

**CLASSROOM MANAGEMENT SKILLS FOR FACILITATING LEARNING  
OF MATHEMATICAL SKILLS FOR CHILDREN WITH MENTAL  
RETARDATION: A CASE OF ILEMELA DISTRICT, TANZANIA**

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ADMINISTRATION  
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**2023**

**CERTIFICATION**

The undersigned certifies that he has read and hereby recommend for acceptance by the Open University of Tanzania, a dissertation entitled: “**Classroom management for facilitating learning of mathematical skills for children with mental retardation: A case of Huruma special unit, Tanzania**” in partial fulfilment of the requirements for the degree of Master of Education in Administration, Planning and Policy Studies of the Open University of Tanzania.

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I, **Lucian Joseph Malungo**, declare that the work presented in this dissertation is original. It has never been presented to any other University or Institution. Where other people's works have been used, references have been provided. It is in this regard that I declare this work as original mine. It is hereby presented in partial fulfilment of the requirements for the degree of Master of Education in Administration, Planning and Policy Studies of The Open University of Tanzania.

.....

Signature

5th July,2023

.....

Date

## **DEDICATION**

I dedicate to all my children to study hard for their betterment of their life, May God help them to reach their destination.

## **ACKNOWLEDGEMENTS**

This work is a product emanating from contributions of several people and institutions. The fundamental source of the completion of this work is the wish of the Almighty God who deserves absolute acknowledgement. However, I am still highly indebted to all individuals and institutions which contributed to having this work completed. I would like to thank all Open University of Tanzania members especially Mwanza center for assisting me in this study, I enjoyed being with them. Special thanks to Huruma Special Unit as they cooperated enough during data collection. Much thanks to my supervisor Dr. Cosmas Mnyanyi for his support to make sure that the research was researchable. A gain, special thanks should go to the Deputy Director of National Literacy Center Mrs.Tulia Michael for her psychological and material support. Many thanks should go to my best friend Benatus Kahuru for his psychological support and financial support he offered during my study; for sure he rescued my psychological problems.

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## ABSTRACT

This study investigated the classroom management skills for facilitating learning of mathematical skills for children with mental retardation in Ilemela district in Tanzania. The study focused on parents and teachers' views, strategies teachers use to manage classrooms and how teachers assess mathematical skills development among pupils with mild mental retardation in primary schools. The study was descriptive in nature using interview guide as data collection tools. The study was guided by the constructivism theory collecting data from 32 of whom 3 were the mathematical teachers, one quality assurer officer and 28 parents and guardians of pupils with mild mental retardation. Data were analysed using themes and descriptive statistics. Findings indicated parents need their children to learn mathematical skills to seamlessly adapt to daily life skills, teachers need further training on skills to manage classroom and use functional mathematical for children with mental retardation who might have other disabilities such as visual, hearing, speech, physical (fine motor) which led to difficult in attaining mathematical skills. The school had one teacher trained in special education. Furthermore, findings indicated a collaboration between the teacher-and the parents supported children to develop mathematical skills more specifically, functional mathematical skills. The study suggests teacher development opportunities for increased collaboration and awareness among community members on facilitating learning of children with mental retardation.

**Keywords:** *Classroom management, skills for mental children.*

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**ABBREVIATIONS**

CHAT	Cultural Historical Activity Theory
CRM	Curriculum Relation Model
DEO	District Education Officer
HI	Hearing Impairment
IMC	Ilemela Municipal Council
LRE	Least Restrictive Environment
MATH	Mathematical Association of Tanzania
MR	Mental Retardation
MMR	Mild Mental Retardation
MS	Mathematical Skills
NGO	Non – Governmental Organization
NCTM	National Council of Teacher of Mathematics
PMMR	Pupils with Mild Mental Retardation
SD	Speech Disorders
UNESCO	United National Education Scientific and Culture/Organization
WHO	World Health Organization
ZDP	Zone of Proximal Development

## **CHAPTER ONE**

### **INTRODUCTION AND BACKGROUND OF THE PROBLEM**

#### **1.1 Introduction**

This study is about investigating classroom management skills necessary to facilitate children with mental retardation in learning mathematical skills. Huruma special unit in Mwanza, Tanzania, enrolls children with mental retardation. This chapter presents the detailed background of the study, the statement of the problem, research objectives, and significance of the study, scope and limitation of the study.

#### **1.2 Background of the Problem**

Tanzania is implementing inclusive education that calls for school management to develop competences in managing classroom teaching for inclusion of children with disabilities including those with mental retardation (Tungaraza, 2014; HakiElimu, 2012; Mnyanyi, 2014; Possi & Milinga, 2017; Zigler, Lusweti, Macmbinji, Jumba, Kaggi & Namirembe, 2017). According to Butler, Miller, Lee and Pierce (2001) and Islami, Gunarhadi and Yamtinah (2022) mathematics for children with mental retardation is important for solving most of the real-life challenges.

According to Devlin (2021), Mathematics subject is important for everyone, as controls almost our daily life. We use mathematics in measuring volumes, in hospitals, at home in the kitchen, and in business when selling and buying goods. Without use of mathematics life becomes miserable. It is this background we find a need of looking at classroom management skills for facilitating mathematics learning

among all of our school children, including those with intellectual impairment, so they lead a good quality of life (Devlin, 2021; Onoshakpokaiye, 2021).

In Tanzania mathematics performance faces challenges. There is high failure in mathematics (Galadima & Yusha'u 2007; HakiElimu, 2012; Mazana, Montero, & Casmir, 2019). One of the shocking results is that when 82.6% of PSLE and 68.7% of CSEE failed in 2012 (Mazana, Montero & Casmir, 2020). This tells there is a need to find out factors influencing pupils with mild mental retardation in attaining mathematical skills. Tanzania is struggling to improve Mathematics to lower primary pupils, the number of pupils with mild mental retardation who complete Standard Seven without competencies in Mathematics is also increasing.

