

**ACCESS TO LOW VISION DEVICES BY LEARNERS WITH LOW VISION**

**IN INCLUSIVE PRIMARY SCHOOLS IN LANGO**

**SUB-REGION, NORTHERN UGANDA**

**BY**

**ODONG DAVID NEWTON**

**17/U/14823/GMSN/PE**

**A RESEARCH DISSERTATION SUBMITTED TO THE BOARD OF EXAMINERS AS**

**PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF**

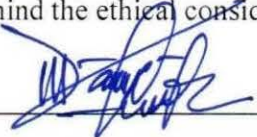
**DEGREE OF MASTERS IN SPECIAL NEEDS EDUCATION**

**OF KYAMBOGO UNIVERSITY**

**FEBRUARY, 2020**

## DECLARATION

This presentation is the original of my work and it has never been presented in any university or institution for any certification or award. I acknowledged all the references cited to compliment my work especially internet, spoken words or text data were used according to the APA format, bearing in mind the ethical consideration of anti-plagiarism.

Signature  \_\_\_\_\_

Date 18<sup>th</sup>. Feb. 2020

**Odong David Newton**

**17/U/14823/GMSN/PE**

## APPROVAL

We the under signed hereby confirm that the work reported in this dissertation was carried out by the candidate under our supervision as Kyambogo University Supervisors.

Signature Niyisabwa Date 20<sup>th</sup> Feb 2020

**Dr. Niyisabwa Odette Tumwesigye**

Department of Community and Disability Studies

Kyambogo University

Signature [Signature] Date 20/2/2020

**Dr. George Willy Kutosi**

Department of Special Needs Studies

Kyambogo University

## **DEDICATION**

I dedicate this piece of work to my dear wife Irene Odong who supported my academic endeavors in all the possible ways, most especially taking care of our children in my absence and her endless encouragement to me during this course. I can't forget to dedicate this to our beloved children; Emmanuel, Solomon, Elizabeth, Joseph and sister Joan Joyce Atim and brother Benson Okello. My love for you is unconditional.

I also dedicate this report to my beloved parents; my late father Egir Onesimo and mother Mrs. Albina Egir, my late brother Walter Ocen. Thank you for guiding and nurturing me.

## **ACKNOWLEDGEMENT**

First and foremost, I would like to extend my gratitude to the Almighty God for the good life granted to me during the two years course.

Secondly, I would like to thank my dear supervisors Dr. Niyisabwa Odette Tumwesigye and Dr. George Willy Kutosi for the scholarly and parental guidance given to me during this study, "May God rewards you abundantly." Amen.

In a special way, I acknowledged the support rendered to me by all my lecturers in the Faculty of Special Needs and Rehabilitation most especially Assoc. Prof. John Baptist Okech, Dr. Lawrence Eron, Dr. Joseph Odeke Nato, Dr. Patrick Ojok, and Dr. Paul Emong among others for guiding me in the field of academia through good facilitations.

I am deeply indebted that I can't fail to acknowledge the followings for the financial and material support rendered to me during this study. These are; Dr. Geoffrey Malinga, Miss Jesica Acipa, Miss Morine Adoc and Hon. Dorcus Otim. Without them, I wouldn't be in position to complete this study.

Special appreciation also goes to the Town Clerk, Principal Personnel Officer, Municipal Education Officer- Apac Municipal Council and the District Education Officer of Apac District, the Board of Governors and Teachers of Apac Model Boarding Primary School, SMC and PTA of Awiri Primary School for continuously granting me study leave with pay during the course.

My sincere thanks also go to my study respondents who helped me to collect data. Without their cooperation, I would not have completed this study.

Last but not least, I would not have completed this course without my course mates especially Daniel Odoch, Rose Lekuru, Sylvia Obany, Angella Rose Adeke, Joy Keirungi, Godffrey Mugote, Ronnah Ainemugisha and Justus Masinde Wakhungu whom we have been discussing together.

Finally, I acknowledged Mrs. Milly Katherine Engur for type setting this piece of work. God bless you abundantly.

## TABLE OF CONTENTS

DECLARATION.....	i
APPROVAL .....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
TABLE OF CONTENTS .....	vi
LIST OF TABLES.....	x
ABBREVIATIONS AND ACRONYMS.....	xi
ABSTRACT .....	xiii
<b>CHAPTER ONE: INTRODUCTION AND BACKGROUND TO THE STUDY .....</b>	<b>1</b>
1.0 Introduction .....	1
1.1 Background to the Study .....	1
1.2 Statement of the Problem .....	7
1.3 The Purpose of the Study.....	8
1.4 Research Objectives .....	8
1.5 Research Questions.....	9
1.6 The Study Scope.....	9
1.7 Limitations of the Study .....	10
1.8 Delimitations of the Study.....	10
1.9 Significance of the Study.....	10

1.0 Definition of Terms .....	13
<b>CHAPTER TWO: LITERATURE REVIEW.....</b>	<b>15</b>
2.0 Introduction .....	15
2.1 Low vision devices available for use by learners with low vision in Inclusive Schools. 15	
2.2 Knowledge of learners with low vision in using low vision devices in Inclusive Schools in Lango Sub-Region.....	17
2.3 Challenges faced by learners with low vision in using the low vision devices in inclusive schools in Lango Sub-Region.....	19
<b>CHAPTER THREE: METHODOLOGY .....</b>	<b>22</b>
3.0 Introduction .....	22
3.1 Research Approach.....	22
3.2 Research Design .....	23
3.3 Case Study.....	23
3.4 Population.....	24
3.5 Target population.....	25
3.6 Sample .....	26
3.7 Sample Size .....	26
3.8 Sample Size Determination .....	27
3.9 Sampling Technique .....	28
3.10 Data Collection Methods.....	30

3.11 Procedure for Data Collection .....	33
3.12 Data Analysis.....	33
3.13 Ethical Consideration .....	34
<b>CHAPTER FOUR: DATA PRESENTATION, INTERPRETATION AND ANALYSIS</b>	
.....	35
4.0 Introduction .....	35
4.1 Low vision devices available for use by learners with low vision in inclusive schools in Lango sub-region.....	38
4.1.1 Optical low-vision devices use by learners with low vision in inclusive schools.....	40
4.1.2 Electronic devices available for use by learners with low vision in inclusive primary schools. ....	41
4.2 Knowledge of learners with low vision in using low vision devices in inclusive schools. ....	43
4.2.1 Knowledge of learners with low vision in using optical low vision devices .....	45
4.2.2 Knowledge of learners with low vision in using electronic devices .....	47
4.3 Challenges faced by learners with low vision in using low vision devices in inclusive schools in Lango sub-region.....	48
<b>CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS</b>	51
.....	51
5.0 Introduction .....	51
5.1 Discussions .....	51

5.1.1 Low vision devices available for use by learners with low vision in inclusive schools in lango sub-region. ....	51
5.1.2 Knowledge of learners with low vision in using low vision devices in inclusive schools in Lango Sub-region .....	52
5.1.3 Challenges faced by learners with low vision in using low vision devices in inclusive schools in Lango sub-region.....	53
5.2 Conclusions .....	54
5.2.1 Low vision devices available for use by learners with low vision .....	55
5.2.2 Knowledge of learners with low vision in using low vision devices. ....	55
5.2.3 Challenges faced by learners with low vision in using low vision devices.....	55
5.3 Recommendations .....	56
5.3.2 Knowledge of learners with low vision in using low vision devices .....	56
5.3.3 Challenges faced by learners with low vision in using low vision devices.....	57
<b>REFERENCES</b> .....	59
<b>APPENDICES</b> .....	64
APPENDIX (I) INTRODUCTORY LETTER TO COLLECT DATA FROM RESPONDENTS .....	64
Appendix (ii): QUESTIONNAIRES FOR TEACHERS.....	65
Appendix (iii): INTERVIEW SCHEDULE FOR HEADTEACHERS .....	71
Appendix (iv): FOCUS GROUP DISCUSSION GUIDES .....	73
Appendix (v): MAP OF UGANDA SHOWING DISTRICTS OF STUDY .....	77

## LIST OF TABLES

Table 1: Research Paradigm .....	23
Table 2: The total population of learners with low vision who were selected for study .....	25
Table 3: The Target, Study (Sample) Population and Population Size .....	27
Table 4: Demographic data of learners with low vision per district.....	35
Table 5: Demographic data of teachers of learners with low vision per district .....	36
Table 6: Non-optical low vision devices available for use by learners with low vision in inclusive schools in Lango sub-region. ....	38
Table 7: Optical low-vision devices use by learners with low vision in inclusive schools .....	40
Table 8: Electronic devices available for use by learners with low vision in inclusive primary schools.....	41
Table 9: Knowledge of learners with low vision in using non-optical low vision devices in inclusive schools. ....	43
Table 10: Knowledge of learners with low vision in using optical low vision devices.....	45
Table 11: Knowledge of learners with low vision in using electronic devices. ....	47
Table 12: Challenges faced by learners with low vision in using low vision devices in inclusive schools in Lango sub-region .....	48

NGOs- Non-Governmental Organisations

NL- Number Lacking

NR- Number Required

OCOs- Ophthalmic Clinical Officers

OD- Ophthalmic Doctor

OHP- Overhead Projector

PTA- Parents Teachers' Association

SDGs- Sustainable Development Goals

SDPs- Strategic Development Plans

SMC- School Management Committee

TLWLV- Teacher of Learners with Low Vision

UN- United Nations

UNDP- United Nations Development Programmes

UNESCO- United Nations Education Scientific Cultural Organisations

UPE- Universal Primary Education

USA- United States of America

USAID- United States Agency for Development

WHO- World Health Organizations

ZPD- Zone of Proximal Development

## ABSTRACT

The purpose of the study was to investigate access to low vision devices by learners with low vision in inclusive primary schools in Lango sub-region. The study was conducted within three districts and one municipality within the region. The objectives of the study were; to examine the low vision devices available for use by learners with low vision, establish the knowledge of learners with low vision in using low vision devices; and to investigate the challenges faced by learners with low vision in using low vision devices. A qualitative approach with interpretivist paradigm and a case study design was used. A sample of 28 participants was selected from a population of 121 people. Data was collected using interview schedules, questionnaires and focus group discussion (FGDs) guides. Interviews were used to collect data from headteachers, questionnaires used to collect data from teachers; and focus group discussion guides used to collect data from learners with low vision. Ethical considerations were observed by ensuring confidentiality of the participants. Data from different instruments were presented in a tabular form. Interpretation and analysis of results were done and discussions plus recommendations of the findings were made. The study found that, “learners with low vision and their teachers had inadequate knowledge of using some low vision devices and no low vision services were being done in schools to determine the kind of low vision devices to be used. Some schools were found to have enrolled more learners with low vision compared to the number of devices and trained teachers that they had. The study concluded that; most devices used by learners with low vision in inclusive primary schools were non-optical devices like audio books, brailled materials, large prints on boards and large print books. The study also concluded that; learners with low vision and teachers of learners with low vision had knowledge of using only non-optical devices, but had difficulties using some optical and electronic devices. The study recommended that; teachers and learners with low vision be trained on the use of all low vision devices, and that; functional vision assessment be carried out to determine the kind of low vision devices to be used by learners with low vision.

## **CHAPTER ONE**

### **INTRODUCTION AND BACKGROUND TO THE STUDY**

#### **1.0 Introduction**

This chapter focuses on the background to the study, statement of the problem, purpose of the study, research objectives, research questions, and the scope of the study, significance of the study, limitations and delimitations.

#### **1.1 Background to the Study**

The study focuses key terms in the study from a global perspective and the situation of access to low vision devices by learners with low vision in America, United Kingdom, Asia-Pacific Region, Africa and the current country of study.

The policy on the access to low vision devices in America is such that all learners have the opportunity to use the devices (Collof, 2018). According to the American Printing House for the Blind (APHB, 2019), there are number of ways how learners with low vision are provided low vision devices in class. In practice 50% of the total numbers of learners in the American schools are those with visual impairment including those with low vision. And it is by-law that learners with low vision study together with the sighted learners. The classrooms are well equipped for them to access and use the assistive devices for low vision. More still, clinical low vision services are also carried out to determine the kind of low vision devices to use.

