixed methods Research*. Thousands Oaks, CA: Sage Publications.
- Teijlingen, E., & Hundley, V. (2002). *The importance of pilot studies*. *Department of public Health*. New Yoyk: Nursing Standard publisher. 16(40) 33 – 36
- Tellevik, J.M. & Elmerskog, E. (2001). The Mobility and Rehabilitation program in Uganda. *A social cultural approach to working with visually impaired persons*. Norwegian support system for special education. Tronheim: Tarnbartun resource center. Norway.
- Tieso, C. (2001). Curriculum: Broad brushstrokes or Paint – by the numbers. *Teacher Education*. 363(3), 199 – 213.
- The White Paper on Education (1992). *Review on Education policy in Uganda*. Government of Uganda. Entebbe: Government Printers.
- Todd, J.H. (1986). Resources, Media, and Technology. in Scholl, G.T. (1986). *Foundations of Education for Blind and Visually Handicapped Children and Youth: Theory and practice*. American Foundation for the blind. INC. New York
- UNBOS (2012). Uganda National Bureau of Statistics 2012. Statistical abstract. Entebbe: Government Printers. Uganda.
- UNCDC (2011). *The Primary School Curriculum*. Uganda National Curriculum Development Centre. The Republic of Uganda, Ministry of Education and Sports. Entebbe: Government Printers.

- UNCST (2014). *National Guidelines for Research involving Humans as Research Participants*. Kampala: UNCST
- UNEB records (2008 – 2012). Uganda National Examination Board. Ministry of Education and Sports. Kampala: Government Printers.
- UNESCO Report (2001). *Including the excluded: Meeting Diversity in Education*. Paris: UNESCO.
- UNESCO (2011). *Life Skills curriculum for Primary School teachers in Uganda*. Kampala: UNESCO
- UNICEF Report (2003). *Inclusive Education Initiatives for children with disabilities. Lessons from the East Asia and Pacific region*. Thailand: UNESCO
- UNICEF Report (2007). *A Human Rights – Based Approach to Education for all. A Framework for the realization of children’s right to Education and rights within Education*. New York: NY
- UNICEF Report (2012). *Implementing Inclusive Education programs and allocating resources in Africa*. New York: UNICEF.
- UPE report (2012). UPE performance. Kampala: Government of Uganda.
- UPE report (2014). UPE performance. Kampala: Government of Uganda.
- Uyirwoth, R.H. (2008). *Factors influencing the social functioning of children with low vision in regular classes in Nebbi District, North Western Uganda*. (Master’s thesis.) University of Oslo, Norway.
- Valerie, J., Easton & McColl, J.H. (1997). *Statistics Glossary. STEPS*.
<http://www.stats.gla.ac.uk/steps/glossary/alphabet.html>.
- Wamunyi, C. M. (2008). *A study of opinions of primary school teachers towards inclusive Education in central Kenya*. (Doctoral thesis.) Kenyatta University.

Wikimedia project (2015). The free encyclopedia. Wikimedia Foundation

Winkler J.W., & William, E. (1986). Teaching Exceptional Children. Reinforcing
Mobility Skills with severely Handicapped Students. Institute of Educational
Sciences. ERIC .

World Health Organization (2015). Wikipedia Project. Wikimedia Foundation.

Yount, R. (2006). Research design and statistics for Christian ministry. *Descriptive
statistics: Populations and sampling*. (4th ed.)

www.napce.org/articles/Research%20Design%20Yount/05/_analysisfloor_4th_pdf

Retrieved: 6th March 2014.

Appendix 2: Budget

This study will be funded by Kyambogo University, the main sponsor.

Proposed Budget for the study

No	Item	Cost (UGX)
1	Proposal development	800,000
2	Stationery and recording items for research	1,300,000
3	Licensing fee to UNCST	50,000
4	Fee for Ethical Research Committee	900,000
5	Pilot study	1,000,000
6	Transport (researcher and 2 assistants)	1,000,000
7	Per diems (researcher and 2 assistants)	3,500,000
8	Thesis writing	1,500,000
9	Thesis production	1,500,000
	TOTAL	11,550,000

APPENDIX 3

QUESTIONNAIRE FOR TEACHERS OF LEARNERS WITH VISUAL IMPAIRMENT

TEACHERS' RESPONSE FORM

Dear colleague in the profession,

This is to request you to complete this form. It is being used in the enquiry on strategies for enhancing access to Basic Education for Learners with Visual Impairment (LVI) in regular UPE schools in South Western Uganda. The information you provide will be treated with confidentiality, and will be used only for research purposes. Your own personal identity by name is not required. Your assistance will be highly appreciated. Please make a tick in the appropriate box(es).

A. Demographic data

1. Name of school

2. Gender: Male

Female:

3. Your highest qualifications: Bachelors degree:

Diploma:

Grade 111 teacher's certificate:

Other: (specify)

4. Specialized training and area of specialization: Visual impairment

Hearing impairment

Learning disability

Deaf blindness

Other: (specify)

Your age range (years): 20 – 30

31-40

41-50

51-60

5. No. of years teaching LVI:



6. How many learners are identified blind and with low vision in your class?

Blind Low vision

B. General strategies for enhancing access to Basic Education

i. How do you manage to cope with the work load in a class with large numbers of children as well as the special commitment to learners with visual impairment?