Children with mild mental retardation can acquire academic skills up to the six-grade level; also, they can become full self-sufficient in some cases live independently without community social support (Mbaga, 2002). Low achievement in mathematics for children with mild mental retardation is one of the challenges facing the education sector in our country and elsewhere in the world (Michael, 2013). The problem at hand makes children with mild mental retardation having low achievement in mathematics. The problem in low achievement in mathematics is both for children with and without mild mental retardation (Michael, 2013). Thus, this study considers investigating the factors influencing pupils with mild mental retardation in attaining mathematical skills in Huruma Special Unit at Pasiansi Primary school in Ilemela Municipal, Mwanza region.



Tanzania is one of the countries which lag behind in performance in mathematics as a subject from primary level up to higher learning institutions (HakiElimu, 2012). Despite the fact that the government effort of allocating a budget for capacity building for mathematics teachers, purchasing teaching resources, different books and other teaching materials and equipment, the number of learners with low. Mathematical skills in primary schools are believed to be increasing day after day. There are twelve components of mathematical skills, these are: problem solving, communicating mathematical ideas, mathematical reasoning, apply mathematics to every day situation, alertness to the reasonableness of results, estimation, appropriate computational skills, algebraic thinking, measurement, geometry, statistics, and probability (Chinn, 2004). Pupils with low mathematical skills have deficit of some of the skills including having minimal or no verbal communication resulting to inability of the reasoning or lack the deliberative capacities necessary to participate in research or policy-influencing decision making (Taylor, 2018).

Reisman (1972) and Kitta (2004) argues that pupils with low mathematical skills are those underachieving in mathematics subject. These pupils in primary and secondary schools normally perform better in other subjects except in mathematics. Hence, different Tanzanian scholars pinpoint mathematics as a national problem since many pupils' failure the subject (Kitta, 2004). From my personal experiences, in Tanzania many children learn mathematics from home before they go to school; this is also supported by Hughes (1986) who argues that children learn numbers before they start school. Parents and siblings teach children simple arithmetic according to the things they have within their environment. Children are taught to count animals and the

sacks of crops and to count money, especially coins. When they go to school, they have a little knowledge of additions and subtractions. From grade one up to grade two most primary pupils in Tanzania normally perform well in mathematics subject. When they start grade three, things start to change slowly and the number of pupils with low mathematical skills emerge in this grade and following grades.

Masele and Tweve (2018) identified the major causes of low mathematical skills among pupils as emanating from pupils, teachers and the community including parents, while others attributed the problem to pupils' effort. The problem of low mathematical skills among many primary pupils needs further investigation and is the basis for this study. There is a need to find out how teachers change methods and strategies when they start teaching mathematics at grade three. This could be the result of changes in the curriculum in which children are exposed to place values of numbers increasing from hundreds to thousands.

According to Chorney and Bakos (2021) and Ziegler and Loos (2017) mathematics can be broadly interpreted as something a person does when solving problems in real life situations. It includes the role of intuition, fluidity of mathematical conceptualization, open-endedness, and nature of proof, use of logic and questioning within mathematical contexts (Michael, 2013). We use mathematics in many areas of our lives and we can work on problems within mathematics that use mathematics as a tool; such like problems may be in science and geography (Portman & Richardson 1997). According to Portman and Richardson (1997), the importance of

mathematical skills includes among others, to enable an individual to cope with their daily life.

Most of the mathematics used in everyday life is embedded in practical problems as Hughes (1986) states that:

*Mathematics is only “useful” to the extent to which it can be applied to a particular situation, and it is the ability to apply Mathematics to a variety of situations to which we give the name “problem solving”. However, the solution of mathematical problem cannot begin until the problem has been translated into the appropriate mathematical terms. This first and essential step presents very great difficulties to many pupils – a fact which is often too little appreciated (Hughes (1986): p.3)*

The basic skills of mathematics help an individual to be an independent person who can take care of himself or herself. In line with this, Naggar-Smith (2008) lists some important basic skills of mathematics in our daily life. These include: to pay for purchase and to give change, to weigh and to measure, to estimate and approximate and to understand straight forward timetables. In this sense, if one fails to grasp the simple basics of mathematics, that person may face difficulties in the above realities.

Mathematics Competency require students to mastering simple computing (add, subtract, divide multiply) or manipulating numbers. In addition to knowing mathematical facts and basic procedure, students must have higher order of reasoning and problem-solving skills as well as the ability to explain their thought processes. This is especially problematic for students with disabilities because they generally perform two grade levels below students without disabilities (Wagner,

1995). Although some researchers have done research concerning low achievement in mathematics for children with mild mental retardation and provide that in effective study strategies were closely associated with achievement for those students (Belmont and Butter field 1969), and others provided instructions to help those inerrable group hence to develop conceptual understanding of mathematics, among those are as concrete – representational – abstract instructional process (Millers and Hudson 2006), but still they perform low.

### **1.3 Statement of the Problem**

The Tanzanian government has taken different Initiatives towards improving performance of mathematics subject in different levels, more so, primary and secondary education in Tanzania. According to Kitta (1994) among the strategies include: enhancing teacher capacity through initial teacher training, workshops, and seminars; buying more mathematical text books and teaching aids and to provide teachers with pedagogical knowledge and other resources. However, despite these efforts, students' poor performance and low mathematical skills has long been a subject of discussion among parents, teachers, educators, political leaders and students themselves (Galadima & Yusha'u 2007; HakiElimu, 2012; Mazana, Montero, & Casmir, 2019; Chorney & Bakos, 2021; Ziegler & Loos, 2017). In line with Kita (1994). Ziegler and Loos (2017) argue that there is a problem of low mathematical skills among primary school pupils caused by many reasons such as; unqualified teachers, few teaching methods, unsuitable teaching and learning environment, shortage of text books and teaching aids, and low awareness of pupils towards mathematics. However, little is known about how do teachers manage

classroom learning activities for children with mental retardation in attaining mathematical skills.

## **1.4 Research Objectives**

### **1.4.1 The General Objectives of the Study**

The purpose of this study is to investigate classroom management for facilitating learning of mathematical skills for children with mental retardation: A case of Huruma special unit, Tanzania, Ilemela Municipal in Mwanza, Tanzania.