In the United Kingdom, the British Journal of Ophthalmology points that little are known about low vision services in schools (Culham, 2016:1). It is further clarified that learners with low vision get very little access to low vision devices in inclusive schools since most of the devices are got in the rehabilitation center which few learners have access to.

In another development, the situation of access to low vision devices in Asia-Pacific Region, is that the services are well developed to cater for all categories of people with visual impairment, including school going-age children with low vision (Wittich, 2014). The services offered are; vision screening, functional vision assessment, referral to low vision services, environmental modification and non-optical interventions, use of low vision devices such as magnifiers, diagnosis and treatment, low vision assessment, refraction, prescription of optical and non-optical devices, training in visual skills, use of low vision devices and surgery.

The situation of access to low vision devices by learners with low vision in Africa is still limited (Light for the World, 2012). Vision 2020: Right to Sight, points that low vision services for children should be much attended to. Limited numbers of teachers who are in inclusive schools are trained to acquire knowledge and skills of handling learners with low vision using special equipment. There is no comprehensive screening and assessment of functional vision to determine learners' placement and the kind of low vision devices to use.

Low vision refers to a condition of any person with reduced visual acuity which may occur due to reduced visual field and color contrast. Functionally, it is uncorrectable visual impairment which interferes with daily activities. Hence, low vision is a condition which is permanent and cannot be corrected by use of contact lenses, medicine or surgery (Lidlof, 2017).

Low vision devices are tools designed to improve the vision function and performance of learners with low vision in academic and social adaptations as well as providing enrichment of daily experiences (Lucien, 2015). They include both optical and non-optical devices which are for distance, intermediate and near distance devices.

Access refers to a right and an approach or the quality of using something (Culham, 2016).

Access to low vision devices therefore means a right to have opportunity of using the devices.

Inclusive schools refer to schools which support and welcome diversities of all learners. They are effective schools where every child has a place to study and teachers are facilitators of learning rather than providing of information (ICEVI, 2015).

This study was guided by Lev Vygotsky's Socio-Cultural Theory. The theory explains child's cognitive development in three ways. These are; Interaction, Zone of Proximal Development (ZPD) and Scaffolding.

First and foremost, Vygotsky (1978) emphasizes that interaction of a child with peers and teachers create opportunities for a child to develop cognitive instrument in preparation for higher order tasks. Considering access to low vision devices by learners with low vision, it requires some practical skills which involve cognitive activities. This means, through interaction of learners with low vision with their peers and teachers it facilitates cognitive development, as a result, increasing access to use the low vision devices.

Secondly, Vygotsky claims that, child's cognitive development is determined by the Zone of Proximal Development (ZPD) which is the difference between the levels at which a child is able to perform an activity on his or her own and the level at which can perform the tasks under the guidance of more knowledgeable others.

Thirdly, Vygotsky used scaffolding which is a kind of physical support rendered to a learner by peers or teachers to accomplish a particular task. To access and use devices by a learner with low vision requires some external supports. This means, teachers of learners with low vision should provide support to ensure access to low vision devices and also learn how to use the devices.

The theory assumes that, challenging tasks can promote cognitive development when one is supported by a more knowledgeable others like specially trained teachers and experienced learners. But contrary to this theory, on finding on access to use of low vision devices by learners

with low vision, the study found that most learners with low vision have very little knowledge of using the low vision devices. Also, some teachers were found to be having very little knowledge of using the low vision devices. This may contribute to failure of learners with low vision to use the devices. Therefore, more experienced teachers and knowledgeable peers are to be identified to provide scaffolding in order to support the learners with low vision to access and use particular devices.

“No practical is the best than a good theory” “Lewin-Vygotsky’s Contemporary” (2002).

He postulates that, interaction of learners with their peers and teachers sets a basis for them to develop practical skills from their initial theoretical interactions.”

Also, interaction with people such as peers and teachers in theoretical teaching should be done first before practical. This improves access to and use of low vision devices by all learners including learners with low vision in inclusive schools.

The study also confirmed that both learners with low vision and their teachers in the schools where this study was conducted lack knowledge and skills of using some devices. The inadequate knowledge of using these devices can be improved through training teachers of learners with low vision, peers and learners with low vision themselves to learn specialized skills in using particular low vision devices (Gissara, 2017).

The Government of the Republic of Uganda has embraced the provision of inclusive education by supporting the education of all learners including learners with low vision. “All persons have a right to education.” Article 30 of the Constitution of the Republic of Uganda. It further explains in article 34 (2 and 3) that, “a child is entitled to basic education which shall be the responsibility of the state and parents of the child.” And that, “no child shall be deprived by any person of medical treatment, education or any other social or economic benefit by reason of religious or

any other beliefs.” Unfortunately, these provisions did not spell clearly how learners with low vision should be provided access to devices including access to low vision devices by learners with low vision in order to access adequate educational services, since low vision devices for learners with low vision are not adequately provided in inclusive schools.

For over two decades, a survey carried out in Uganda and world over points that there are a number of children with visual impairment more especially those with low vision who are attending schools (Minto, 2014). Children with low vision are either in special, integrated or mainstream schools. Also, more children who could benefit from surgical, refractive interventions and provision of low vision devices are not identified due to lack of coordination between education and health care service providers (WHO, 2016).

The global campaign and program of ICEVI (2015) provides that, “by 2020, all children with visual impairment especially those with low vision will enroll and remain in primary education and their educational achievement will be on a par with non-disabled children.” This shall be through awareness creation by different partners. Similar advocacy was also made by EFA-VI where by education is considered to be a basic and a fundamental human right as enshrined in the Universal Declaration of Human Rights (EFA-VI, 2011).

The districts where this study was conducted spelt out different Strategic Development Plans (SDPs) adopted from the Education Sector Policy Frame Work of the Ministry of Education and Sports (MoES) which emphasized the provision of education to all learners in which education of learners with low vision are not exceptional. For example, the Apac District Strategic Development Plan (DSDP, 2015:152-1.5, 2.2), suggests the plans to promote the education of all learners with special needs, in which learners with low vision are included. It also has its strategic objective of increasing level of basic quality education as well as access to all the

equipment to promote the education of all learners with special needs. It includes training of teachers and education of all learners with special needs in the district.

Basing on these plans, the practice on the ground did not reflect clearly what is in the paper pertaining the provision of education to all learners with special learning needs especially learners with low vision.

“On the other hand, the DHO Apac (Dr. Emer) reported that the practice on the ground reveals, some districts like Apac and Kwania do not have Ophthalmic Doctor (OD) in the District Hospitals, yet these personnels are the ones who should guide in carrying out assessment of functional vision and provision of other low vision services as well as determining the low vision devices to use.

But the study reveals no school-based approach is conducted to support learners with low vision in accessing and using low vision devices in inclusive schools. They attend to only cases which are reported to hospitals, leaving learners with low vision in schools unattended to (Aceng, 2017).

“More still, there is no Medical Camps organized in districts for Functional Vision Assessment and Surgery. All the cases are referred to Lira Regional Referral Hospital which is not sufficient for providing adequate services to all persons with visual impairment, hence learners with low vision in schools are not attended to and no opportunity to determine the kind of low vision devices for them to use (DHO-Lira and Apac).”

Some attempts to improve the situation of learners with low vision by some support organizations like Non-Governmental Organizations (*NGOs*) could have been made to improve the lives of learners with visual impairment by providing assistive devices in inclusive schools in

the mother District of Apac where Apac Municipality and Kwanja were splited recently as well as Lira District.

Furthermore, inclusive schools in Lango Sub-region where this study was conducted were found not to be having any special provisions for assessment of learners with low vision as well as choosing appropriate low vision devices. The provisions they have majorly cater for learners who are blind, sighted and those with other disabilities, but not learners with low vision.

It is on this background that the researcher was prompted to carry out this study to explore the opinions on how to improve access to low vision devices by learners with low vision in inclusive schools in the selected districts in Lango sub-region.

## **1.2 Statement of the Problem**

Access to education at primary level is mandatory for both boys and girls through provision of all the necessary devices that facilitates learning of all learners including learners with low vision (SDGs, 2016).The values of access to low vision by learners with low vision is that it increases learner's abilities to perform daily activities, promote independence and improve learner's academic performance (Thom, 2016). However, Goal four (4) of the Sustainable Development Goals (*SDGs*, 2016) advocates for provision of quality education to all learners through access to inclusive education and provision of tools for innovations. But, the four districts where this study was conducted, it was witnessed that there were signs of awareness of this international policy, but the practices towards implementation of this policy was found to be contrary due to lack of training of teachers in the use of low vision devices. From the time UPE (1997) was introduced, no study on access to low vision devices by learners with low vision has been conducted in Uganda.

Some attempts to improve the education provision for learners with low vision has been made by the Government of the Republic of Uganda through integration of all learners, but it caused very little impact towards access to low vision devices by learners with low vision.

A study conducted by Alenyo (2001) on low vision emphasized on the inclusion of LWLV in the mainstream schools. Another study was also conducted by Uyirwoth (2008) whose finding was based on the participation of LWLV in social activities. These two studies did not point clearly how LWLV should have access to LVDs in schools. Meaning that, the strategies for enhancing academic performance through access to low vision devices were not well laid down.

This study sought to investigate ways of ensuring access to low vision devices by learners with low vision in inclusive primary schools.

### **1.3 The Purpose of the Study**

The purpose of the study was to investigate access to low vision devices by learners with low vision in inclusive primary schools in Lango sub-region.

### **1.4 Research Objectives**

The objectives of the study were to;

1. Examine the low vision devices available for use by learners with low vision in Inclusive Schools in Lango Sub-Region.
2. Establish the knowledge of learners with low vision in using low vision devices in Inclusive Schools in Lango Sub-Region.
3. Explore challenges faced by learners with low vision in using the low vision devices in inclusive schools in Lango Sub-Region.

## **1.5 Research Questions**

This study was meant to find out the followings;

1. What low vision devices are available in schools for use by learners with low vision?
2. What knowledge do learners with low vision have to use the devices for low vision?
3. What challenges do learners with low vision face in using the low vision devices?

## **1.6 The Study Scope**

### **(i) Geographical Scope**

The study was carried out in Northern Uganda, in one municipality and three districts. The four schools covered were Arocha Primary School in Apac Municipality, Awila Primary School in Apac District, Ikwera Primary School in Kwania District and Ngetta Girl's Primary School in Lira District.

### **(ii) Time Scope**

The study was carried out for a period of 13 months that is from August 2018 up to September 2019.

### **(iii) Content Scope**

The main aim of the study was to establish access to low vision devices by learners with low vision in inclusive schools in Lango Sub-region as well as how to improve the use of devices and performance in schools.

### **1.7 Limitations of the Study**

- The study was limited to only the selected schools in Lango sub-region. The findings of the study reflected the real practices in schools studied within the region. This therefore makes it difficult to generalize that all schools in the region have similar practices.
- Also, during data collection, it was difficult to realize 100 percent responses.
- This study was limited to only inclusive primary schools. This means, it did not address the situation of access to LVDs by learners with low vision in other academic levels like secondary, tertiary institutions and universities.
- Due to the nature of work, the researcher suffered balancing work and research since I was not granted study leave.

### **1.8 Delimitations of the Study**

- Moving from one place to another to collect data was easy since the researcher conducted a study in only one school per district.
- Since the study was conducted in schools, it was very easy to create rapport with teachers and learners during data collection.