.....
.....

What challenges do you face in your service delivery?

.....
.....

ii. Is there any encouragement and support from the head teacher or any other organization that positively drives you to support the LVI?

.....

If yes, explain the kind of support given to you.

.....
.....

iii. Is there a resource room in your school? Yes No.

iv. If yes, how do you use it in the teaching/learning process for LVI?

.....
.....

What materials/equipment for use in the teaching / learning of LVI are present in the resourseroom?

.....
.....

If there is no resource room available, where do you provide extra support to LVI in specialized skills like Braille?

.....
.....



v. What is your personal opinion on the teaching of LVI together with sighted children in regular UPE Schools as compared to established integrated schools?

.....
.....

vi. What suggestion do you have for improving the teaching LVI from regular UPE settings?

.....
.....

C. Braille skills for teachers

i. What system(s) of writing are used by the LVI in your class?

Braille Handwritten (ordinary) Handwritten (large print)

All the above others: (specify)

ii. Indicate the level of your Braille skills by putting a tick in the box(es) next to the skill(s) you have:

Grade 1 English Braille Grade II English Braille Simple Mathematics Braille

Full Mathematics Braille Notation

iii. What book or manual guide do you use in teaching Braille?

.....

What kind of in – service training have you taken part in with respect to teaching Braille to learners with visual impairment?

.....



D. Availability of adapted materials and equipment

(**Instructions:** Indicate the number of materials available in your classroom and the number required.)

Basic Braille materials and equipment		
Material	Number required	Number Available
Slates		
Styluses		
Cubes		
Cubeflames		
Braille paper		
Perkins Brailleurs		
Marbug		
English Braille textbooks pupils' copies		
English Braille textbooks teachers' copies		
Braille readiness materials		
Drawing Kits		
Basic mathematics equipment		
Abaci		
Taylor flames		
Taylor Types		
Measuring devices (rulers, compass, protractors)		
Mathematics Braille textbook teachers' guide		
Shapes		
Basic low vision materials and devices		
Large print textbooks		
Felt tip / thick pens		
Magnifying glasses		
Telescopes		
Lenses / spectacles		
Contrast enhanced glasses		
Large beamed hats		



E. Skills in Orientation and Mobility (O&M) and Activities of Daily Living (ADL)

i. Do you personally have skills in teaching / training O&M and ADL to LVI? Yes No

ii. If yes, how often do you make deliberate efforts to give the training to LVI in the two skills mentioned above?

.....

iii. Are the training in O&M and ADL reflected on the class time table?

.....

iv. What difficulties do you experience while offering O&M ADL skills to LVI?

.....

.....

.....

F. Adaptation of the physical environment

Indicate the adaptations have you made in the thephysical environment to enable LVI participate freely and safely in activities?

i. Adaptations made inside the classroom.

.....

.....

ii. Adaptations made outside the classroom (in the school compound).

.....

.....

iii. What contribution has the school administration made towards adapting the physical environment to facilitate participation of LVI in ctivities?

.....

.....



G. Adaptation of the intended curriculum

Instructions: Allocate scores to the items in the table below, basing on the curriculum modifications made in your school:

ITEM	ITEM VALUE	SCORE
CONTENT		
Modification of content	10	
TEACHING METHODS		
Remedial lessons conducted in the unit	9	
Braille / Large Print reference information	8	
Excursions	7	
EXAMINATIONS MODIFICATIONS		
Brilled questions	6	
Large Print questions provided	5	
Extra time provided	4	
PARTICIPATION IN SPORTING ACTIVITIES		
Goal Ball	3	
Show down	2	
Adapted athletics	1	
TOTAL VALUE	55 (100%)	

END

Thank you very much for your assistance.



APPENDIX 4

INTERVIEW SCHEDULE FOR HEAD TEACHERS

1. How long have you been a head teacher in this school?
2. How many learners are blind and how many are with low vision in the school?
3. For how long have LVI been enrolled in this school?
4. How many specialized teachers are there in the school?
5. What effort has the National Curriculum Development center (NCDC) made towards the training of teachers regarding curriculum adaptations for learners with visual impairment?
6. What material or financial support do you receive from the district Education office / NGOs as far as the education of learners with visual impairment is concerned?
7. What major difficulties do you encounter in educating learners with visual impairment?
8. What is your view on educating learners with visual impairment in regular UPE schools as compared to established integrated schools?
9. Suggest strategies that can enhance access to quality Basic Education for learners with visual impairment in regular UPE schools.