#### **1.4.1 Specific Objectives**

- (i) To examine parents and teachers' views on enhancing attainment of mathematical skills among pupils with mild mental retardation in primary schools.
- (ii) To explore strategies teachers, use to manage classroom when facilitating learning of mathematics skills for children with mild mental retardation in primary schools
- (iii) To find out how do teachers assess learning of pupils with mild mental retardation in attaining mathematical skills in primary schools.

## **1.5 Research Questions**

- (i) What are the teachers and parents' perception on what contributes to enhancing pupils with mild mental retardation in attaining mathematical skills in primary schools?

- (ii) What are the strategies teachers used to manage classroom when facilitating learning of mathematics for children with mild mental retardation in primary schools?
- (iii) How do teachers assess learning of pupils with mild mental retardation in attaining mathematical skills in primary schools?

### **1.6 Significant of the Study**

The proposed study is going to inform the main factors influencing pupils with mild mental retardation in attaining mathematical skills and suggest the possible interventions that can be adopted by the Ministry of Education Science and technology in collaboration with President's Office Regional Administration and Local Government Authorities in addressing the problem. This study provides information and data useful for policy makers, curriculum developers, School Quality assurers of pupils with special need and other stake holders to know the factors for influencing pupils with mild mental retardation in attaining mathematics. The findings are useful for future researchers. Other significant include: increased teachers' morale to facilitate mathematics skills learning school children with mild mental retardation; support teachers to determine method of teaching mathematics for such group of pupils; and contribute to addressing challenges related to factors influencing pupils with mild mental retardation in attaining mathematical skills in Primary Schools.

### **1.7 Scope of the study**

The study covered teachers and parents from one school that enrolls children with mental retardation in Mwanza, Tanzania. The coverage of the content generally

based on the facilitation of learning of mathematical skills among pupils with mental retardation.

### **1.8 Limitation of the Study**

This study is limited to a sample of only one (1) primary school with special unit in Ilemela Municipal Council (IMC) in Mwanza region, Tanzania. This may not necessarily inform the situation of the whole country but at least can provide some basic information on the factors limiting the pupils with mental mild retardation in attaining mathematical skills in primary schools. The study faced the following obstacles; the reluctance of some respondents to reveal their opinions investigated. To overcome this researcher explained the importance of the study to the participants for them to make an informed decision on whether or not to participate in the study. No respondent was forced to participate in the study.

The study focused on the implementation of curriculum for learners with special needs in inclusive education settings, the few selected schools, the views and opinions of the participants for that matter differed, depending on the individual schools' experience, differences in the experience of school heads, educational leadership, teachers' and schools' characteristics as well as the school environment settings.

Because the research instruments were objective, they were able to control and influence the variations in experience. However, because Tanzania is a huge country, the study's focus was solely on schools in that area. As a result, its conclusions were

only applicable to a small portion of Tanzania. The selected school is among the many schools facilitating learning of mathematics to children with mental retardation as representative sample. Other than that, the study merely contributed to deepening our understanding of the subject matter; it did not permit us to generalize our conclusions, but it may serve as a representative sample of schools that share similar traits. Furthermore, because of their busy schedules, educational administrators and heads of schools frequently gave reasons why they could not participate in interviews, which required the researcher to spend additional time conducting interviews for the goal of gathering data. The researcher was flexible with the use of respondents' time during data gathering.

### **1.9 Definition of key terms**

#### **Mental Retardation (MR)**

Mental retardation (MR) is a genetic disorder manifested in significantly below average overall intellectual functioning and deficits in adaptive behavior (Armatas, 2009). For the purpose of this study, mental retardation refers a state of pupils failing to acquire academic skills due to the low Cognitive brain they have.

#### **Mild Mental Retardation (MMR)**

The American Association on Mental Retardation (2004) defines Mild Mental retardation is as a significantly sub-average intellectual ability which ranges between 50-55 and 70 and concurrent delays in adaptive functioning that present prior to the age of 18. For the purpose of this study, mild mental retardation refers to the intellectual impairment among pupils not attaining mathematical skills.



**Pupils with Mild Mental Retardation (PMMR)**

Pupils with mild mental retardation are handicapped children who need special education and their ability in number relationships have been recognized according to concrete-representational abstract instructional approach (Kroesbergen & Van Luit, 2003). In this study, pupils with mild mental retardation are pupils with difficulties to attain academic skills including mathematical skills.

**Mathematical Skills (MS)**

Mathematical skills refer is the leading skills which students with intellectual disabilities have difficult to understand (Kroesbergen & Van Luit, 2003). For the purpose of this study mathematical skill refers to the skill of numbers that pupils should use at school as well at home in their daily life.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents different studies done by different researchers and scholars on pupils with mild mental retardation and the problem of mathematics on their learning in primary schools. This part also reviews literature on challenges that pupils with mild mental retardation experience in acquiring mathematical skills. The teaching methods which teachers use in teaching mathematics for pupils with mild mental retardation in primary school are also reviewed and discussed as expressed by many researchers.

#### **2.2 Theory Guiding the Study**

This study adopts constructivism theory as guides researcher on the understanding on how does human think and how does human learn (Gash, 1992; Erdem, 2019; Akban & Beard, 2016; Reindal, 2021). The theory has a number of influential people including Piaget, Vygotsky and Bronfenbrenner. According to Gash (1992) Piaget views that thinking can be thought of as the process of maintaining a balance (a balance between experience and what is known just before experience) within the organism. Further Piaget feels that the fundamental dynamics of life are about the differentiation of the human organism due to its interaction, environment and dynamics (Özer & Erdem, 2022). The general consensus among educators is that what an individual knows is not a function of independent observation, it is created through interaction with their worldview, and knowledge and reality are subjective in

nature (Erdem, 2019; Akban & Beard, 2016; Reindal, 2021) as such constructivism is seen as a model or metaphor for how people learn (Cobern, 1995).

Within the constructive view of learning, Vygotsky sees social activities as precursors to, and form the basis for, complex mental processes (Cole, 1996; Vygotsky Learning theory, 2012). The role of the teacher becomes to promote children's cognitive development by passing along the meanings that their culture assigns to objects and events and by assisting children with challenging tasks (Vygotsky, 1978; Vygotsky Learning theory, 2012). Further Bronfenbener (1979) considers child development as the result of interaction with environmental systems surrounding a child. Bronfenbrenner Ecological System Theory focuses on quality and context of the child's environment. These surroundings may help or hinder a child's developmental continuation including those with intellectual impairment.