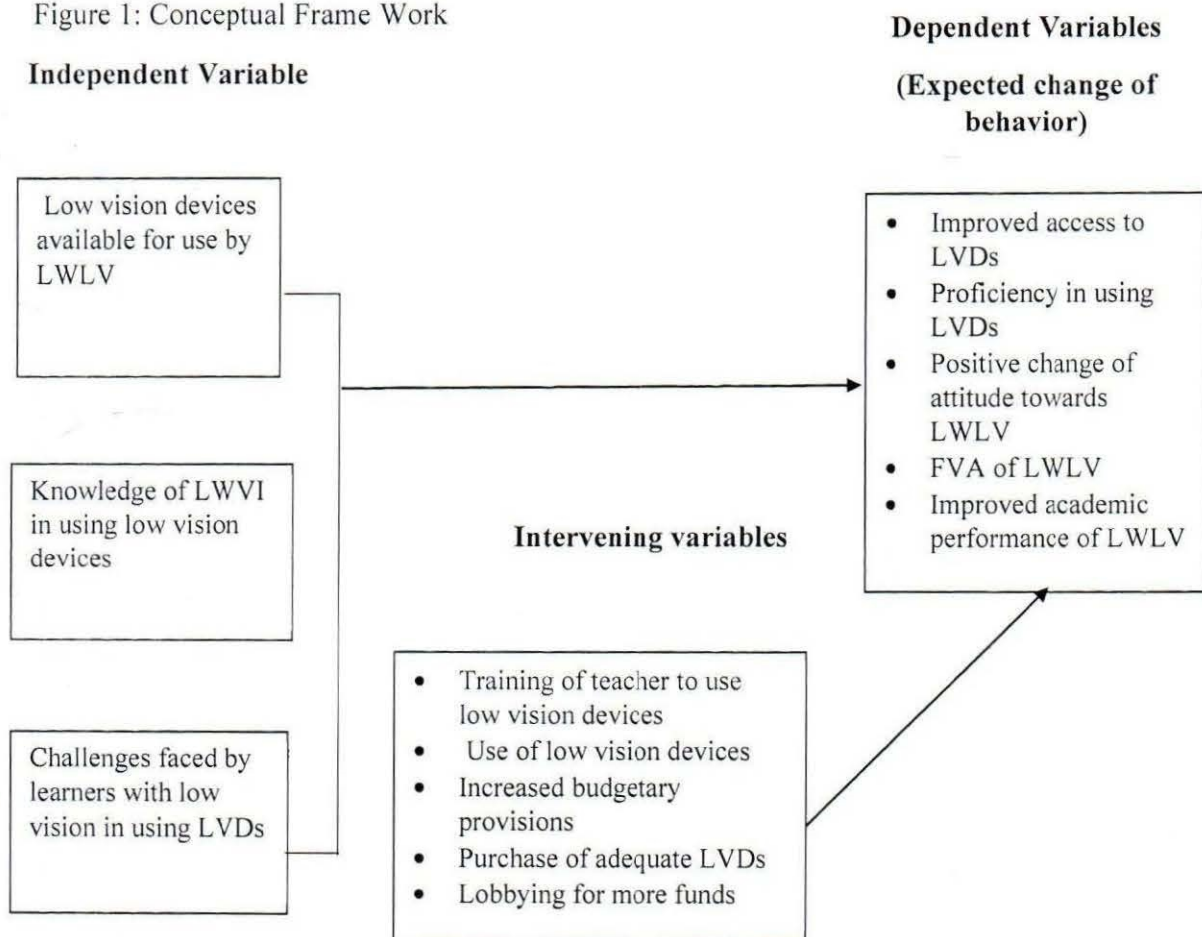
### **1.9 Significance of the Study**

The findings of the study had the following assumptions (ICEVI, 2015);

- Low vision services for learners with visual impairment in schools can be improved through school-based health services approaches.
- The study also assumed that it would provide opportunity for routine assessment and screening of learners' functional vision in inclusive schools to determine devices to use in school.

- The study also assumed that quality of teaching learners with low vision in inclusive schools may improve if learners with low vision can access the devices.
- The study also assumed that policy makers can be informed to increase their supports in offering educational and eye care services to learners with low vision in inclusive schools in Northern Region and Uganda at large.
- The study also assumed to enable teachers of learners with low vision to acquire knowledge and skills that improve their proficiency in using low vision devices.
- The study is also expected to add new knowledge on the existing ones in order to improve quality education provisions for learners with low vision in inclusive schools

Figure 1: Conceptual Frame Work



The framework shows that access to low vision devices is determined by three factors. These are; availability of low vision devices, knowledge of using low vision devices by learners and challenges faced by learners with low vision in using low vision devices. These three factors reflect the independent variables.

**The independent variables** are variables that can be controlled to test the effects (Helmenstine, 2018).

**The extraneous variables** are those factors that hinder the normal process of reaching the outcomes of the findings (Russel, 2012).

They are variables that you are not studying, but at times interfere with reaching your findings. This study identified the following variables in the study such as inadequate knowledge of teachers of learners and learners with low vision, inadequate low vision devices in schools, LVDs are unavailable in schools and inadequate funds as variables that could have interfered with reaching the final of the study. However, these factors are silence, but can be addressed through intervening variables.

### **Intervening variables**

To reach the final stage of the study, the intervening variables were to be in place to help work on the extraneous variables.

Intervening variables were the hypothesis set to control the extraneous variables so as to ease reaching the final stage of research study (Edwards, 2016). This study identified the following intervening variables to achieve in the study. Training of teacher to use low vision devices, use of low vision devices, increased budgetary provisions, and purchase of adequate LVDs and lobbying for more funds.

**Dependent variables** are those variables which are being tested and measured (Russel and Peter, 2012). The dependent variables in this study were the outcomes of the study which would help to improve the welfare of learners with low vision to access low vision devices.

### **1.0 Definition of Terms**

The key terms in this study were; low vision, low vision devices, access and inclusive schools.

#### **Low vision**

Low vision refers to loss of eye sight that cannot be corrected with prescription glasses, contact lenses or surgery (AAO, 2018). It explains that it is not a complete blindness but, a condition that can be corrected through adaptation of devices.

On the other hand, low vision is a condition of a person with visual impairment or visual functioning even after treatment or standardized refraction correction and has visual acuity of less than 6/18 to light perception or visual field of less than 10 ° from the point of fixation, but who is potentially able to use residual vision for planning and execution of visual tasks (WHO, 2018).

#### **Low vision devices**

Low vision devices refer to tools that are designed to improve the visual functions and performance of learners with low vision. (AFB, 2018). They include optical, non-optical and electronic devices which can be used to execute tasks of short, middle and long-distance tasks.

#### **Access**

Access refers to a right to have opportunity of using something (ICESCR, 2006). Access to low vision devices therefore refers to the right to have opportunity of using low vision devices.

### **Inclusive schools**

Inclusive schools are schools where learners with special needs have opportunity to attend schools and classes together with the ordinary learners (Karin, 2012). For this case, inclusive schools for learners with low vision refer to schools that accommodate learners with low vision to study with the sighted learners (ICECI) (UN, 2015).

## CHAPTER TWO

### LITERATURE REVIEW

#### **2.0 Introduction**

This chapter presents literature review related to the topic of study. The topic of study is, “access to low vision devices by learners with low vision.”

The related literature from different scholars and theories were reviewed in relation to the objectives of the study.

#### **Literature Review**

Literature review refers to the approved document of the student or researcher before making a dissertation or thesis (Adams, 2013). He points that literature review gives the comparison between the body of your current study and studies of the earlier scholars. These include extract from dissertations, newspapers, journals and internet among others.

On the other hand, literature review refers to a text of scholarly paper which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic (Creswell, 2014).

To remind the reader, the objectives of the study are hereby under reproduced;

- Low vision devices available for use by learners with low vision in Inclusive Schools.
- Knowledge of learners with low vision in using low vision devices in Inclusive Schools.
- Challenges faced by learners with low vision in using low vision devices in inclusive schools.

#### **2.1 Low vision devices available for use by learners with low vision in Inclusive Schools.**

**Available** refers to a situation where by something can be accessed at any time by anybody. Also means, something is present or can be easily obtained, reached and achieved (Mason, 2007).

Low vision devices refer to tools designed to enhance the visual function and performance of the individual (Lucien, 2015). To a learner with low vision, the low vision devices improve the academic and social adaptations as well as providing enrichment of daily experiences.

According to the American Foundation for the Blind (AFB, 2018), low vision devices consists of optical, non-optical and electronic devices. The optical devices are those which use lenses and prisms that magnify both long and short distance objects. The optical low vision devices are classified as; long, middle and short distance vision devices. Other low vision devices are electronic devices.

The long-distance vision devices are those used to view objects from long distances. For example, binocular and monocular telescopes, while those for short distance vision are hand held, stand, bar and spectacle mounted magnifiers.

On the other hand, the non-optical devices for low vision are bold prints, felt tipped pens, reading stands, adequate lighting, and sun glasses among others.

Also, the electronic low vision devices are; closed circuit television (CCTV), Computers and Over Head Projector (OHP).

The United Nation Convention on the Right of Persons with Disabilities (CRPD, 2006), recognizes the universal access to educational services by all learners in inclusive schools and to receive adequate support they need. Article 24 of this convention further stresses the need to ensure equal access to an inclusive education system at all levels. This means, there is need to provide the low vision devices to enhance the learning of all learners, but this provision was confirmed to be a myth in inclusive schools in Lango sub-region.

The Inclusive Education Policy in Uganda (UN, 1997) and Universal Primary Education policy (UPE, 1997) enabled learners with special needs including those with visual impairments such as learners with low vision to enroll to learn together with sighted peers. They follow the same curriculum and participate together in various school curriculum activities. As they follow the normal curriculum with the rest of learners, they are expected to be provided low vision devices to facilitate their learning. This study therefore found that, low vision devices were inadequate in schools and even some schools do not have the devices at all.

## **2.2 Knowledge of learners with low vision in using low vision devices in Inclusive Schools in Lango Sub-Region.**

Knowledge literally refers to one's ability of doing something with expertise due skills acquired (Doyle, 2018).

The knowledge of using low vision devices was determined using two variables, "**awareness and usage.**"

**Awareness** refers to the knowledge or perception of a situation or facts that can be translated in to actions (Cuttshell, 2018). Awareness is the greatest agent of change and builds confidence (Tolle, 2018). This means that one's awareness of something for example devices provides facts that enable him or her perform an activity with confidence.

**Usage** refers to the action of doing something or to utilize something for a particular function or purpose. It also refers to application of knowledge of something (Julita, 2018). This literally means one's ability to apply knowledge, for example the knowledge of using low vision devices by learners with low vision.

Low vision devices such as optical and electronic devices require some knowledge and skills for one to use. The knowledge acquired can be due to training (Brayn and Maureen, 2019).

Learners with low vision in inclusive schools in Lango Sub-region and their teachers were found to be having insufficient knowledge and skills of using the low vision devices. This means, the inefficiency of using these devices were due to lack of training in using the low vision devices by both learners and the teachers of learners with low vision in inclusive schools in Lango Sub-region. Another reason for lack of knowledge of learners with low vision and their teachers was that the devices were not available at schools.

Similarly, Thom (2016), conducted a study on the utilization and use of low vision devices by learners with low vision. His study reveals the use of low vision devices require some knowledge and skills of using the devices to enable learners perform daily academic tasks. The study also found that most learners with low vision did not know how to use the low vision devices. This is a clear indication that lack of knowledge can hinder the performance in a particular task. All this insufficient knowledge was originated from lack of training in the use of devices by both teachers and their learners with low vision.

Another study was conducted by Douglas and Corn in Northern Turkish on the use of low vision devices. The study found that, most learners, teachers and school administrators did not know how to use the low vision devices. Considering the current study, inadequate knowledge of using devices was also found to be a key factor failing learners' access to low vision devices which need to be addressed.

Basing on the theoretical framework and using teacher's-based approach, Vygotsky (1978), assumes that expert guidance is needed to move a child through Zone of Proximal Development

(ZPD) by a more knowledgeable teacher or peers to provide scaffolding. But on the contrary, this study disagrees with the practices in the schools where the earlier studies were conducted for example; a study on inclusion of learners with low vision in schools and participation of learners with low vision in social activities did not point out strategies for learners' access to low vision devices.