END



APPENDIX 5
INTERVIEW SCHEDULE FOR INSPECTORS OF SCHOOLS

1. For how long have you served as an inspector of schools in this district?
2. How many regular UPE schools have enrolled LVI in the district?
3. For how long have LVI been attending regular UPE schools in this district?
4. What consideration does the district have for providing specialized teachers in the regular UPE schools where LVI have been enrolled?
5. What material or financial support does the district office provide to these schools?
6. What is your view on educating learners with visual impairment in regular UPE schools as compared to established integrated schools?
7. What effort has the National Curriculum Development center (NCDC) made towards the training of teachers regarding curriculum adaptation for learners with visual impairment?
8. Suggest strategies that can enhance access to quality Basic Education for learners with visual impairment in regular UPE schools.

END



APPENDIX 6:

FOCUS GROUP DISCUSSION SCHEDULE FOR LEARNERS WITH VISUAL IMPAIRMENT

Guidelines for discussion

1. General strategies for enhancing access to Basic Education

- Instruction process
- Preferred setting: Established integrated school / Regular UPE school
- Strategies to enhance access to quality Basic Education in regular UPE schools

2. The teachers' knowledge in Braille

- Level of Braille used
- Difficulties experienced when reading / writing Braille

3. Availability of materials / equipment

- Available materials / equipment
- Preferred materials / equipment
- Adaptation of learning materials

4. Skills in O&M / ADL**(a) O&M**

- Difficulties experienced during movement in the school compound
- Difficulties experienced during movement in the classroom

(b) ADL

- ADL performed independently
- Challenges experienced while performing ADL
- Adaptations required to improve ADL



5. Adaptation of physical learning environment

- Obstacles within the classroom environment
- Obstacles within the school compound
- Adaptations required in the physical environment

6. Adaptation of intended curriculum

- Adaptation of content
- Adaptation of teaching methods
- Examination modifications
- Participation in co-curricular activities

END



APPENDIX 7

OBSERVATION SCHEDULE FOR LVI

Observation: A non-participant observation

A. General strategies for enhancing access to Basic Education						
SN	Content	Not at all 1	Little 2	Fairly good 3	Good 4	Very good 5
1.	The teacher is always in present and attending to LVI in class					
2.	Teacher involves LVI in the lesson and gives them feedback					
3.	LVI participate in learning activities					
B. Braille skills for teachers of LVI						
1.	Teacher teaches Braille correctly					
2.	LVI read Braille correctly					
3.	LVI write Braille correctly					



C. Availability of learning materials and equipment for LVI

Use of adapted learning materials and equipment						
NS	Content	Not at all	Little	Fairly good	Good	Very good
1.	Teacher uses adapted educational materials when teaching LVI					
2.	LVI participate in learning activities using adapted educational materials					
3.	Locally improvised materials used in the teaching / learning process					

D. Skills acquired by LVI in O&M / ADL

Proper application of O&M skills		
Specific O&M skill	Skill Value	Score
Independent travel	4	
Proper white cane use	3	
Sighted guide technique	2	
Protective technique	1	
Total score	10	
Percentage	100%	

Proper application of ADL skills		
Specific ADL skill	Skill Value	Score
Clean bodies	8	
Brushed teeth	7	
Cut figure nails	6	
Clean clothes	5	
Combed hair	4	
Smart dressing	3	
Neatly arranged belongings	2	
Proper dining etiquette	1	
Total score	36	
Percentage	100%	



E. Adaptation of the physical environment

Item adapted	Item value	Score
Steady lighting	9	
Enough space between seats	8	
Easy access to learning centres	7	
Contrast enhanced chalkboards	6	
Clear shorelines to major places	5	
Clear landmarks	4	
Raised surface around latrines / toilet hole	3	
Contrasting colours on doors	2	
Obstacle free environment	1	
Total item score	45	
Percentage	100%	



APPENDIX 8 a**CONSENT FORM FOR HEADTEACHERS AND INSPECTORS OF SCHOOLS**

Title of the Study: Strategies for Enhancing Access to Basic Education for learners with Visual Impairments in Universal Primary Education Schools in South Western Uganda.

Dear respondent,

I am Odette Niyisabwa, a student of Kenyatta University pursuing a PhD in Special Needs Education. I am conducting a research on strategies for Enhancing Access to Basic Education for learners with Visual Impairments and I kindly request for acceptance to take part in this study. You have been chosen to participate in this study because your position and the services you offer directly benefit learners with Visual impairments.

Background to the Study:

The study is designed to investigate strategies for enhancing Access to Basic Education for learners with Visual impairments in Universal Primary Education Schools in South Western Uganda. The government of Uganda through the White Paper on Education emphasized the integration of persons with disabilities into ordinary schools, and committed itself to supporting institutions providing special Needs Education. The implementation was spearheaded by the president of Uganda His Excellency Yoweri Kaguta Museveni. During presidential campaigns 1996, he pledged to offer free Education to all school age going children within government aided schools, and priority was to be given to children with disabilities. According to UPE report 2002, this provision attracted many learners with disabilities including those with visual impairment into UPE schools. Unfortunately, reports from government show that their learning needs were no met. (Ministry of Education and Sports “MOES” fact sheet 2000 – 2012; UPE report 2012.) The purpose of this study is therefore to find out how best the learners with Visual Impairment can learn with in UPE schools.