Social constructivism is therefore, a philosophy which emphasizes culture and context in understanding what occurs in society and constructing knowledge based on this understanding (McMahon, 1997; Social Constructivism- Emerging Perspectives on Learning, 2008). Also, Vygotsky emphasizes that the classroom interaction between students and teachers and creative collaboration help pupils to accomplish their work (Wells & Claxton, 2002). His work emphasizes three main themes. The first is the importance of culture, the second is the central role of language, and the third is what he termed the “zone of proximal growth or development (ZPD)” (Vygotsky, 1978; The Teaching and Learning of Competence Based Mathematics, 2010). The Zone of Proximal Development emphasizes the

construction of knowledge within a cooperative environment (Wells & Claxton, 2002).

Constructivism theory fits well with this study that investigates classroom management of children with mental retardation in facilitating learning of mathematical skills at Huruma special unit in Mwanza, Tanzania. Facilitation of mathematics to pupils in primary schools can be of great values for processes that include; understanding the numbers, acquiring the knowledge of counting and the concepts of adding, subtraction, multiplying and dividing whole numbers up to ten thousand without or with grouping (Allsopp et al., 2007).

### **2.3 Mental Retardation**

The history of mental retardation is commonly associated to slower to learn than others. The Greeks in 1552 BC and the Romans in 449 BC were among the first to officially record recognition of the monthly retarded children. There are also passages in the Bible referring to the retarded. Barr (1913) and Nclntyre (1961) define mental retardation as *'significance Sub-average general intellectual functioning existing concurrently with deficits in adaptive behaviours and manifested during the development period that adversely'*. In addition to this, Beim – Simfa (2006) argues that mental illness is a confused state of thinking involving distorted, perceptions of people or one's environment it may be accomplished by radical changes of mood. This mental illness is also described as psychological or associated with distress or disability that is not expected as part of the normal development or culture (Beim – Simfa , 2006).

Mental illness is characterized by disturbance of awareness, social behavior, personal hygiene, sleep and appetite, mood and feelings, speech, thought and hearing. Considering the characteristics, individuals with mental retardation and those with mental illness, we can realize that the two concepts are regularly confusing because their characteristics resemble. It needs a thorough assessment for individual to be identified as mentally retarded. However, it should be noted that an individual could have both conditions (dually diagnosed) placing option for individual with mental retardation involves assigning the individual with appropriate instruction in a least restrictive setting (LRE). LRE is the Educational Setting that most closely meets the child's special educational needs. There are four different degree of mental retardation. Those are mild, moderate severe and profound; these categories are based on the function level of individuals (Table 1).

**Table 2.1: Four Different Degree of Mental Retardation**

<b>Level of mental retardation</b>	<b>Intelligent Quotient</b>	<b>Percentage of Population</b>
Mild	55 - 70	85%
Moderate	35 - 55	10%
Sever	20 - 40	3% - 4%
Profound	Below 20 - 25	1% - 2%

*Source:* Meyen and Buy ( 1982) P. 227 – 243.

Formally children with disabilities were not enrolled in the school, they were left at home. The Education Act of 1978 of Tanzania, sanction the right to education for all including children with disabilities to be enrolled in primary schools. Yet the number of pupils with mild mental retardation in primary schools is smaller than other pupils with disabilities such as pupils with physical impairment, the deaf, the blind and pupils with albinism. It seems that the government has not given priority

to the children with mild mental retardation to be enrolled in primary schools (Mbage, 2002). Children with mental retardation may experience other types of disability like visual impairment, hearing impairment, speech disorder and physical disability.

Visual impairment according to Hayhoe (2012) define visual impairment as a significant functional loss of vision that cannot be corrected by medication, surgical operation, or ordinary optical lenses such as spectacles. For the purpose of this study visual impairment refers to measured loss of any of the visual function such as acuity, visual field, color, color vision, or binocular vision.

Hearing impairment is a situation whereby a person loses part or all of his or her ability to hear (Okeke, 2001). In line with this, the World Health Organization (WHO) (2001) defines hearing impairment in adults as a permanent unaided hearing threshold level (average for frequencies 0.5, 1, 2, 4 kHz (kilohertz) for the better ear of 41 dB or greater (WHO, 2001). A gain, WHO (2001) in children under 15 years of age, hearing impairment is defined as permanent unaided hearing threshold level (average for frequencies 0.5,1,2,4 kHz) for the better ear of 31 dB or greater. In this study, hearing impairment indicate hearing disability which may range is severity from mild to profound.

The individual with Disabilities Education Act, or IDEA (2004) defines speech disorders as a communication disorder, such as stuttering, impaired articulation, a language impairment, or a voice impairment, that adversely affects a child's

educational performance. In the context of this study, a speech disorder is impairment in the articulation of speech sound fluency of voice. On the other hand physical disability is a condition that substantially limits one or more basic physical activities in life such as walking, climbing stairs, reaching, carrying, or lifting (Saebu, 2010). In this study, physical disability refers to the limitation's physical functioning

#### **2.4 The Huruma Special Unit**

Huruma Special Unit is a unit for students with disabilities. The center was started in August 2004 by among parents with children with disabilities in collaboration with Madam Bertha, a German missionary from America. On it's in inauguration day in March 2005, the unit enrolled 13 pupils where 9 were boys and 4 were girls in March, 2005. In the beginning, the unit was placed at the Holy Family Church at Pasiansi and later moved to Pasiansi Primary school. In the same year, of 2005 the number of pupils with disabilities was increased from 13 to 20. The enrolled had different kind of disabilities, such as intellectual impairment, physical impairment, hand capped, slow learners and those with multi- hand capped.

After the increasing number of pupils with disabilities, parents together with Madam Bertha decided to request Mwanza City Municipal Director to get another place for expanding the unit. The request was accepted and approved. The expanded unit was built with aids from England, America and Non-Governmental Organization known as Plan International in collaboration with the Government of Tanzania. The process of building the unit was completed in December, 2007 and the lessons started

effectively in 2008. Thus, the expanded unit was called Pasiansi Huruma Special Unit. Up to now, Pasiansi Huruma Special Unit has 48 pupils with different disabilities; where boys are 32 and girls are 16.