### **2.3 Challenges faced by learners with low vision in using the low vision devices in inclusive schools in Lango Sub-Region.**

Challenges refer to objection or threats that inhibit the achievement of a particular course or an event (Roget, 2013). It also refers to a situation of being faced with difficulties that requires solutions or interventions.

According to Mitti (2016), challenges or barriers to access the low vision devices are attributed by many factors such as lack of family support, high cost of devices and lack of prioritization of low vision devices in preference to other materials, inadequate number of low vision devices and some devices being unavailable at school.

The assessment of visual functions plays a great role in accessing; determining one's reading distance and the kind of devices to use (Minto, 2018).

According to Hong Kong Society for the Blind (HSB, 2018 and Vision, 2020), access to low vision devices is said to be a challenge in inclusive schools due to high cost of low vision devices, the low vision devices also require some knowledge and skills to use.

However, learners with low vision in inclusive schools where this study was conducted were seen to be challenged because they lack the eye care services such as functional vision assessment and corrective services. They also lack almost all forms of devices to be used to

enhance their learning in inclusive schools. Lack of assessment by the health care workers and lack of teachers' training were found to be the most challenging factor that impedes the access and use of low vision devices by learners with low vision in inclusive schools in Lango Sub-region.

According to the International Council for Education of People with Visual Impairment (ICEVI, 2015), more efforts should be made to expand the lobbying power for the provisions of low vision devices so that it can be accessed by learners in inclusive schools. But, most of these schools in Lango sub-region where the study was conducted did not show any sign lobbying to access services as well as low vision devices. These interfere with learners' access and use of low vision devices and as a result, their academic performance is affected.

The provision of low vision devices to learners with low vision can improve the quality of learners' education as well as the knowledge and skills that they may acquire when trained by their teachers and peers (Carmen, 2017). But on the contrary, these provisions were found to be lacking in Lango Sub-region where inclusive education is being provided.

The major aim of a teacher of learners with low vision is to ensure that learners have equal opportunities to access the learning materials (Gissara, 2017). She further claims that, teachers should adapt the environment, methods and train the basic knowledge and skills of using the low vision devices.

Similarly, Laura (2016) points that teachers of learners with low vision should identify the learning needs of learners so as to determine the kind of devices to use, the cost of devices should also be subsidized, carrying out functional vision assessment in schools and availing low vision devices in schools. All these submissions are good strategies to increase access to low

vision devices by learners with low vision, but it is a myth in Lango sub-region where the study was conducted.

Having reviewed literature, next is the practical part of the study (methodology).

## CHAPTER THREE

### METHODOLOGY

#### 3.0 Introduction

This chapter presents the practical or empirical area of study of the phenomena and therefore requires practical solutions to the research topic presented. This chapter presents the key components which include; research approach, research design, study population, sample, sampling techniques, methods of data collection, study instruments, procedure for data collection and data analysis.

#### 3.1 Research Approach

Research approach is the orderly ways of laying strategies to gather information about a particular activity (Yin, 2008). Fingerson (2003) points that; research approach is the process of gathering information and data about a particular event for the purpose of making educational decisions. This study used qualitative approach where by, interpretivist research paradigm was used. Interpretivist refers to a qualitative research approach whereby the researcher obtains the understanding of a particular word from the individual perspectives (Rocco and Bliss, 2003). This paradigm assumes that human activities cannot be observed from external reality. This means, it focuses on people's subjective experiences. It also assumes that, knowledge is personally experienced rather than acquired from outside (Ntgerty, 2016).

The research paradigm was summarized in the table below,

**Table 1: Research Paradigm**

Paradigm	Meaning of paradigm	Belief	Interpretation
<b>Interpretivist</b>	The researcher obtains understanding of the study from individual perspectives.	<b>Epistemology</b> <ul style="list-style-type: none"> <li>• Subjective</li> <li>• Depends on knowledge of participants</li> <li>• Believes in problem solving</li> </ul>	<ul style="list-style-type: none"> <li>• Knowledge is the key to identify discrepancy or problems.</li> <li>• Knowledge to detect discrepancy must be reliable (Botha, 2014)</li> </ul>

### 3.2 Research Design

Research design is the plan or a strategy for conducting the research (Creswell, 2002). Broadly, research design is used in either qualitative or quantitative research designs.

This study used a case study design during data collection, analysis and presentation of views of respondents. This was a qualitative research design.

Qualitative design is the systematic process of investigating or inquiring something (Riedel, 2011).

On the other hand, Denzin and Lincoln (2005) argues that qualitative research design helps the researcher to carry out investigation in a natural setting, attempting to make sense of, or interpret the phenomena to bring the meaning.

### 3.3 Case Study

Case Study is an in-depth description and analysis of a bounded system. It is an empirical inquiry that investigates a contemporary phenomenon within its real-life context to identify and bridging the gaps of phenomenon and context which are not evident (Yin, 2008).

Case Study helps a researcher to understand complex social phenomena because the method allows investigations to retain the holistic and meaningful characteristics of real-life events such as organizations and managerial processes (Kohlbacher, 2006)

On the other hand, Jensen and Rodgers (2001) points out that case study is a qualitative approach to research which enables the researcher to understand a complex issue or object and brings with it a familiarity to the case that no other research approach is able to do. This study used a case study in the selected schools in Northern Uganda.

Basing on Vygotsky's theory as the theoretical framework, this study was the practical investigation of the extent of social interaction by teachers and peers and the level of their supports towards the use of low vision devices by learners with low vision.

This study used a case study because of the following reasons;

- The researcher wanted to get a vivid description of events relevant to the study.
- The researcher wanted to focus on the individual actors or group of actors and seeks to understand their perceptions on providing access to the use of low vision devices by learners with low vision.

### **3.4 Population**

The study was carried out in some schools in the selected districts of Lango Sub-region.

The total number of respondents who were selected for study was presented in the table below.

**Table 2: The total population of learners with low vision who were selected for study**

Class	District of Study				Total number of LWLV per class	Percentage of LWLV per class in the area of study
	A	B	C	D		
Schools						
P.1	00	2	4	32	38	8.81
P.2	00	6	9	44	59	13.69
P.3	04	5	14	48	71	16.47
P.4	04	2	29	53	88	20.42
P.5	02	3	13	46	64	14.45
P.6	01	2	11	55	69	16.01
P.7	03	1	07	31	42	9.74
<b>TOTAL</b>	<b>14</b>	<b>21</b>	<b>87</b>	<b>309</b>	<b>431</b>	<b>100</b>

Table 3 shows how learners with low vision were selected for the study. Learners with low vision each were taken from the selected schools in four districts in northern region. One school each was selected through purposive sampling techniques. For example, schools in districts A and B were selected because they have enrolled learners with low vision. Meanwhile, schools in districts C and D were also selected because they have established a special unit for about three decades and were assumed to be having low vision devices available for use by learners with low vision in their schools.

However, the table shows high percentage of learners with low vision in P.4 followed by P.3. P.5 and P.6 had almost equal percentage of learners with low vision enrolled in class. The choice for conducting a study in P.6 and P.7 was from the view that P.6 being a semi-candidate class may be a determinant class for good performance of a child in P.7 if the child has appropriately utilized the low vision devices at the earliest stages of child's academic growth.

### **3.5 Target population**

Target population is the entire group of individuals or objects the researcher is interested in to help generalized conclusions (Natalie, 2016). The target populations in this study were the

headteachers, teachers and learners with low vision of the sampled schools. The total target populations were 121 people. They were selected from primary six and seven from schools in Northern Region covering three districts and one municipality.

The schools selected were; Arocha Primary School in Apac Municipality, Awila Primary School in Apac District, Ikwera Primary School in Kwania District and Ngetta Girl's Primary School in Lira district.

### **3.6 Sample**

Sample is the sub-set of the total population involved in the study (Natalie and Brooke, 2019). They added that sample helps a researcher to choose the population of interests. It is also the population in which the researcher can apply his or her conclusions of the study. It is the sub-set of the target population. However, the study population here was 121 people who comprised of headteachers, teachers and learners with low vision in the selected schools and districts of study.

During sampling, the respondents were coded as R1, R2 and R3 to refer to respondents.

One headteacher each was sampled from the selected schools, teachers of learners with low vision in primary six and seven as well as learners with low vision from primary six and seven from each school.

### **3.7 Sample Size**

These are individuals or objects representing the entire number or a group from which they were selected. In this case, four schools from three districts and one municipality were studied. Schools A and B were selected because they have enrolled learners with low vision while, schools C and D were selected because they have special units for learners with low vision established for more than three decades. This was from the assumption that, the longer school was established, the more is the available facilities including devices for learners with low vision

(Tanner, 2014). But even this study disagreed with this assumption in that even the earlier established schools were even lacking the low vision devices like the recently established schools, meaning this assumption was not true. In this case, only 28 participants were used to determine the sample size in the study.

### 3.8 Sample Size Determination

“The larger the sample, the better the population is represented (Gay and Yount) in Odette 2016.”

She points that, researchers with large samples between 101-1000 should have a sample of 10% and those with small population below 101 should have a sample of 20% minimum.

However, the target population were 121, sample 28 and 28 sample size which was representing 23.1 % of the target population. This percentage is above the expected one as pointed by Gay and Yount (2006). The percentage sample was determined using the formulae below;

$$\text{Percentage Sample} = \frac{\text{Sample Size}}{\text{Target population}} \times 100 \%$$

The summary of the target population, study (sample) population and population size were presented in the table below;

**Table 3: The Target, Study (Sample) Population and Population Size**

Respondents	Target population				Study population (Sample)				Sample size			
	A	B	C	D	A	B	C	D	A	B	C	D
R1	1	1	1	1	1	1	1	1	1	1	1	1
R2	2	2	2	2	2	2	2	2	2	2	2	2
R3	4	3	18	86	4	4	4	4	4	4	4	4
Sub-total	7	6	21	87	7	7	7	7	7	7	7	7
Grand Total	121				28				28			

**KEY**

R1- Respondent one (headteachers)

R2- Respondent two (teachers of LWLV)

R3- Respondent three (LWLV)

### **3.9 Sampling Technique**

Sampling is the process of obtaining data from a smaller group or sub-set of the total population so as to gain knowledge of the representation of the total population (Gorad, 2003). The study used purposive sampling procedure to select the respondents due to their adequate knowledge in the area of study.

#### **Inclusion and Exclusion Criteria**

##### **Inclusion Criteria**

The study was conducted in schools A, B, C, and D purposely. Schools A and B were selected because they have enrolled learners with low vision and schools C and D were selected because they have established units for learners with visual impairment and enrolled learners with low vision for more than the last two decades. Teachers of learners with low vision were also included because they were assumed to have more knowledge of managing learners with low vision.

##### **Exclusion Criteria**

Some schools in the districts of study were not selected because they were assumed not to be having any records of learners with low vision, no teachers trained in special needs education and low vision services.

## **Justification of respondents**

### **a) The Head teachers**

The headteachers were involved in this study because;

- He or she is an administrator in the school
- He or she is also responsible for admission of all learners in the school
- He or she purchases facilities and equipment for teaching all learners with low vision in the school
- He or she supervises teachers to ensure that all the school activities are conducted as programmed.
- He or she is responsible for teachers' Continuous Professional Development (CPD)

### **b) Teachers**

Teachers were selected because;

- They interact directly with all learners with low vision and sighted peers.
- They give information and evaluate the participation of all learners with low in school activities and sighted peers.
- They also identify learners with low vision in the school and determine their placement
- They are able to give information on the challenges they face in teaching learners with low vision in the school
- They can assess and evaluates the performance of different learners in the school
- They also know the kind of low vision devices and other instruction materials that can be used by learners with low vision

### **c) Learners with low vision**

- They are enrolled in the schools of study

- They choose the devices they would want to use for study
- They support one another in using the low vision devices

### **3.10 Data Collection Methods**

Data collection methods involve the use of measurement tools for example; the questionnaires, interviews and Focus Group Discussions (FGDs) designed to obtain data on a given topic of study by the researcher (Fowler, 2009).