Study Procedure:

During the study, you will be expected to participate in an interview which will last for approximately 45 minutes. The interview will be recorded by an audio recorder, and notes on the responses given will also be made. **Risks and Benefits:**

Participating in this interview may hinder you from attending to your office work for that particular period of time. There will be no direct benefit for your participation in this study. However, results from this study will be disseminated, which will be beneficial to the targeted population.

Compensation:

During your stay on the study, you will be compensated with a transport reimbursement and for the time spent on the study with a lump sum fee of UGX 15,000/=

Voluntary Participation:

Participation in this study is voluntary. You may choose to participate or withdrawal from the study at any time without penalty.

Confidentiality:

The confidentiality of your identity and information that you provide in this study will be strictly maintained. The information you will give will be protected in a secure office, and your names will not be used, but will be replaced with codes.

Contact Persons:

In case you have a complaint on the way you have been treated and pertaining your rights during the course of your participation or you have any study related questions, please feel free to contact the number below:

Name: Niyisabwa Odette

Email: niyisabwa.odette@gmail.com

Telephone number: +256 772 968 235

Signature of participant:



APPENDIX 8 b**ASSENT FORM FOR LEARNERS WITH VISUAL IMPAIRMENT**

Title of the Study: Strategies for Enhancing Access to Basic Education for learners with Visual Impairments in Universal Primary Education Schools in South Western Uganda.

Dear respondent,

I am Odette Niyisabwa, a student of Kenyatta University pursuing a PhD in Special Needs Education. I am conducting a research on strategies for Enhancing Access to Basic Education for learners with Visual Impairments and I kindly request for acceptance to take part in this study. You have been chosen to participate in this study because you a direct beneficiary of this research project.

Background to the Study:

The study is designed to investigate strategies for enhancing Access to Basic Education for learners with Visual impairments in Universal Primary Education Schools in South Western Uganda. The government of Uganda encourages the integration of persons with disabilities into ordinary schools, and committed itself to supporting institutions providing Special Needs Education. The implementation was spearheaded by the president of Uganda His Excellency Yoweri Kaguta Museveni. During presidential campaigns 1996, he pledged to offer free Education to all school age going children within government aided schools, and priority was to be given to children with disabilities. According to UPE report 2002, this provision attracted many learners with disabilities including those with visual impairment into UPE schools. Unfortunately, reports from government show that their learning needs were no met. The purpose of this study is therefore to find out how best the learners with Visual Impairment can learn with in UPE schools.

Study Procedure:

During the study, you will be expected to participate in a discussion which will last for approximately one hour. The discussion will be recorded by an audio recorder, and notes on the responses given will also be made.



Risks and Benefits:

Participating in this interview may hinder you from attending a lesson and or play with your friends for that particular period of time. You will also be observed a number of times when you are attending lessons in class, while moving about in the school compound, and when playing with your friends during break time. You will be given some refreshments (a bottle of soda and a cake) after the discussion.

Voluntary Participation:

Participation in this study is voluntary. You may choose to participate or withdrawal from the study at any time without penalty.

Confidentiality:

The confidentiality of your identity and information that you provide in this study will be strictly maintained. The information you will give will be protected in a secure office, and your name will not be used, but will be replaced with codes.

Contact Persons:

In case you have a complaint on the way you have been treated and pertaining your rights during the course of your participation or you have any study related questions, please feel free to contact the number below:

Name:Niyisabwa Odette

Telephone number: +256 772 968 235

Thumb print of learner with visual impairment

Signature of teacher:



APPENDIX 8 c

CONSENT FORM FOR TEACHERS

Title of the Study: Strategies for Enhancing Access to Basic Education for learners with Visual Impairments in Universal Primary Education Schools in South Western Uganda.

Dear respondent,

I am Odette Niyisabwa, a student of Kenyatta University pursuing a PhD in Special Needs Education. I am conducting a research on strategies for Enhancing Access to Basic Education for learners with Visual Impairments and I kindly request for acceptance to take part in this study. You have been chosen to participate in this study because your position and the services you offer directly benefit learners with Visual impairments.

Background to the Study:

The study is designed to investigate strategies for enhancing Access to Basic Education for learners with Visual impairments in Universal Primary Education Schools in South Western Uganda. The government of Uganda through the White Paper on Education emphasized the integration of persons with disabilities into ordinary schools, and committed itself to supporting institutions providing special Needs Education. The implementation was spearheaded by the president of Uganda His Excellency Yoweri Kaguta Museveni. During presidential campaigns 1996, he pledged to offer free Education to all school age going children within government aided schools, and priority was to be given to children with disabilities. According to UPE report 2002, this provision attracted many learners with disabilities including those with visual impairment into UPE schools. Unfortunately, reports from government show that their learning needs were not met. (Ministry of Education and Sports “MOES” fact sheet 2000 – 2012; UPE report 2012.) The purpose of this study is therefore to find out how best the learners with Visual Impairment can learn with in UPE schools.



Study Procedure:

During the study, you will be expected to fill a questionnaire which will last for approximately 30 minutes. You will be given sufficient time to fill the questionnaire before handing it back to the researcher.