#### **2.4 Learning Mathematical Skills**

Learning skills and remembering facts in mathematics are important but they are only means to an end (Portman & Richardson, 1997). Facts and skills are not important in themselves; they are important when we need them to solve a problem. Students do remember facts and skills easily when they use them to solve real problems. A part from using mathematics to solve real –life problems, students should also be taught about the different parts of mathematics, and how they fit together (ibid). Mathematics can be taught using a step-by-step approach to a topic but it is important to show that many topics are linked (Allsopp et al., 2007). It is also important to show students that mathematics is done all over the world (De Lange, 1996; Ma, 1999). The goal of teaching mathematics is to help pupils become more independent and critical thinkers who understand the purpose of mathematics and the ways in which mathematics can be applied meaningfully in their daily life situation (Halai, 1998). Allsopp et al., (2007) mention and discuss some ideas how pupils can do mathematics in a good way. These ideas are problem solving, reasoning, connections, communication and representation.

The Constitution of Tanzania (1992) insists on ensuring that there are equal and adequate opportunities to all persons to acquire educational and vocational training at all levels of schools and other institutions of learning (Komba, 2009). However, the



constitution declares that every person has the right to access education of his choice up to the highest level according to his virtues and ability. The most important consideration for teachers is to understand that children have various learning styles, interests and general learning difficulties (Johnsen, 2001).

#### **2.4.1 Teaching Methods**

Teaching methods are comprised of principles which teachers use for instruction; they are about the different ways you can teach a topic in the classroom (Johnsen, 2001). These methods can be group discussion, lecture, demonstration, problem and puzzles, question and answers, oral and written testing, games or play, participatory and so forth (Portman & Richardson, 1997). Also, Dalen (1982) describes three forms of instruction namely individual instruction, whole class teaching, and group teaching. The uses of variety in teaching methods for pupils with low mathematical skills motivates pupils, improve their learning skills, and enables them to learn quickly (Portman & Richardson, 1997).

Teaching and learning mathematics pose a lot of challenges to teachers, stakeholders, government, parents and schools in education (Kafyulilo, 2011). Many countries are currently experiencing gradual drop in students' participation and performance in mathematics (Mwingsheke, 2003). Failure in this subject raises a debate on how teachers teach and how students learn (Kafyulilo, 2011). Some scholars debate the cause of low mathematical skills; however, some of them have come to agree that although there are some reasons that may cause low mathematical skills to most of primary pupils, the main cause can be poor teaching methods or strategies.

Some scholars argue that, there are probably many reasons for a student's failure in mathematics and most of them are likely to be based within the curriculum and the teaching methods rather than within the learner (Westwood, 2004). Pupils who exhibit learning difficulties may not be intellectually impaired; rather their learning problems may be the result of an inadequate design of instruction in curricular materials (Mathematics learning Difficulties in Primary Education, 2011).

In addition to that, inappropriate instruction that means instruction that does not differentiate between the types of learners in a group, cause mathematical difficulties for most of the learners (Chinn, 2004). This is supported by Donlan (1999) who argues that, mathematics is a domain in which the diversity of component skills is such that it allows dramatic individual differences to occur with some frequency. Failure to using teaching methods that make arithmetic meaningful is one of the causes of children lacking understanding in arithmetic (Chlute, 1984).

This is supported by Milo (2003) who argues that, realistic instruction conforms to the learners' informal knowledge, and the role of the teacher should change from directing to guiding. Korthagen *et al.* (2001) provides four pairs of principles which can be used in teaching mathematics and reduce failure of this subject. These principles are: To construct and to concretize, levels and models, reflection and production and the last principles are social context and interaction.

Another cause of low mathematical skills is the failure to use teaching aids, especially concrete objects. Dowker (2008) argues that, when considering various

cultures, human body parts have been used as aids for counting in the development of some number system. It is now realized that pupils in all classes in primary schools, and slow learners for all of their formal education, benefit if mathematical concepts are presented initially through the use of concrete materials (Duncan, 1978). Therefore, if the teacher decides that learning should be optimized through practical experiences, she or he must also arrange the classroom and use of concrete aids (ibid). In line with this, some scholars see the failure as being born from teachers due to lack of important teaching competencies, while others see the failure as resulting from lack of students' motivation in mathematics (Kafyulilo, 2011). However, the problem of low mathematical skills can be caused by both teaching approaches and the way students learn.

#### **2.4.2 Causes of Low Mathematical Skills**

Many pupils may be labeled or identified as having low mathematical skills however; there are several aspects that may cause this problem for them (Reisman, 1972). These aspects can be caused by; unfriendly teaching and learning environment, few teaching methods and strategies, poor teaching, shortage of teaching and learning materials, negative attitudes towards mathematics subject, gap in mathematical foundation, lack of readiness, emotional problems and so forth (ibid). Several studies show that low mathematical skills are caused by the situation and context, lack of accuracy in object counting accuracy and strategies, limited resources and limited formal schooling (Dowker, 2004). However, many researchers agree that, problems in other areas can be linked to language difficulties, reading difficulties, hearing loss, spatial difficulties and difficulties with aspects of memory

(Chin, 2004). In line with this, cause of low mathematical skills is based on varying use of problem-solving strategies, accuracy and speed processing (Ostad, 1999).

### **2.4.3 Pupils with Low Mathematical Skills**

Pupils who have low mathematical skills are pupils who are underachieving in mathematics (Chinn, 2004; Reisman, 1972). There are three domains of mathematical skills (called also cognitive dimension components, process competencies, or common competencies) – knowing, applying and problem solving (Männamaa, et al., 2012). The mathematical skills include two main aspects namely the knowledge of the number system and arithmetic fluency (ibid). Chin (2004) identifies some basic mathematical skills which these pupils may lack, these include: problem solving, communicating mathematical ideas, mathematical reasoning, applying mathematics to everyday situations, estimation, measurement, patterns, probability, geometry, appropriate computational skills, and algebraic thinking.