This study used Interview schedule to collect data from headteachers, closed-ended questionnaires were used to collect data from teachers of learners with low vision and data from learners with low vision were collected using Focus Group Discussions (FGDs) to determine the low vision devices available for use in schools and challenges faced by learners with low vision in inclusive schools.

#### **Interviews**

Interview refers to a form of open-ended questions which involve the use of verbal questions and answers as a way of collecting data (Fowler, 2009). He further explains that standardized questions involve prompts, probing questions and explanations to clarify questions to the interviewer in case the questions are not clear.

Furthermore, DeMarrais (2004) postulates that, “interview is a process by which a researcher and participants are engage in a conversation focused on questions related to a research study.” In a similar way, Walford (2001) says; “interview is a process of interaction in which the interviewee gives the needed information orally in face to face situation as the interviewer records the responses.”

The study used face to face interview schedule, where the researcher used informal interviews with the respondents.

Moser and Kalton (1998) points the following weaknesses of interview for being; expensive to use in scattered areas, difficult to trace the interviewees due to change of address and some interviewees may not be willing to participate in the interview face to face. But contrary to this submission, Fowler (2009) points the following attributes which makes interview a better tool for data collection in a qualitative study of this kind. It is easy to administer to both literate and illiterate people, the interviewer may clarify unclear questions to the interviewees, the interviewer can collect information and interpret the data from interviewees through observing the interviewee's social and physical environment, the interviewer can observe the interviewee's reaction in real life situation and the interviewer can build rapport between the interviewer and the interviewees.

### **Questionnaires**

Morrison (2005) defines questionnaire as a research instrument used both in a qualitative or a quantitative instrument for data collection where by the researcher provides structured questions to the respondents and it is administered without the presence of the researcher. It consists of series of questions and other prompts for the purposes of gathering information from respondents. Questionnaires can be administered in a paper hand process whereby questions are presented on a paper to respondents.

Questionnaires may be open-ended (unstructured) questions, closed-ended (structured) questions. This study used closed-ended questions where by respondents were required to respond according to already pre-determined responses. They were required to choose the most correct alternative answer (s) in the questions. Some scholars like Wilson and Bailey (2004) have criticized closed-ended questions for being bias in the following ways; it provides limited data or information and it does not give the respondent room for free expression.

However, Morrison (2005), observes that, closed ended questions are more effective to use for data collection due to the fact that; It is easier and less time consuming to complete the tasks, it is easier to analyze the data and there is likelihood of having high response rate than missing data from respondents.

### **Focus Group Discussion (FGDs) Guides**

Focus group discussion is a qualitative data collection method used by a researcher to get information from respondents of similar background and characteristics (Namey, 2013). Facilitation is done by the researcher or research assistant on a particular phenomenon. The strengths of this method are that, it provides a researcher and participants' insight since the participants agrees and disagrees with each other. The researcher used this to collect data from learners with low vision basing on the questions in the interview schedule to address the availability of low vision devices, knowledge of using low vision devices and the challenges faced by learners with low vision in using low vision devices.

### **Credibility and Validity**

Credibility and validity were also observed during this study.

#### **Credibility**

Credibility is the extent to which a research account is believable and appropriate with particular reference to the level of agreement between a researcher and participants (Yvonna and Egon. 2015).

On the other hand, credibility refers to a difference between what is said or promised and what happens or is true. It also refers to the situation where by the findings; behavior is applicable and consistent to the readers or researchers.

## **Validity**

Validity refers to the accuracy of findings. Kombo (2006) points that, validity of instruments is considered if the instrument can measure what it is intended to measure.

### **3.11 Procedure for Data Collection**

After writing the proposal, the researcher designed a study tool and later got an introductory letter from Kyambogo University Graduate School. He also made his introductory letter to request people who should participate in his study.

The researcher designed study instruments (interviews, questionnaires and Focus Group Discussion questions- FGDs) to help in data collection between April to June 2019. The instruments were pre-tested and later given to the supervisors for approval before use.

The researcher visited the schools and presented the introductory letter from Kyambogo University to introduce himself to the Headteacher of the study schools.

The headteacher also introduced the researcher to teachers who helped him to identify learners with low vision to participate in the study.

The researcher met the respondents and created rapport, they agreed on place, time and the duration of the interview. Each headteacher was interviewed orally in a face to face interaction in their respective office. Teachers were made to fill in questionnaires independently and came out with their ideas and opinions independently and learners with low vision participated in FGDs with the researcher and come out with their views as the researcher was recording their views.

### **3.12 Data Analysis**

The data collected from interviews, questionnaires, Focus Group Discussions (FGDs) were categorized, put into sub-themes, themes and presented in tabular form together before making conclusions. Data were interpreted, discussed and concluded before making recommendations.

### **3.13 Ethical Consideration**

Ethical issues were taken care of at all stages of the study with particular attention to confidentiality (Marshall and Rossman, 2011). All respondents participated voluntarily in this study. The information provided by each participant was not to be revealed, but only used to get information of this study.

Participation is a right (Silverman, 2011). The rights of respondents were respected by fulfilling what was promised to them by the researcher.

## CHAPTER FOUR

### DATA PRESENTATION, INTERPRETATION AND ANALYSIS

#### 4.0 Introduction

This chapter presents data from different respondents. Data was collected basing on three objectives of the study. It was presented qualitatively by description of results. The objectives that guided the study were;

To examine the low vision devices available for use by learners with low vision in inclusive primary schools, to establish the knowledge of learners with low vision in using low vision devices in inclusive schools in Lango sub-region and to investigate the challenges faced by learners with low vision in using low vision devices in inclusive schools in Lango Sub-region.

**Table 4: Demographic data of learners with low vision per district**

Class	District of Study				Total
	A	B	C	D	
Schools					
P.1	00	2	4	32	38
P.2	00	6	9	44	59
P.3	04	5	14	48	71
P.4	04	2	29	53	88
P.5	02	3	13	46	64
P.6	01	2	11	55	69
P.7	03	1	07	31	42
<b>TOTAL</b>	<b>14</b>	<b>21</b>	<b>87</b>	<b>309</b>	<b>431</b>

The data above shows that the total number of learners with low vision in the target schools were 431 learners compared to only 28 teachers of learners with low vision in the four schools where the study was conducted. This is projected as one teacher to manage fifteen (15) learners (1:15.39 teacher-pupil ratios). This is a large number which may be difficult to manage by a

single teacher. These submissions reveal that learners with low vision in inclusive primary schools were having challenges accessing the low vision devices.

Also, the table shows that, schools C and D have enrolled many children with low vision compared to the number of teachers and yet there are few low vision devices available in these schools. This reveals a challenge to learners with low vision which may in turn impedes the academic performance of learners with low vision.

The table also shows that, more learners with low vision were enrolled in P.3, P.4, P.5 and P.6, but the researcher has chosen P.6 and P.7 to assess if the access to low vision devices in terms of availability has any effect on the performance of learners with low vision in primary seven since primary six is a semi-candidate class and is assumed to be a determinant class for good performance in P7.

**Table 5: Demographic data of teachers of learners with low vision per district**

District	Headteacher			Teacher		
	Headteacher	Qualification/ Training	Years in the school	Teacher	Qualification/ Training	Years in the school
A	H1	B. ED	1	T1	B. ED (SN)	15
				T2	DIP. (SN)	8
D	H2	B. ED	6	T1	DIP. (SN)	3
				T2	DIP. (SN)	5
C	H3	B. ED (SN)	8	T1	DIP. (SN)	17
				T2	DIP. (SN)	7
D	H4	B. ED	3	T1	DIP. (SN)	22
				T2	DIP. (SN)	

**KEY**

H1-4- Head teachers

T1-2- Teachers

B. ED- Bachelor of Education

B. ED (SN)-Bachelor of Education (Special Needs)

The table above presents the information about headteachers and teachers who participated in the study. The table shows that most of the headteachers of those schools did not have any special training in special needs. Also, some headteachers have taken few years in the school while others have taken many years.

The above categorizations were from the assumption that, “the more the headteacher has stayed in a particular school, the better the developmental plans.” For instance, the plan to improve access to low vision devices by learners with low vision.

Considering the demographic data about teachers, it shows that many teachers who were involved in the study have at least a Diploma in special needs education and one had a Bachelors training in Teacher Education (Special Needs Education).

This presentation implies that headteachers who did not have special training in special needs education might have failed to prioritize the purchase of devices for learners with low vision.

Also, it implies that, even teachers who were reported to have trained in special needs education had diploma. The diploma training assumes to provide general knowledge in the field of special needs education. This means, the teachers were not having adequate knowledge to adapt the devices such as non-optical devices to be used by learners with low vision.

**4.1 Low vision devices available for use by learners with low vision in inclusive schools in Lango sub-region.**

**Table 6: Non-optical low vision devices available for use by learners with low vision in inclusive schools in Lango sub-region.**

SCHOOL CODE	A			B			C			D		
	NR	NA	NL	NR	NA	NL	NR	NA	NL	NR	NA	NL
Non- Optical Devices												
Large print books	17	5	-12	13	5	-08	18	10	-08	86	12	-74
Large print on boards	17	4	-13	13	5	-08	18	6	-12	86	7	-79
Perkins brailers	15	00	-15	18	00	-18	40	10	-30	50	15	-35
Ring bells	09	0	-09	05	0	-05	18	1	-17	86	2	-84
Needle rulers	10	0	-10	08	0	-08	18	2	-16	88	1	-87

**KEY**

NR- Number Required

NA- Number Available

NL- Number Lacking

Objective one was meant to examine the low vision devices available for use by learners with low vision in the selected inclusive schools in Lango Sub-Region, Northern Uganda. After the analysis of the findings, summaries of the low vision devices available for use by learners with low vision were presented in the tables according to their categories. That is; non-optical, optical and electronic low vision devices.

In table 7 the results indicate that the most common non-optical device used in schools by learners with low vision were found to be Perkins brailers, large prints on board, while others were found to be large print books. Ring bells and needle rulers were also cited to be used in schools C and D.

Through some interview with learners, they reported that, the common non-optical devices used in schools C and D were found to be brailled materials. The choice of braille materials than other materials came from the view that, the two schools C and D had enrolled learners with blindness for a long period than those with low vision. Learners with low vision then gave the following report when interviewed;

“All learners with low vision in our school are always made to learn braille together with the blind learners. Our teacher tells us that, learning braille earlier prepare us to acquire the skills for future use when we became blind.” This gives us more interest of learning using Perkins Bailer than any other low vision devices.”

The above finding reveals schools A and B do not train their learners with low vision to use Perkins brailers. This came from he views that these schools have just enrolled learners with low vision in their schools for less than five years, therefore, they lack the common non-optical devices preferred by other schools like brailers.

These findings show that there is need to sensitize teachers and school administrators to prioritize the kind of non-optical devices which are best to facilitate the learning of learners with low vision in schools.

Porter (2015) points that the knowledge gaps that exist in carrying out earlier assessment to determine the kind of low vision devices to use leave the eye care provider and teachers mixed up in choosing the appropriate adaptive devices to be used by learners with low vision in schools. This means that regular eye health assessment should be carried out to determine the appropriate low vision devices for use by learners with low vision in inclusive schools.

#### 4.1.1 Optical low-vision devices use by learners with low vision in inclusive schools

**Table 7: Optical low-vision devices use by learners with low vision in inclusive schools**

SCHOOL CODE	A			B			C			D		
	NR	NA	NL	NR	NA	NL	NR	NA	NL	NR	NA	NL
Optical Devices												
Hand Held Magnifiers	17	0	-17	13	0	-13	18	4	-14	88	8	-80
Spectacle Mounted Magnifiers	17	2	-15	13	1	-12	18	4	-14	40	3	-37
Stand Magnifiers	20	0	-20	13	0	-13	12	2	-10	80	4	-76
Hand Held Monocular telescopes	18	0	-18	13	0	-13	20	0	-20	54	1	-53

#### KEY

**NR-** Number Required

**NA-** Number Available

**NL-** Number Lacking

The table above presents the optical low vision devices available for use by learners with low vision in inclusive schools in Lango Sub-region. The results reveal, hand held magnifiers, spectacle mounted and stand magnifiers were found to be available in schools C and D. Schools A and B were reported not to be having most of the devices mentioned above although school A had two spectacle mounted magnifiers, while school B had only one spectacle mounted magnifier. On the other hand, school D was reported to be having hand held monocular telescope.