Risks and Benefits:

Participating in this interview may hinder you from attending to your pupils in class for that particular period of time. There will be no direct benefit for your participation in this study. However, results from this study will be disseminated, which will be beneficial to the targeted population.

Voluntary Participation:

Participation in this study is voluntary. You may choose to participate or withdraw from the study at any time without penalty.

Confidentiality:

The confidentiality of your identity and information that you provide in this study will be strictly maintained. The information you will give will be protected in a secure office, and your names will not be used, but will be replaced with codes.

Contact Persons:

In case you have a complaint on the way you have been treated and pertaining your rights during the course of your participation or you have any study related questions, please feel free to contact the number below:

Name: Niyisabwa Odette Email: niyisabwa.odette@gmail.com

Telephone number: +256 772 968 235

Signature of participant:



APPENDIX 8 d

CONSENT FORM FOR PARENTS OF LEARNERS WITH VISUAL IMPAIRMENT

Title of the Study: Strategies for Enhancing Access to Basic Education for learners with Visual Impairments in Universal Primary Education Schools in South Western Uganda.

Dear parent,

I am Odette Niyisabwa, a student of Kenyatta University pursuing a PhD in Special Needs Education. I am conducting a research on strategies for Enhancing Access to Basic Education for learners with Visual Impairments and I kindly request for acceptance of your child to take part in this study. Your child has been chosen to participate in this study because he / she is a direct beneficiary of this research project.

Background to the Study:

The study is designed to investigate strategies for enhancing Access to Basic Education for learners with Visual impairments in Universal Primary Education Schools in South Western Uganda. The government of Uganda encourages the integration of persons with disabilities into ordinary schools, and committed itself to supporting institutions providing Special Needs Education. The implementation was spearheaded by the president of Uganda His Excellency Yoweri Kaguta Museveni. During presidential campaigns 1996, he pledged to offer free Education to all school age going children within government aided schools, and priority was to be given to children with disabilities. According to UPE report 2002, this provision attracted many learners with disabilities including those with visual impairment into UPE schools. Unfortunately, reports from government show that their learning needs were not met. The purpose of this study is therefore to find out how best the learners with Visual Impairment can learn with in UPE schools.

Study Procedure:

During the study, your child will be expected to participate in a discussion which will last for approximately one hour. The discussion will be recorded by an audio recorder, and notes on the responses given will also be made.



Risks and Benefits:

Participating in this interview may hinder your child from attending a lesson and or play with his/her friends for that particular period of time. The child will also be observed a number of times while attending lessons in class, while moving about in the school compound, and when playing with friends during break time. The child will be given some refreshments (a bottle of soda and a cake) after the discussion.

Voluntary Participation:

Participation in this study is voluntary. Your child may choose to participate or withdrawal from the study at any time without penalty.

Confidentiality:

The confidentiality of your child's identity and information that he/she will provide in this study will be strictly maintained. The information given will be protected in a secure office, and the child's names will not be used, but will be replaced with codes.

Contact Persons:

In case your child gets a complaint on the way he/she has been treated pertaining his/her rights during the course of participation or gets any study related questions, please feel free to contact the number below:

Name: Niyisabwa Odette

Telephone number: +256 772 968 235

Signature of parent

Signature of teacher:



Appendix 9 a: Letter of Introduction from Kenyatta University



KENYATTA UNIVERSITY GRADUATE SCHOOL

E-mail: kubps@yahoo.com
dean-graduate@ku.ac.ke
 Website: www.ku.ac.ke

P.O. Box 43844, 00100
 NAIROBI, KENYA
 Tel. 020-8704150

Our Ref: E83/EA/22854/11

Date: 31st July, 2014

The Principal Secretary,
 Higher Education, Science & Technology,
 P.O. Box 30040,
NAIROBI

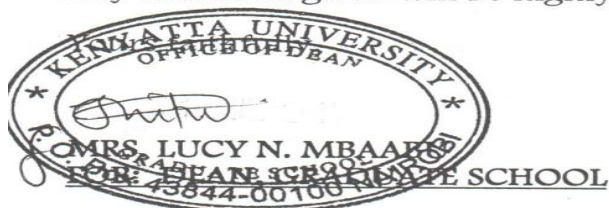
Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION
MS. ODETTE NIYISABWA - REG. NO. E83/EA/22854/11

I write to introduce Ms. Odette Niyisabwa who is a Postgraduate Student of this University. She is registered for a Ph.D. degree programme in the Department of Special Needs Education in the School of Education.

Ms. Odette intends to conduct research for a project entitled, "Strategies for Enhancing Access to Basic Education for Learners with Visual Impairments in Universal Primary Education Schools in South Western Uganda".

Any assistance given will be highly appreciated.