In line with this, Donlan (1998) argues that pupils with low mathematical skills have low arithmetical ability whereby its components include basic number knowledge, memory of arithmetical facts, the understanding of concepts and the ability to follow procedures.

The number knowledge involves the ability to recognize numbers in different forms (numerals, number words, and concrete quantities) and to place them in order (ibid). Factual knowledge involves memory for different categories of facts (addition, multiplication, subtraction and division) (ibid). Conceptual understanding involves, understanding the properties of and relationships between arithmetical operations.

Procedural knowledge involves memory for learned procedures (ibid). The low mathematical skills may correlate to impairments in mathematical difficulties (ibid).

#### **2.4.4 Classroom Organization**

Classroom organization is one aspect of differentiation which focuses on the style of making pupils learn in different ways in the classroom. Sometime classroom organization enhances placement. In Cole's concentric circles (1996) which represent the notion of context that surrounds children 's performance in a classroom lesson, classroom organization is among the levels. Wells and Claxton (2002) stress the importance of classroom organization in teaching and the learning process. These two authors noted that, "students who are at risk of educational failure, suggests that the social organization of the classroom is significantly implicated in the level of achievement" (p.182). From this note of these authors, it is better to reduce the class size so as to improve pupils' achievement. Also, when the class size is reduced and organized in a good manner, it can be easy for teachers to accommodate all pupils in the class in spite of their diversity such as learning abilities, disabilities, Social economic status, ethnicity, gender and sex.

#### **2.5 Empirical studies**

In this section I present empirical studies related to classroom management for facilitating learning of mathematical skills among children with intellectual impairment.

### **2.5.1 Factors influencing pupils with mild mental retardation in attaining mathematical skills**

Islami, Gunarhadi and Yamtinah (2022) investigated use of mathematics learning media and the need for Montessori media development for students with mild mental retardation in class IV at SLB Makassar city, in which 10 teachers participated. The study aimed to determine the needs of mathematics learning media to find out the learning media used in SLB Makassar and to find out the need for learning media based on the Montessori method. The study used a descriptive qualitative approach in which 10 teachers participated. Data were collected using a questionnaire. Data were analysed using a qualitative descriptive analysis technique. Result indicated a need to innovate and develop use of 2D and 3D Montessori media.

Other studies including Dowker (1998) and Butterworth (1999) indicate that there are many children and adults who experience difficulties with mathematics. A mathematical difficulty refers to children or adults who struggle or fail to cope with some of the aspects of arithmetic which are necessary for education or practical purposes. Studies have demonstrated that children with mathematical difficulties have particular impairments in understanding and processing numerical magnitude. However, little is known about the cognitive deficits that underlie their poor achievement in mathematics. Also, several cognitive studies have shown that children with difficulties in mathematics have structural and functional abnormalities in those areas of the brain that are involved in numerical magnitude processing (Szczygieł & Pieronkiewicz, 2022; Lambert & Schuck, 2021).

Pupils who are assumed to have mathematical difficulties are pupils with the lowest score in math (Szczygieł & Pieronkiewicz, 2022). Their main features are the inability to translate the problem into the appropriate mathematical terms. Also, Grauberg (1998) mentions those features as: problems in understanding symbols, lack of organizational skills, weakness in memory, the problem with relative concepts, weakness in auditory discrimination and difficulties in social interaction.

Mittler (1974) pointed out some factors affecting arithmetic attainment in primary children. These factors include; intellectual factors, emotional factors, neurological factors, teachers' attitude toward arithmetic and understanding of concepts, appropriate intervention in teaching, teaching aids, computational practice and absence from school (TenBraak, Lenes, Purpura, Schmitt & Størksen, 2022). Referring to my specific context of this study, the main assumption of an increasing number of pupils with low mathematical skills in Tanzania might be due to the poor teaching methods as indicated by many researchers (Borzekowski, Chale & Cole, 2022; Kitta, 2004; Mwinuka & Tarmo, 2021).

### **2.5.2 Classroom management strategies for children with mild mental retardation**

Göransson et al. (2016) investigated how a conceptually-based mathematics curriculum can be interpreted and constructed for students with intellectual disability. A total of 18 mathematics lessons in 6 classes for students with intellectual disability were filmed, and the teachers were interviewed in connection with the lessons. A qualitative content analysis approach was used to identify aspects of mathematical

competency content and to analyse the teaching. Three major groups of teaching strategies are identified: pedagogical mathematics activities, focusing on students' perceptions of mathematical content, and encouraging dialogue between students.

Teaching strategies are defined as the procedure used to attain a goal (Joo, Park & Lim, 2018). However, teaching cannot be the development of pupils. Thus, Vygotsky's theory of cognitive development clearly stressed the importance of learning through guided participation by the teacher and peers (Vygotsky, 1978; Rogoff, 2003). Johnsen (2001) presents four main aspects of teaching strategies first is teaching methods, second is classroom organizations, third is teaching materials, and fourth is peer support. More specifically (Ostad 1999) shows that schools' support services had picked out about 10% of the children in some primary schools as needing remedial programs in mathematics. Ostad in his study in which has shown the typical children with mathematical difficulties continued use of primary backup strategies through the whole primary school (Ostad 1997a:1997b: 1999:2000). From the study, researchers investigated that most teachers who teach mathematics use back up strategy when teaching mathematics.

Teaching of mathematics includes helping pupils move from concrete to abstract thinking. Pupils need hands-on activities which include direct experience with materials and visual methods, representing materials and symbolic representation (Westwood, 2004). From this perspective, the teachers' role is to make and use different teaching materials. Children must learn to link the new written form of representation with the concrete understanding of number which they already have



when they start school (Hughes, 1986). Many studies show that mathematical operations might be performed with the help of visual imagery, which could be compared to some kind of mental board (Reuhkala, 2001). Mathematical ideas can often be represented in any form such as a physical representation, which are external representations, taking the form of language, written symbols, pictures, or physical objects (Ostad, 2001).