In an interview with one of the headteachers of schools A and D reported as follows;

“Our school does not have most of these optical devices mentioned above since it is not prioritized to be budgeted in the UPE release. Meanwhile, a headteacher of school D also reported that, these optical devices are available in our school in that number since the

school cannot afford to buy because they are expensive and most of these were given to school by some NGOs while some children were given by their parents.”

Basing on the above submissions, the few number of optical low vision devices available in schools is attributed by a number of factors such as; deployment of headteachers who are not trained in special needs education may not give a fair ground for prioritizing the learning needs of all learners especially the purchases of low vision devices in inclusive primary schools.

Goal four of SDGs emphasizes the provision of basic quality education and provision of universal access to quality education at all level. This means that even access to low vision devices by learners with low vision should be treated with much consideration.

The above submissions points that, the earlier established schools like schools C and D which were reported to be lacking most of these low vision devices may not ensure the realization and achievement of SDGs goal four by 2030.

#### 4.1.2 Electronic devices available for use by learners with low vision in inclusive primary schools.

**Table 8: Electronic devices available for use by learners with low vision in inclusive primary schools.**

SCHOOL CODE	A			B			C			D		
	NR	NA	NL	NR	NA	NL	NR	NA	NL	NR	NA	NL
Electronic devices	12	0	-12	08	0	-08	10	2	-08	20	1	-19
Audio books	12	0	-12	08	0	-08	10	2	-08	20	1	-19
Computer with JAWS	05	0	-5	02	0	-02	06	1	-05	20	1	-19
CCTV	02	0	-2	02	0	-02	01	1	00	10	1	-09
OPH	01	0	-1	01	0	-01	01	0	-01	02	0	-02

## **KEY**

**NR-** Number Required

**NA-** Number Available

**NL-** Number Lacking

Objective one was meant to find out the electronic devices available for use by learners with low vision in schools. It was reported that the electronic devices commonly used in some schools where this study was conducted are; audio books, computer with JAWS, CCTV and overhead projector (OHP). Much as these devices are found in some schools, schools A and B did not give any report of using any of the electronic devices, meanwhile both schools C and D were reported to be having audio books, computer with JAWS and Over Head Projector (OHP).

The presentations here reveal, schools A and B were reported unable to afford since they have very low economic base and no access to support by some stake holders except parents.

Also, schools C and D registered few numbers of these electronic low vision devices available at school. The number available is not commensurate to the number of learners with low vision in these schools. This therefore implies that, learners in these schools given few electronic devices were not having adequate access to devices as well as realizing their academic achievements. In an interview with the headteacher of school D, she expressed that;

“We have many learners with low vision and even the electronic devices like computer and OHP are inadequate compared to the number of learners with low vision. Even so, we have only one teacher who is trained in using computer. So, most of the time, our children learn with the help of non-optical and some optical devices.”

Children can perform challenging tasks when assisted by a more knowledgeable others and competent individuals Onwuegbuzie in Vygotsky (2016). Since the above reports confirms most teachers of learners with low vision were lacking knowledge of using some electronic devices like computers, it contradicts the statement of the above scholar since both teachers and learners with low vision were seen as handicap of using the electronic devices.

The above statement implies that, the choices for the use of non-optical devices and some optical devices than electronic devices came about due to the fact that teachers of learners with low vision were having inadequate training in the use of some low vision devices like computer. The study therefore pointed that; some refresher courses should be carried out by teachers to acquire skills to improve learners' access and use of low vision devices in inclusive schools.

#### 4.2 Knowledge of learners with low vision in using low vision devices in inclusive schools.

**Table 9: Knowledge of learners with low vision in using non-optical low vision devices in inclusive schools.**

SCHOOL CODE	A		B		C		D		TOTAL	
Number of participants per school	7		7		7		7		28	
Awareness and Usage of Low vision devices	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
<b>Non-Optical Devices</b>										
Large print on boards	4	3	2	5	6	1	7	0	19	9
Large print books	3	4	3	4	4	3	5	2	15	13
Audio books	0	7	1	6	7	0	7	0	15	13
Ring bells	0	7	0	7	1	6	2	5	3	25
Needle rulers	0	7	0	7	2	5	1	6	3	25

The data on the knowledge of learners with low vision were determined using two key variables that is “**awareness**” and “**usage**” of low vision devices. The assessment of knowledge was done by asking participants to respond using the words “**yes**” and “**no**” where, yes was referring to having knowledge and no, not having knowledge of using low vision devices.

The findings revealed, most learners with low vision had knowledge of using large prints on boards. Other report shows that learners with low vision had knowledge of using large print books and audio books. However, schools A and B reported that their learners do not know how to use the audio books.

On the other hand, the findings also revealed, two schools C and D had learners who have knowledge of using ring bells and needle rulers.

“The school has just enrolled learners with low vision therefore, many devices such as audio books, ring bells and needle readers are not available at school reported teachers and learners of school A while a teacher in school B also reported that the school is totally lacking ring bells and needle rulers. These devices are not easily accessible in the market.”

Considering the above submissions, on the knowledge of learners with low vision in using low vision devices, it was meant to find out if learners are aware or know how to use the devices. This was elaborated by two words, awareness and usage.

Awareness refers to perception of a situation or facts that can be translated in to actions (Cuttsell, 2018). It helps to build confidence in an individual (Tolle, 2018). It also enables one to perform an activity with confidence.

Also, usage refers to application of knowledge in doing something (Julita, 2018). Basing on these two variables, it then confirms that learners with low vision lack knowledge of using some low vision devices. This means that, they lack the potentials of performing some academic activities and activities for daily living (Thom, 2016).

#### 4.2.1 Knowledge of learners with low vision in using optical low vision devices

**Table 10: Knowledge of learners with low vision in using optical low vision devices.**

SCHOOL CODE	A		B		C		D		TOTAL	
	7		7		7		7		28	
Awareness and Usage of Low vision devices	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Optical Devices										
Hand Held Magnifiers	0	7	0	7	4	3	7	0	11	17
Spectacle Mounted Magnifiers	2	5	1	6	4	3	3	4	10	18
Stand Magnifiers	0	7	0	7	2	5	4	3	6	22
Hand Held Monocular Telescopes	0	7	0	7	0	7	1	6	1	27

The table above summarizes the knowledge of learners with low vision in using optical low vision devices in inclusive schools. It was presented basing on the knowledge of learners with low vision per school where the study was conducted. It reveals that, in schools C and D, some learners were reported to be having the knowledge of using hand held magnifiers while schools A and B reported that learners with low vision do not have knowledge of using hand held magnifiers.

On the spectacle mounted magnifiers, all the four schools reported that some learners with low vision have the knowledge of using this device. By the fact that some learners have the

knowledge of using this device cannot make the researcher to generalize the finding that all learners who participated had the knowledge of using spectacle mounted magnifiers. This shows already some gaps since there were some percentage of learners who did not know how to use this device.

Also, only one learner each from schools C and D was reported to be having knowledge of using hand held monocular magnifiers. The rest of the learners in schools C and D and other participating schools did not have knowledge of using hand held monocular magnifiers.

Basing on the above presentation, most of the schools which reported that their learners have some knowledge of using these optical devices reported very few numbers of learners. This therefore indicates that majority of learners in these schools where the study was conducted are still far behind in utilizing the use of optical devices, yet these devices are very good to facilitate the short, middle- and long-distance vision of learners with low vision. The minimal knowledge of using these optical devices by most learners where this study was conducted confirms, learners' academic performance is highly affected and therefore calls for intervention.

“We do not have our own magnifiers and even the school does not have. Sometimes we borrow from our friends when we want to read something. Some of us were given these devices by our parents and others by Muzungu.” Reported by some learners in an interview.

Thom (2016) points that, to use the devices by learners, it requires the personal knowledge and skills of teachers. Also, school administrators should do a lot of collaboration with other stake holders like NGOs to ensure that school afford these devices first for learners to learn how to use them.

#### 4.2.2 Knowledge of learners with low vision in using electronic devices

**Table 11: Knowledge of learners with low vision in using electronic devices**

SCHOOL CODE	A		B		C		D		TOTAL	
	7		7		7		7		28	
Awareness and Usage of Low vision devices	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Electronic Devices										
Audio Books	0	7	0	7	2	5	1	6	3	25
Computer with JAWS	0	7	0	7	1	6	0	7	1	27
CCTV	0	7	0	7	0	7	1	6	1	27
OHP	0	7	0	7	0	7	0	7	0	28

On the use of electronic devices, the results point that learners in schools A and B did not have any knowledge of using any of the electronic devices like audio books, computer with JAWS, CCTV and OHP. Meanwhile, schools C and D reported that some learners had the knowledge of using Audio books. The knowledge of using computer with JAWS was reported in school D while CCTV was found to be used in both schools C and D.

“Most of these electronic devices are expensive and our schools cannot afford to buy using the little UPE release in the school.” These were the reports of headteachers of schools A and B in an interview.

Focusing the above submissions, there is evidence that most schools where this study was conducted have not taken initiatives of using the modern adaptive technologies for learners with low vision. This practice may keep learners with low vision idle and unexposed to the broader world as result, limiting their skills of research, affecting the academic performance.

Kelly (2011) points that, failure of the school and learners to have access to modern technologies like electronic devices are not only the administrators' factor, but also factor related to funding. He advised that school administrators should solicit funds to enable them purchase these devices for use by learners with low vision.

#### 4.3 Challenges faced by learners with low vision in using low vision devices in inclusive schools in Lango sub-region

**Table 12: Challenges faced by learners with low vision in using low vision devices in inclusive schools in Lango sub-region**

SCHOOL CODE	A	B	C	D	TOTAL
Number of participants per school	7	7	7	7	28
Inadequate low vision devices	1	2	2	2	7
Low vision devices are unavailable at school	2	1	2	2	7
Inadequate functional vision assessment of learners with low vision	1	2	2	1	6
Inadequate knowledge of learners in using low vision devices	1	1	1	2	5

Objective three was meant to identify challenges faced by learners with low vision in using low vision devices in inclusive schools in lango sub-region.

The findings reveal learners with low vision in inclusive schools faces a lot of challenges. Among the challenges they face are inadequate low vision devices, low vision devices are unavailable at school, inadequate Functional Vision Assessment (FVA) of learners with low vision and inadequate knowledge of using low vision devices.

The findings also show that most respondents reported that there are inadequate low vision devices at schools while others said that the low vision devices are unavailable in schools.

Meanwhile, some respondents reported that there is inadequate functional vision assessment and others reported that they have inadequate knowledge of using low vision devices.

According to these submissions, learners with low vision are said to be having inadequate knowledge of using low vision devices. The researcher found that this was due to the fact that functional vision assessment is not carried out to determine the kind low vision devices they should use. Also, some devices were inadequate while other schools reported the unavailability of the devices. This means, learners could not have knowledge from without. The researcher therefore advised that the devices be availed to schools first for learners with low vision to acquire the knowledge and skills of using them.

Also, there is need to have school-health care-based services to carry out the assessment to determine the kind of devices to use by learners with low vision. In an interview with some respondents, low vision devices are expensive and require some technical knowledge and skills to use;

“we have few teachers who are trained in special needs education, but it seems they also lack the specialized skills of using low vision devices due to lack of training in using specific low vision devices.”

“Also, there is no proper source of funding like UPE funds released to schools which is very little in that it cannot manage the purchases these low vision devices which are very expensive.

It therefore means that, challenges faced by learners with low vision in accessing and using low vision devices are due to lack of funds in schools that cannot facilitate the provision of low

vision services like functional vision assessment and financing the purchases of low vision devices.

## CHAPTER FIVE

### DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.0 Introduction

This chapter presents the summary, discussion, conclusions and recommendations of the study.