LNM/cww

Appendix 9b: Letter of Approval of Research Proposal from Kenyatta University



KENYATTA UNIVERSITY GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
kubps@yahoo.com
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 020-8704150

Internal Memo

FROM: Dean, Graduate School **DATE:** 31st July, 2014
TO: Ms. Odette Niyisabwa **REF:** E83/EA/223854/11
C/o Special Needs Education Department
SUBJECT: APPROVAL OF RESEARCH PROPOSAL

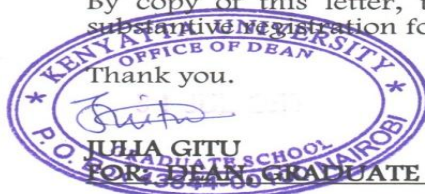
We acknowledge receipt of your revised Research Proposal as per our recommendations raised by the Graduate School Board of 16th July, 2014.

You may now proceed with your Data collection, subject to clearance with the Principal Secretary, Higher Education, Science & Technology.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking Forms per semester. The form has been developed to replace the Progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

By copy of this letter, the Registrar (Academic) is hereby requested to grant you substantive registration for your Ph.D. studies.

Thank you.



CC. Registrar (Academic)
Chairman, Special Needs Education Department

Supervisors:

1. Dr. Chomba Wa Munyi
C/o Special Needs Education Department
Kenyatta University
2. Dr. Michael N. Njoroge
C/o Special Needs Education Department
Kenyatta University

Appendix 10: Application for Permission to Conduct Research

UNCST/RC 1

THE REPUBLIC OF UGANDA**UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY****APPLICATION FOR PERMISSION TO CONDUCT RESEARCH**

(N.B. Read instructions and guide in Annexes I and II before completing this form)

FOR OFFICIAL USE

APPLICATION No.

FIELD OF RESEARCH

PROJECT No.

.....

.....

SECTION A: PARTICULARS OF APPLICANT

1. Full Name NIYISABWA ODETTE
(Underline Surname)
2. Male [] Female [] (Please tick (3))
3. Date and Place of Birth 06TH APRIL 1970
4. Marital Status MARRIED
5. Nationality UGANDAN
6. (i) Permanent Address PO BOX 28377
KAMPALA UGANDA
Fax: — Telephone: +256 772 968 235
E-mail: niyisabwa.odette@gmail.com
- (ii) Address of Institution of affiliation in Uganda KYAMBOGO UNIVERSITY
Fax: 041-220464 Telephone: 041-286452
E-mail: arkyu@kyu.ac.ug
7. Current Immigration Status:*
(if already in Uganda)

*Refers only to foreign applicants.

8. Present Occupation Status:

- (i) Post LECTURER
(+Temporary/Contract/Permanent) ✓
- (ii) Institution: KYAMBOGO UNIVERSITY
- (iii) If on contract, date of expiration:

9. Education

(i)

University	Qualification	Class	Year	Field of Specialization
<u>OSLO/NORWAY</u>	<u>M. PHIL</u>	<u>A</u>	<u>2005</u>	<u>SPECIAL NEEDS EDUCATION</u>
<u>MAKERERE</u>	<u>BED/SHE</u>	<u>2ND LOWER</u>	<u>2001</u>	<u>SPECIAL NEEDS EDUCATION</u>
<u>ITEK</u>	<u>DIPLOMA</u>	<u>2ND LOWER</u>	<u>1996</u>	<u>VISUAL IMPAIRMENT.</u>

- (ii) Postgraduate research experience, with list of publications, if any (use additional paper if necessary).

Niyisabwa Odette (2004). Assessment of Phonology awareness of School beginners. The Norwegian Universities Committee for Development Research and Education (NUFU), Norway. ISBN: 978-9970-103-06-5 GAWN GRAPHICS, KAMPALA-UGANDA.

- (iii) Names, qualifications and status of personnel involved in the research:-

Dissertation for MPhil - University of Oslo.

Name	Qualifications	Status*
<u>MARY NAMUKASA</u>	<u>Diploma</u>	<u>RESEARCH ASSISTANT</u>
<u>MUKIZA JOSEPH</u>	<u>Diploma</u>	<u>RESEARCH ASSISTANT.</u>

*STATUS with regard to the project

+Delete whichever is inapplicable.

SECTION B: MAIN FEATURES OF RESEARCH PROJECT

10. Title of research project: Strategies for enhancing Access to Basic Education for learners with Visual Impairments in Universal Primary Education Schools in South Western Uganda.
11. Main objective of research To determine Strategies for enhancing Basic education for learners with visual Impairments in UPE schools in South Western Uganda.
12. Brief outline of research methodology Mixed methods research design will involve both qualitative and quantitative methods.
13. Research type (Please tick (3)):
 Degree Award Non-degree Award
 (If Degree Award, state type of degree e.g BA, MSc or Ph.D etc, and the institution awarding it) Ph.D; KENYA TIA UNIVERSITY
14. Districts of Uganda in which research will be carried out MBARARA, NTUNGAMO, KABAHE, KISORO, RUKONGIRI, ISINGIRO, MITOOMA.
15. (i) Estimated cost of research 3200 USD.
 (ii) Source of funds KYAMBOGO UNIVERSITY
 (iii) Duration THREE YEARS
16. BREAKDOWN OF EXPENDITURE:

(This table must be filled by all applicants)

	Year 1 (US\$)	Year 2 (US \$)	Year 3 (US\$)	Total (US\$)
Personnel			500	4,200
Travel*			700	
Materials & Supplies			1,000	
Administration			300	
Results dissemination			1,000	
Other Proposal Development	500		500	
Contingency			200	

*Both local and international.