Mathematical concepts are introduced to the pupils in a practical context through the use of concrete materials (Duncan, 1978). The Piagetian stage of concrete operation explains that meaningful mathematics are mathematics about which the learner can think more including mental imagery, objects, drawings, and personal experience (Piaget, 1973). Underhill, et al., (1980) argue that the best instructional sequence is one that moves through a sequence of concrete, semi-concrete, and abstract learning experiences. Visual and spatial difficulties may affect a child's ability to use and understand some of the concrete materials used in teaching mathematics (Ostad, 1990; Dowker, 1998).

### **2.5.3 Mathematics Assessment of pupils with mild mental retardation**

Schnepel et al. (2020) investigated the mathematical progress of students with an intellectual disability in inclusive classrooms. They investigated the learning gains of 38 students with ID enrolled in inclusive classrooms. Data on mathematics achievement were collected at the beginning and at the end of one school year. A cluster analysis revealed four homogeneous groups that differed significantly in their mathematical progress. Students in the same cluster improved in the same subskills.

Findings indicated further that prior knowledge is a significant predictor for progress. In addition, the acquisition of the quantity-number concept, especially the linkage of quantities and numbers, seems to be an important factor for mathematical development. These results show that mathematics instruction needs to be tailored to the specific knowledge profiles of students.

Parmar et al. (1996) examined the content validity of selected standardized tests of mathematics achievement as it pertains to students with disabilities. The study used content from the perspective of educators who are the primary consumers of test results. The analysis was directed towards relating existed tests to curricula and instructional approaches. The Assessment Standards used were the ones presented by the National Council of Teachers of Mathematics as a framework with which to evaluate the appropriateness and adequacy of assessment instruments. Findings indicated there were problems with content validity of the tests including inadequate representation of content domains, inappropriate sequencing and placement of items, inappropriate use of age and grade-equivalent scores, and incorrect descriptor assigned to items.

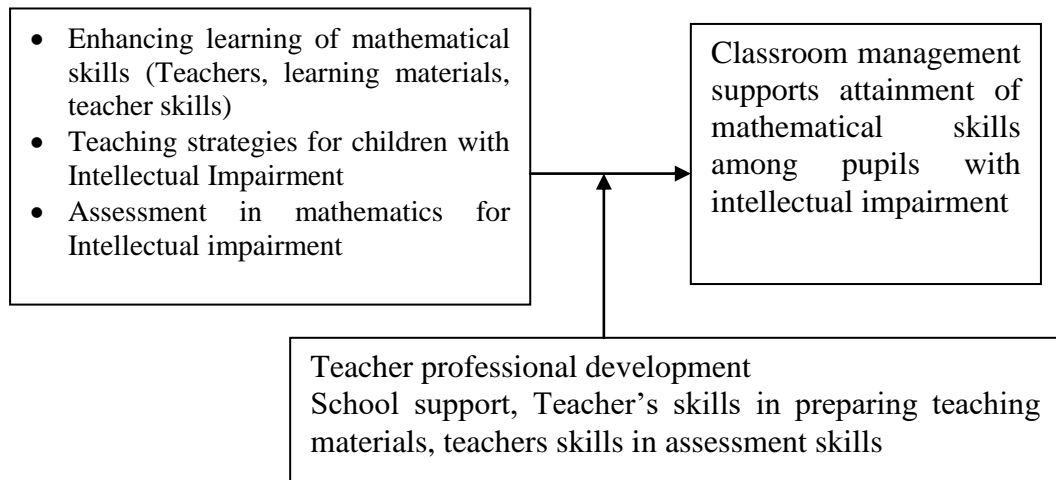
The study by Parmar et al. (1996) call for differentiation which is the use of different teaching techniques and strategies to teach pupils concepts. UNESCO (2004) argues that, giving different learning tasks to pupils with different proximal learning possibilities, varying in study content, learning task, length of study content and length of time for solving a task are traditional ways of differentiating. Jonsen (2003) asserts differentiation as the process of modifying or adapting the curriculum

according to the different ability levels of the students in one class. Teachers can adapt or differentiate the curriculum by changing the content, and methods, for teaching and learning content (sometimes referred to as the process), and, methods of assessment (sometimes referred to as the product).

## **2.6 Research Gap**

The literature review indicates a need for developing classroom teachers with skills to manage classrooms in which children with intellectual impairment are included. It is through determining factors influencing the learning of mathematics, children with intellectual impairment can improve their learning capabilities. Further, is a need for teachers to determine strategies that might be used to influence teaching and learning of mathematics. While teaching it seems literature emphasis on assessment of learning. Less is known on classroom management for learners with disabilities more specifically in Tanzania and at Huruma Centre on classroom management for facilitating learning of mathematics among children with intellectual disabilities. This research project intends to fill the gap by establishing factors that influence pupils with mild mental retardation, the specific teaching strategies and the assessment strategies for facilitating attainment of mathematical skills at primary school level.

## 2.7 The conceptual framework



**Figure 2.1: The conceptual framework**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

Chapter three presents the methodology used to seek solutions to the problem and questions under study. This part explains the research design and discusses its advantages and disadvantages. The second part relates to the process of data collection and consists of a sampling procedure, gaining entry into the study, methods and instruments and ending procedure of data collection. The third part presents steps of analysis and embedded arenas of analysis. The chapter concludes with issues pertaining to ethical consideration, validity and reliability.

#### **3.2 Research Approach**

The study employed a mixed research approach by combining both qualitative and quantitative methods in collecting data from the field. The rationale behind the application of mixed research methods was to get deeper understanding on the particular study. The combination of the two research methods aimed at triangulating data which might not be obtained through a single approach. According to (Almeida 2018; Bamberger 2012) asserted that mixed research methods promote greater understanding of stakeholder's perspectives on the nature of the intervention. Thus, this study advocated the approach to get deeper understanding of the phenomenon. Notwithstanding, it aimed at balancing the weakness of each other as there is no method which is complete by itself.

Subsequently, Harrison, Reilly and Creswell (2020) indicate that mixed research approach helps to structure data collection, data analysis and interpretations. Integrating the two methods is important in problem solving. Generally, quantitative research methods helped the researcher to understand the problem by developing ideas on the study topic. Moreover, the for qualitative approaches the study unveils thought and opinions of the respondents for better understanding of the study issue.