The discussions and recommendations were presented according to the objectives of the study.

#### Summary

The purpose of the study was to investigate access to low vision devices by learners with low vision in inclusive schools in Lango sub-region. The study used three objectives which were meant to; examine the low vision devices available for use by learners with low vision, to establish the knowledge of learners with low vision in using low vision devices and to investigate challenges faced by learners with low vision in using low vision devices in inclusive schools. Qualitative research approach was used. A population of 121 people were targeted, 28 people were sampled using purposive sampling techniques. The research instruments used in this study were questionnaires for teachers, interview schedule for headteachers and focus group discussion guides for learners with low vision.

#### 5.1 Discussions

##### 5.1.1 Low vision devices available for use by learners with low vision in inclusive schools in lango sub-region.

Objective one was meant to examine low vision devices available for use by learners with low vision in inclusive schools in lango sub-region. Here, the data from headteachers were collected using interviews, from teachers using questionnaires and from learners with low vision using

Focus Group Discussions (FGDs). It was then reported that, most low vision devices available for use by learners with low vision in inclusive schools were non-optical devices like audio books, large print books and large prints on boards. These results show that learners with low vision only benefit from using non-optical low vision devices instead of optical and electronic low vision devices.

This indicate that, there is inadequate provision for accessing low vision devices by learners with low vision in inclusive schools and in the long run may impact on the learners' academic performance. This argument is in line with article 24 of the CRPD (2006) which points and recognizes the universal access to educational services by all learners in inclusive schools as well as equal access to devices such as low vision devices. But, on the contrary, in Lango sub-region, these provisions were found to be a dream and it's in papers but not fully implemented in inclusive schools in this region.

#### **5.1.2 Knowledge of learners with low vision in using low vision devices in inclusive schools in Lango Sub-region**

Objective two was meant to establish the knowledge of learners with low vision in using low vision devices in inclusive schools in lango sub-region. Here, data were collected from headteachers using interviews, from teachers using questionnaires and from learners with low vision using Focus Group Discussions (FGDs). Measuring the level of learners' knowledge in using low vision devices was determined using the two key variables, "awareness" and "usage."

The report shows that most learners with low vision have knowledge of using non-optical devices like audio books, large print books and bold prints on boards than optical and electronic devices. The few optical devices that learners with low vision knew how to use were reported to

be hand held magnifiers, spectacle mounted magnifiers, stand and hand held monocular telescopes.

However, few learners were found to be having knowledge of using some electronic low vision devices. The reason here being, most of these electronic devices are not available at school.

Both knowledge and skills are the ability to perform an activity with expertise (Doyle, 2018). Knowledge and skills are acquired through training (Brayn and Maureen, 2019).

Focusing the knowledge of using low vision devices by learners with low vision in inclusive schools, most learners with low vision did not know how to use devices such as optical and electronic devices. This lack of knowledge of learners with low vision here were found to be originated from lack of knowledge of their teachers in using low vision devices due to lack of training in specialized skills.

According to Vygotsky (1978), scaffolding offers physical support to learners by teachers and more knowledgeable peers increases the learners' potentials and knowledge of using low vision devices.

Therefore, for schools to improve learners' access to low vision devices, both teachers and peers who are trained should be utilized so as to increase access to low vision devices in inclusive schools in Lango sub-region.

### **5.1.3 Challenges faced by learners with low vision in using low vision devices in inclusive schools in Lango sub-region**

The findings revealed, learners with low vision in inclusive schools where this study was conducted were faced with challenges of inadequate functional vision assessment of learners with low vision, inadequate knowledge of using low vision devices, low vision devices are either

inadequate or unavailable at schools, functional vision assessment is not carried out to determine the kind of low vision devices to be used by learners with low vision in inclusive schools. In an interview with one of the headteachers of a school in Apac Municipality, she reported that; “whenever children with low vision are taken to Apac Main Hospital, there is no proper services offered to children, instead they are referred to Lira Regional Referral Hospital.” She confirmed that, there is no ophthalmic doctor in Apac Main Hospital, but some low vision services are offered from the hospital by ophthalmic clinical officer (OCO) who at times receives many cases in the hospital, making children with low vision failing to access adequate low vision services.

On the other hand, the low vision devices are said to be inadequate or unavailable in most of these inclusive schools which therefore makes it difficult to be accessed by teachers as well as learners with low vision in inclusive schools. Mitti (2016) points that barriers to access to low vision devices by learners with low vision are due to lack of family support, low vision devices are expensive and some schools do not prioritize purchases of low vision devices.

Similarly, Hongkong Society for the Blind (*HSB*, 2018) points that challenges that learners with low vision face in accessing low vision devices are due to high cost of low vision devices, inadequate knowledge and skills of teachers of learners with low vision. These submissions therefore mean that, lack of learners’ access to functional vision assessment and teachers’ training in the specialized field of special needs exposes the learner to barrier to access to low vision devices in inclusive schools in Lango sub-region.

## **5.2 Conclusions**

The following conclusions were given according to the study objectives as below;

### **5.2.1 Low vision devices available for use by learners with low vision**

The study concluded that low vision devices available and used by most learners with low vision in inclusive schools were non-optical devices like audio, large print books and large prints on boards. Brailled materials were only reported to be used in two schools. The optical devices like magnifiers and telescopes were lacking in most inclusive schools in lango sub-region. The electronic devices like computers with JAWS were found one school, while CCTV was found in another school. The Over Head Projector (OHP) in particular was not found in any school where the study was conducted. This confirms that, even the devices commonly used by learners with low vision are those which are best for use by learners who are blind not learners with low vision.

### **5.2.2 Knowledge of learners with low vision in using low vision devices.**

The non-optical devices which learners with low vision in the four schools were exposed to use were Perkins brailers and hand frames. They lacked knowledge of using optical and electronic devices such as hand held, stand and spectacle mounted magnifiers.

### **5.2.3 Challenges faced by learners with low vision in using low vision devices**

The study concluded that learners with low vision were facing the challenges of inadequate low vision services which include; Functional Vision Assessment (FVA) by teachers and other service providers. The study also concluded that the low vision devices were also inadequate in some schools while others were completely unavailable in schools. On the other hand, teachers were also found lacking knowledge and skills of using some low vision devices since they are not trained in using these devices.

### **5.3 Recommendations**

The following recommendations were given basing on the conclusions of the study made and according to the objectives of the study;

#### **5.3.1 Low vision devices available for use by learners with low vision**

The study concluded that learners with low vision in inclusive schools were using mostly non-optical devices for example; audio books, large print books and large prints on boards. The study also concluded that some schools were using only brailled materials which are best for use by learners who are blind not those with low vision. Only two schools were using computer with JAWS. Yet, the UPE policy (1997), Inclusive Education policy and article 24 of CRPD (2006) advocate for enrolment of all learners in schools as well as providing adequate relevant materials for learning so as to enhance their learning and improve performance in academic activities.

The study therefore recommended that; there is need to supply all categories of low vision devices to inclusive schools, more teachers should be trained and posted to inclusive schools to train learners with low vision on how to use low vision devices, low vision services such as Functional Vision Assessment (FVA) should be carried out in schools to determine the kind of low vision devices to be used by learners with low vision, government should also increase budgetary provisions in schools to improve purchases of appropriate low vision devices in inclusive schools.

#### **5.3.2 Knowledge of learners with low vision in using low vision devices**

The study concluded that learners with low vision only have knowledge of using non-optical devices such as audio books, Perkins Brallier, large print books and large prints on boards. They lacked knowledge of using optical devices like magnifiers (hand held, spectacle mounted and

stand magnifiers) and telescopes. The study also concluded that teachers of learners with low vision have very little knowledge of using different low vision devices since they are not trained to use the devices. The study therefore recommended that, learners with low vision be exposed to learn different low vision devices, learners' functional vision be assessed to determine the low vision devices to be used by learners, more teachers should be trained in specialized skills in order to acquire knowledge of using different low vision devices, more resource persons and more knowledgeable peers should be used to train learners with low vision to acquire knowledge and skills of using low vision devices in inclusive schools.

### **5.3.3 Challenges faced by learners with low vision in using low vision devices**

The study concluded that learners with low vision were facing the challenges of inadequate low vision services which include; Functional Vision Assessment (FVA) by teachers and other service providers. The study also concluded that the low vision devices were also inadequate in some schools while others were completely unavailable in schools. On the other hand, teachers were also found lacking knowledge and skills of using some low vision devices since they are not trained in using these devices.

The study therefore recommended that, school based approach of low vision services for example Functional Vision Assessment (FVA) should be taken in to consideration to determine the low vision device to be used by learners with low vision in inclusive schools, more low vision devices should be availed in schools through lobbying to government, donors and some well-wishers, teachers of learners with low vision should be trained some specialized skills of using different low vision devices either through full-time or short courses and workshops or seminars.

## **Suggestions for further studies**

### **Teachers of learners with low vision**

The current study did not explore further the knowledge of teachers of learners with low vision in using low vision devices. Inadequate knowledge of teachers of learners with low vision in using low vision devices have direct impacts on learners' access to low vision devices in inclusive schools. The study found that some teachers were also lacking knowledge and skills of using some low vision devices. Meaning that, this insufficient knowledge of teachers in using the devices could directly impact negatively on the learner's knowledge and skills of using the devices since teachers can offer scaffolding to learners. Therefore, there is need to conduct another study on "teachers' knowledge in enhancing access to low vision devices by learners with low vision in inclusive schools."

## REFERENCES

- Steward, D.H and Shamdasani, P.N (2004). Tools for policy impact: a handbook for researchers.
- Baxter (2008). Qualitative case study methodology; Study design and implementation for novice researchers. the qualitative report, 13(4). Retrieved from:  
<http://nsuwork.nova.edu/tqrr/vol.13>.
- Cohen, M.L and Morison.K (2015). Research methods in education, 7<sup>th</sup> Edition USA, Canada
- Cohen.L, Manion.L and Kieth.Morison (2011). Research methods in education, 7<sup>th</sup> Edition, Routledge, Taylor Francis Group, London and New York.
- Cohen.L, Manion.L and Morrison (2011): Research methods in education, 7<sup>th</sup> Edition, Taylor and Francis Group, London and New York.
- Corn A.L and Koenig A.J (1996). Foundations of low vision, American foundations of the blind, New York,
- Corn, A.L and Koenig, A.J (1996). Foundation of low vision: Clinical and functional perspectives. New York: American foundation of the blind.
- Creswell. J.W (1997). Qualitative inquiry and research
- Creswell. J.W and Poth.C.N (2016). Qualitative inquiry and research design: Choosing among five approaches, 4<sup>th</sup> Edition, International Student Edition, Sage Publication, India, India-Pacific.
- D'Andrea, F.M and Farrenkopf, C. (2000). Looking to learn: Blind. promoting literacy for students with low vision. New York: American Foundation for the Blind.
- Denicolo.P (2014). Success in research, achieving impact in research, SAGE Publications, London, Los Angeles, New Delhi

Elaine.w (2013). School-based research, a guide for education students, SAGE Publications, Ltd, London, Page 203-215

Gall.M.D, Gall.JP and Brog. W.R (2007). An Introduction to education research, 8<sup>th</sup> Edition, Library of Congress Cataloging in Publication Data, United States of America.

Hartin. P (2012). A tool kit for disability rights convention, for world blind union, New Zealand.

Hartin. P and Mani. MNG (2015). World blind union and international council for education of people with visual impairment (*ICEVI*), USA.

[http://whqlibdoc.who.int/hq/2002/WHO\\_PBL\\_02.87.pdf](http://whqlibdoc.who.int/hq/2002/WHO_PBL_02.87.pdf)

<https://www.researchgate>

John, P.W (2006). Experiential learning: A best practice handbook for educators and trainers, 99 of the Best Experimental Cooperative Games, Lakebay, WA: ISBN 0-9646541-4-8

Karin, V.D, Kishiki, and Courtright, p (2012). Low vision care in Africa: practical approaches to clinical services, educational engagement and planning, light for the world, Lions Club International Foundation, Wilde Ganzen and KCCO, Canada.