SECTION C

17. Names and addresses of two referees:

1. DR. OKWAPUT STAKUS
HEAD OF DEPARTMENT, COMMUNITY & DISABILITY STUDIES,
KYAMBOGO UNIVERSITY.
2. DR. OKECH JOHN BAPTIST
DEAN, FACULTY OF SPECIAL NEEDS AND REHABILITATION,
KYAMBOGO UNIVERSITY.





18. (a) I undertake to submit:

- (i) Six monthly progress reports of my project
- (ii) Final results on completion of the project
- (iii) Copies of any published paper/article arising from the project

(b) I hereby certify that to the best of my knowledge and belief, the particulars given in this form are true and complete in all respects.

Date 6TH August 2014 Signature of Applicant Nijseba

Appendix 11: Approval Letter From TASO Research Ethics Committee

	<p>The AIDS Support Organisation TASO (U) Ltd.</p>	<p>TASO Headquarters Mulago Hospital Complex P.O. Box 10443, Kampala Tel: +256 414 532 580/1 Fax: +256 414 541 288 E-mail: mail@tasouganda.org Website: www.tasouganda.org</p>
<p>TASO TRAINING CENTRE Kanyanya Off Gayaza-Road, After Mpererwe P.O. Box 10443, Kampala Tel: +256 414 567 637 Fax: +256 414 566 704 E-mail: training@tasouganda.org</p>	<p>06th October 2014</p>	<p>Our Ref: TASOIRC/52/14-UG-IRC-009</p>
<p>SERVICE CENTRES TASO ENTEBBE Plot 15-17 Lugard Avenue P.O. Box 235, Entebbe Tel: 0414 320 030 E-mail: entebbe@tasouganda.org</p>		
<p>TASO GULU Gulu Hospital P.O. Box 347, Gulu Tel: 0471 432 743 E-mail: gulu@tasouganda.org</p>	<p>Ref: RESEARCH APPROVAL "STRATEGIES FOR ENHANCING ACCESS TO BASIC EDUCATION FOR LEARNERS WITH VISUAL IMPAIRMENTS STUDY"</p>	
<p>TASO JINJA Jinja Hospital P.O. Box 577, Jinja Tel: 0332 260 117 Fax: 0434 120 382 E-mail: jinja@tasouganda.org</p>		<p>Thank you for submitting your responses to queries raised by the reviewers dated 10th September 2014. This is to inform you that your responses dated 03rd October 2014 met the requirements of the TASO REC.</p>
<p>TASO MASAKA Masaka Hospital P.O. Box 1679, Masaka Tel: 0392 749 998 Fax: 0392 260 104 E-mail: masaka@tasouganda.org</p>	<p>TASO REC annual approval has been granted for the full review research project "Strategies for Enhancing Access to Basic Education for Learners with Visual Impairments in Universal Primary Education Schools in South Western Uganda." Protocol Version 2.0, 12th September 2014.</p>	
<p>TASO MASINDI Masindi Hospital P.O. Box 117, Masindi Tel: 0465 420 636 Fax: 0465 420 636 E-mail: masindi@tasouganda.org</p>		<p>This approval is valid until 05th October 2015 after which you will be required to make a request for extension to the Chairperson, TASO REC in case of continuation with research.</p>
<p>TASO MBALE Mbale Hospital P.O. Box 2250, Mbale Tel: 0454 433 207 Fax: 0454 435 851 E-mail: mbale@tasouganda.org</p>	<p>The review and approval includes the following:</p>	
<p>TASO MBARARA Mulindwa Road P.O. Box 1010, Mbarara Tel: 0485 421 323 Fax: 0485 421 323 E-mail: mbarara@tasouganda.org</p>		<ol style="list-style-type: none"> 1. The study protocol, version 2.0, 12/09/2014 2. Informed consent and assent documents 3. Interview guides and questionnaires 4. TASO REC Research Review Application and Declaration of Conflict of Interest form 5. A letter of introduction from Kenyatta University
<p>TASO MULAGO Mulago Hospital P.O. Box 11485, Kampala Tel: 0414 530 034 Fax: 0414 541 286 Email: mulago@tasouganda.org</p>	<p>It is a requirement by the TASO REC that you submit the timely annual progress reports.</p>	
<p>TASO RUKUNGIRI Ishasha Road P.O. Box 350, Rukungiri Tel: 0486 442 810 Fax: 0486 442 813 E-mail: rukungiri@tasouganda.org</p>		<p>We recommend that you proceed with the registration of your study by the Uganda National Council of Science and Technology (UNCST).</p>
<p>TASO SOROTI Soroti Hospital P.O. Box 422, Soroti Tel: 0454 461 390 Fax: 0454 461 042 E-mail: soroti@tasouganda.org</p>	<p>Continuing Review application due date (60 days prior to expiration date).</p>	
<p>TASO TORORO Plot 30, Cox Road P.O. Box 777, Tororo Tel: 0454 442 009 Fax: 0454 445 334 E-mail: tororo@tasouganda.org</p>		<p>Sincerely,</p>
<p>REGIONAL OFFICES CENTRAL Kanyanya Off Gayaza Road, After Mpererwe P.O. Box 26369, Kampala Tel: 0312 266 501 Fax: 0414 566 704 E-mail: central@tasouganda.org</p>	<p>Mr. Bakanda Celestine Chairperson, TASO RESEARCH ETHICS COMMITTEE (REC) CC: Executive Director, TASO (U) Limited</p>	
<p>EASTERN Mbale Hospital P.O. Box 1335, Mbale Tel: 0454 435 268 E-mail: eastern@tasouganda.org</p>		
<p>WESTERN Mulindwa Road P.O. Box 1081, Mbarara Tel: 0485 420 496 Fax: 0485 420 496 E-mail: western@tasouganda.org</p>		
<p>NORTHERN Gulu Hospital P.O. Box 252, Gulu Tel: 0471 432 993 Fax: 0471 432 999 E-mail: northern@tasouganda.org</p>		

APPENDIX 12: Research Approval and Registration From UNCST

Uganda National Council for Science and Technology

(Established by Act of Parliament of the Republic of Uganda)

Our Ref: SS 3628
Ms. Niyisabwa Odette
Kyambogo University
Uganda

27/10/2014

Re: Research Approval:

Strategies for Enhancing Access to Basic for Learners with Visual Impairments' in Universal Primary Education Schools in South Western Uganda

I am pleased to inform you that on 27/10/2014, the Uganda National Council for Science and Technology (UNCST) approved the above referenced research project. The Approval of the research project is for the period of 27/10/2014 to 27/10/2017.

Your research registration number with the UNCST is **SS 3628**. Please, cite this number in all your future correspondences with UNCST in respect of the above research project.

As Principal Investigator of the research project, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the research protocol or the consent form (where applicable) must be submitted to the designated local Institutional Review Committee (IRC) or Lead Agency for re-review and approval **prior** to the activation of the changes. UNCST must be notified of the approved changes within five working days.
3. For clinical trials, all serious adverse events must be reported promptly to the designated local IRC for review with copies to the National Drug Authority.
4. Unanticipated problems involving risks to research subjects/participants or other must be reported promptly to the UNCST. New information that becomes available which could change the risk/benefit ratio must be submitted promptly for UNCST review.
5. Only approved study procedures are to be implemented. The UNCST may conduct impromptu audits of all study records.
6. A progress report must be submitted electronically to UNCST within four weeks after every 12 months. Failure to do so may result in termination of the research project.

Below is a list of documents approved with this application:

	Document Title	Language	Version	Version Date
1	Research Proposal	English	2.0	12 September, 2014
2	Questionnaires	English	N/A	N/A
3	Interview Schedule	English	N/A	N/A
4	Observation Schedule	English	N/A	N/A
5	Assent Form	English	N/A	N/A
3	Consent Forms	English	N/A	N/A

Yours sincerely,

Winfred Badanga
for: Executive Secretary
UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY
cc Chair, TASO Research Ethics Committee

LOCATION/CORRESPONDENCE

Plot 6 Kimera Road, Ntinda
P. O. Box 6884
KAMPALA, UGANDA

COMMUNICATION

TEL: (256) 414 705500
FAX: (256) 414-234579
EMAIL: info@uncst.go.ug
WEBSITE: <http://www.uncst.go.ug>

Appendix 13: List of independent judges of research instruments

SN	Name	Designation	Place of work
1.	Dr. Ali Baguwemu	Lecturer	Kyambogo University
2.	Dr. George Willy Kutosi	Lecturer	Kyambogo University
3.	David Khaemba	Lecturer	Kyambogo University

Appendix 14: Letter requesting for permission to conduct research in schools

Kyambogo University,
Department of Community and Disability Studies
5th October 2014

The District Education Officer,
..... District

Dear Sir / Madam;

RE: Request for permission to conduct research in primary schools

My names are Odette Niyisabwa, a lecturer at Kyambogo University in the department of Community and Disability Studies. I am pursuing a PhD in Special Needs Education at Kenyatta University located in Nairobi – Kenya. I am conducting a research on strategies for enhancing Access and retention of learners with visual impairments in Universal Primary Education schools in South Western Uganda.

I am requesting for permission to conduct research in and primary schools. I have already obtained approval and registration of the research project from Uganda National Council for Science and Technology (UNCST); and my Registration number is: **SS 3628**. (Attached please find a letter of introduction from Kenyatta University, and a letter of approval and registration from UNCST.)

In case any complaint related to the research conduct arises from any of the above schools, please feel free to contact me on the following contacts:

Niyisabwa Odette; Telephone: 0772 968 235, Email: niyisabwa.odette@gmail.com

I look forward to your positive response.

Yours sincerely;



Niyisabwa Odette

PhD Candidate – Kenyatta University