Koenig A.J and Holbrook M.C (2000). Foundations of education: Instructional strategies for teaching children and youths with visual impairment, Volume 2, New York, ABF Press

Koenig, A.J & Holbrook, M.C (2000). Foundations of education: instructional strategies for teaching children and youths with visual impairments, New York: American Foundation For the blind.

Leckie, Scott, Gallanger, Anne (2006). Economic, social and cultural rights: a legal resource guide. University of Pennsylvania Press. Pp.Xiv. ISBN978-0-8122-3916-4

MacDonald (2016). Texas state historical association: handbook of Texas, Texas School for the Blind and Visually Impaired.

Maxwell.J.A (2005). Qualitative research design, an interactive approach, Thousand Oaks, London, New Delhi Sage Publication Inc.

Mbonye, K.A (2016). Ministry of health guidelines for health Care, Coordinating Office, Ministry of Health, Uganda, Kampala.

Moyn.S (2010). Human rights in history (Harvard University Press).

Odeng.M (2013). Human rights education to start in secondary school, Kampala.

Okaja.E (2007). Realizing the Inference between UPE and child labor in Uganda, Case Study of Soroti District. PHD Thesis, Institute of Social Studies, The Hague.

Olga.M (2002): supporting children with visual impairment in mainstream schools, Franklin watts, London, New York, Sydney.

Pfeffer.J (2000). The knowing-doing gap: How smart companies are turning knowledge to actions. National Society for Experimental Education, 9001 Braddock Road Suite 338

Reuters (2016). Journals ranked by impact: psychology, multidisciplinary.” Journal citation reports. Web of science and social sciences Ed. Society for General American Psychology APA.

Ryan. J. (2018). Advanced vision therapy center, Idaho Optometrist and Neuro-Optometry, America Academy of Optometry, University of California.

- Sharan B.M (2009). *Qualitative research: A Guide to design and implementation* revise and expanded from qualitative research and case study applications in education, John Wiley and Sons, Jossey-Bass, San Francisco.
- Silver, j (2018). *Low vision in east African students: Need for optical low vision services*, British, J Ophthalmic.
- Spungin, S.J and Ferrell, K.A (2007). *The Role and function of the teacher of students with visual impairments*. Position paper of the division on visual impairments, Council for Exceptional Children. Arlington, V.A: Council of Exceptional Children.
- UNDP (2016). *Sustainable development goals (SDGS)*, UNDP's Global Website.
- UNESCO (2007). *Investing against evidence: The global state of EDC care and education*, 38-39, Marop. PTM, KAGA, Y: UNESCO.
- UNESCO (2016). *Mind in the society: Development of higher psychological processes*.
- USAID (2015). *Universal primary education, human rights and the rights to health: An assessment of the policy and practice in Uganda*, Center for Health, Human Rights and Development, Old Kiira Road-Ntinda, Kampala -Uganda.
- USAID (2015). *Universal primary education. Human rights and rights to health: An assessment of policy and practice in Uganda*, Kampala, Uganda.
- [www://.un.org/Sustainable Development](http://www://.un.org/Sustainable Development)
- Yin.R.K (2002). *Case study research, Design and methods*, 3<sup>rd</sup> Edition, New Bury Park, C.A
- Yin.R.K. (2011). *Qualitative research from start to finish*, the Guilford press, United States of America (USA), Library of congress cataloging in publication data.

Zimmerman G.J (2004). Optics and low vision devices, Erin Foundations of Low Vision, New York.

Minto, H (2004). Establishing low vision services at secondary level. Community eye health/ international center for eye health, volume: 17, issue: 49, pg.5.



Appendix (ii)

QUESTIONNAIRES FOR TEACHERS

Dear colleagues,

This is to request you to complete this form. It is being used in my study entitled, “**access to low vision devices by learners with low vision in inclusive schools in Lango Sub-region.**”

You have been chosen as one of the respondents to provide information for this study. The information you provide will be treated with confidentiality and will be used strictly for the purposes of this study. Your own personal identity is not required. Thank you so much in advance. Please tick in the appropriate box(es).

**Section A: Background Information**

1. Name of the

school.....

2. Gender: Male Female

3. Your highest academic qualification

Master Degree

Bachelor Degree

Diploma

Grade III Teachers' Certificate

4. For how long have you been a teacher in this school?

Year (s)

5. Are there any Learners with Low Vision in the school? If yes, how many Learners with Low Vision do you have in the school by class?-

**Class      Number**

P.1

P.2

P.3

P.4

P.5

P.6

P.7

**Total**

**Section B: Low vision devices available for used by learners with low vision in schools:**

6. Are there low vision devices available for use by learners with low vision in you school? If yes, mention these devices.

7. Low vision devices available for use in school

SN	Low Vision Devices	Number Required	Number Available
a)	<b>Optical devices</b>		
	• Hand held magnifiers	.....	.....
	• Stand magnifiers	.....	.....
	• Bar magnifiers	.....	.....
	• Spectacle mounted magnifiers	.....	.....
	• Hand held monocular telescopes	.....	.....
	• Clip on monocular telescope	.....	.....
	• Spectacle mounted telescope	.....	.....
	• Contact lenses	.....	.....
b)	<b>Non-optical devices</b>		

	<ul style="list-style-type: none"> <li>• Talking items</li> <li>• Large print books</li> <li>• Telephones</li> <li>• Thermostat</li> <li>• Watches on remote control</li> <li>• Needle readers</li> <li>• Tactile labels</li> </ul>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
c)	<p><b>Electronic devices</b></p> <ul style="list-style-type: none"> <li>• Closed Circuit Television (CCTV)</li> <li>• Overhead projector (OHP)</li> <li>• Audio &amp; electronic books</li> <li>• Smart phones and tablets</li> <li>• Computers with JAWS (Job Access with Speech)</li> </ul>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

8. Which of these low vision devices are commonly used by teachers of learners with low vision in your school?

- a) Optical devices
- b) Non-optical devices
- c) Electronic devices
- d) Others. Specify

.....

9. Of the devices mentioned above, which of these devices are preferred for use by learners with low vision?

- a) Optical devices
- b) Non-optical devices
- c) Electronic devices

d) Others. Specify

.....

10. How do you access these low vision devices for use by learners with low vision in school?

- a) Purchased from UPE funds
- b) Provided by parents
- c) Supplied by the government
- d) Provided by NGOs
- e) Others. Specify.

.....

**Section C: Knowledge of learners with low vision in using low vision devices in inclusive schools.**

11. do you have training in special needs education? If yes? If yes, what is your qualification?

- a) Master in SNE
- b) Bachelor of Education SNE
- c) Diploma in SNE
- d) Certificate in SNE

12. Do your teachers have knowledge of using low vision devices? If yes, which of these devices do they prefer to use?

- a) Optical devices
- b) Non-optical devices
- c) Electronic devices

d) Others. Specify

.....

13. Are learners with low vision in your school aware of any of these low vision devices?

Yes  No

14. Which of these devices are preferred for use by learners with low vision in your school?

a) Optical devices

b) Non-optical devices

c) Electronic devices

d) Others. Specify

.....

**Section D: Challenges faced by learners with low vision in accessing low vision devices in schools.**

15. What challenges do you face to enable learners with low vision access low vision devices in school?

a) Inadequate low vision devices

b) Inadequate skills of using low vision devices

c) Low vision devices are unavailable in school

d) Inadequate funds to motivate teachers of LWLV

e) Others. Specify

.....

16. Are there any training organized for teachers of learners with low vision in the area of low vision services? If yes, what are these training?

a) Functional vision assessment

69

- b) Use of low vision devices
- c) Orientation and mobility training
- d) Adaptation of learning materials
- e) No training organized
- f) Others. Specify

.....

**E: Strategies to improve access to low vision devices by learners with low vision**

17. Suggest what strategies to be done to improve access to low vision devices by learners with low vision.

- a) Functional vision assessment
- b) Training teachers on use of low vision devices
- c) Training teachers on Orientation and mobility
- d) Adaptation of learning materials
- e) No training organized
- f) Training in all the above areas
- g) Others. Specify

.....

**THE END.**

**Thank you for completing this questionnaire. God bless you.**

.....  
**ODONG DAVID NEWTON**  
**+256-772-878013/ +256-752-878013**

Appendix (iii)

INTERVIEW SCHEDULE FOR HEADTEACHERS

Section A: Background Information

1. What is your name?

Section A: Background Information

1. Name of the

school.....

2. Gender: Male Female

3. Your highest academic qualification

Master Degree  Bachelor Degree

Diploma  Grade III Teachers' Certificate

4. For how long have you been a Headteacher in this school?  Year (s)

Section B: Access to low vision devices by learners with low vision in inclusive schools.

5. Are there learners with low vision in your school? If yes, how many are there according to their classes?

Class      Number

P.1

P.2

P.3

P.4

P.5

P.6

P.7

Total

6. Are there low vision devices available in school? If yes, which of these are available?
7. Which of these low vision devices do learners prefer to use?
8. How do learners with low vision get these low vision devices to use at school?

**Section C: Knowledge of learners with low vision in using low vision devices.**

9. Have you ever organized any assessment to use low vision devices? If yes, which of these devices do you train learners to use?
10. Are learners with low vision aware of the use of any of these low vision devices?
11. Do your teachers guide learners how to use low vision devices in school?

**Section D: Challenges faced by learners with low vision in accessing and using low vision devices.**

12. What challenges do your learners face in accessing low vision devices?

**Section E: Strategies to improve access to low vision devices by learners with low vision.**

13. Suggest strategies to improve access to low vision devices by learners with low vision.

**THE END.**

**Thank you for participating in this interview. God bless you.  
+256-772-878013/ +256-752-878013**



	<ul style="list-style-type: none"> <li>• Talking items</li> <li>• Large print books</li> <li>• Telephones</li> <li>• Thermostat</li> <li>• Watches on remote control</li> <li>• Needle readers</li> <li>• Tactile labels</li> </ul>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
c)	<p><b>Electronic devices</b></p> <ul style="list-style-type: none"> <li>• Closed Circuit Television (CCTV)</li> <li>• Overhead projector (OHP)</li> <li>• Audio &amp; electronic books</li> <li>• Smart phones and tablets</li> <li>• Computers with JAWS (Job Access with Speech)</li> </ul>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

6. How do you get access to these low vision devices to use at school?

**Section C: Knowledge of learners with low vision in using low vision devices.**

7. Do you have awareness of using any of these low vision devices? If yes, which of these devices do you know how to use?

**a) Non-optical devices**

SCHOOL CODE	A		B		C		D		TOTAL	
Number of participants per school										
Awareness and Usage of Low vision devices	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
<b>Non-Optical Devices</b>										
Large print on boards										
Large print books										
Audio books										
Ring bells										
Needle rulers										

**b) Optical devices**

SCHOOL CODE	A		B		C		D		TOTAL	
Awareness and Usage of Low vision devices	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
<b>Optical Devices</b>										
Hand Held Magnifiers										
Spectacle Mounted Magnifiers										
Stand Magnifiers										
Hand Held Monocular Magnifiers										

c) Electronic devices

SCHOOL CODE	A		B		C		D		TOTAL	
Awareness and Usage of Low vision devices	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
<b>Electronic Devices</b>										
Audio Books										
Computer with JAWS										
CCTV										
OHP										

8. Do you school organize functional vision assessment of learners with low vision?

9. Do your school organize any training to use low vision devices? If yes, which of these devices do you train to use?

10. Do your teachers guide learners on how to use low vision devices in school? If yes, which of these devices do you learn under teachers' guidance?

**Section D: Challenges faced by learners with low vision in accessing and using low vision devices.**

11. What challenges do you learners face in accessing low vision devices?

**Section E: Strategies to improve access to low vision devices by learners with low vision.**

12. Suggest strategies to improve your access to low vision

**THE END.**

**Thank you for participating in this focus group discussion. God bless you.  
+256-772-878013/ +256-752-878013**