### **3.3 Research Design**

The study employed a case study design as allow the researcher to investigate deeply into the real situation (Moore, Lapan & Quartaroli, 2012; Rashid, Rashid, Warraich, Sabir & Waseem, 2019; Yin, 2012) of the existing problem facing teachers related to classroom management for facilitating learning of mathematics skills among children with intellectual impairment in Ilemela District Council. Thus, these phenomena were studied from both researchers' perspectives (etic) and interviewee perspectives (emic) through multiple sources of information gathered through interview, observation and questionnaires. This way of using more than one method is known as triangulation method. Maxwell (2005) argues that, the importance of collecting information using variety methods reduces the risk of chance association and of systematic biases due to a specific method, and allows a better assessment of the generality of the explanation that someone develops.

The investigator interviewed mathematics teachers of students with intellectual impairment using an interview guide. These questions we related to the presence of the problem of factors for low achievement in mathematics for children with mild –

mental retardation, the teaching strategies used and the way they assessed teaching and learning. In all cases issues of teaching methods, teaching strategies, assignments, teaching materials, teaching through daily life situation, and suggestions for improvement were discussed. The investigator observed some of the things accompanied with teaching mathematics which are in the observation schedule. These are: classroom arrangement and organization, classroom interaction, teaching methods, teaching strategies, teaching and learning materials, teachers' knowledge and experience, lesson plan and scheme of work and time.

### **3.4 Target Population**

According to Basic Education Statistics of Tanzania (BEST) of 2019 in Tanzania there were 17,855 children with intellectual impairment of whom 1,035 children in pre-primary education and 16,820 in primary education. According to BEST 2019, intellectual impairment carried a big number of pupils than any other type of disability identified in Government and Nongovernment schools. In Mwanza there were 1,036 children with intellectual impairment and specifically in Ilemela district there were 221 children with intellectual impairment. The researcher target teachers teaching children with intellectual impairment enrolled in schools.

### **3.5 Sample Size and Sampling**

The researcher collected the information from Huruma specific/unit in Pasians primary school. The teachers were interviewed and also filled in questionnaires, parents were interviewed and pupils were observed.

Considering the focus of this study which involves factors influencing pupils with mild – mental retardation, in attaining mathematical skills in Huruma Special Unit primary school was purposefully sampled because it is only one primary school with special unit for pupils with mild mental retardation in Ilemela Municipal Council.

The reasons for selecting this school are first because the investigator is familiar with the environment and has been living there for five years. The second reason is that Huruma primary school has special unit for pupils with mild mental retardation. The third reason is that this primary school has been a target school for various studies. The fourth reason is that there were no enough funds which to enable the investigator to go far away where the special primary schools with pupils with mild mental retardation are available in the country. The selected school may therefore be classified as the good case. One school with special unit can therefore give some insight of what is taking place in other schools in Tanzania.

This study employed a purposeful sampling. In purposeful sampling, the goal is to select cases that are likely to be information rich with respect to the purpose of the study (Gall et al., 2007). The intention is to select teachers that could provide rich information about factors influencing pupils with mild mental retardation in Huruma special unit in Ilemela Municipal Council.

**Table 3.1 Sample Size**

<b>Sex</b>	<b>Mathematical Teacher</b>	<b>Parents /Guadians</b>	<b>School Quality Assurance Officer</b>	<b>Total</b>
Male	1	12	1	14
Female	2	16	-	18
<b>Total</b>	<b>3</b>	<b>28</b>	<b>1</b>	<b>32</b>



### **3.6 Data Collection Tools**

The study employed observation during data collection and the teacher interview and a questionnaire.

#### **3.6.1 Observation**

The study employed observation in order to determine children change in behaviour as the teacher facilitated learning of mathematics skills. Johnson & Cristensen (2012) define observation as, “*the watching of behavioural patterns of people in certain situations to obtain information about the phenomenon of interest*” (p.206). Observation may be used as a method within most qualitative designs, although it is more used in case-studies, where a group of individuals participating in events, activities or organizations, and in ethnographic studies where entire cultural systems or subcultures are in focus (Cresswell,199).

The main instrument of collecting data was observation. Since this study is about factors for low achievement in mathematics for children with mild – mental retardation, it is therefore important to observe what the teachers do in the classroom. Observation often provides a direct and powerful way of learning about people’s behaviours and the context in which this occurs (Maxwell, 2005). Observation provides rich data sources that offer an in-depth explanation of the case (Gall et al., 2007). In this study the Investigator observed all teaching conditions during mathematics classroom instruction to pupils with mild mental retardation.

In addition to that, the investigator reviewed documentations such as study books, written work of pupils with mild mental retardation, teacher’s lesson plan and

scheme of work. The observation method may supplement what the oral interviews may not suffice. This is probably the reason why Gans (1976) says that, “*Participant observation is the only method I know that enables the researcher to get close to the realities of social life*” (p.59). The participant observations was structured by using an observation schedule or checklist to guide the investigator in observing teaching methods in the mathematical classes. The investigator wrote field notes on the behaviours and activities of mathematical teachers in the classroom. The observation schedule or checklist form was used as a basic checklist to allow the investigator to be certain that all relevant methods were implemented or not by using Vygotsky’s cognitive development theory and Bronfenbrenner ecological system theory in teaching mathematics. In this study the observation was applied in the classroom while the pupils were learning. Also learning materials, teaching methodology, environment such as offices, toilets, kitchen, dining hall, pathways, garden, sports gears, playing ground teaching aids, participatory method and concrete representational – abstract method.

#### **6.4.2 Interview**

The study involved semi-structured interview with a general interview guide; the approach involved outlining a set of topics to be explored with each respondent. The interview guide had open-ended questions that enabled the interviewees as oral-verbal stimuli about mathematics and the methods they use (Kothari, 2007). Punch, (2009) supports Kothari by arguing that, the stimulus-response nature of semi-structured interview stresses rational rather than emotional responses. Maxwell (2005) argues that, “*interviewing is often an efficient and valid way of understanding someone’s perspectives*” (p.94). From this quotation the investigator asked questions

by investigating, exploring and analysing the factors which cause the increased factors for influencing pupils with mild retardation in attaining mathematical skills in the Ilemela District Council. The purpose of including an interview is to attempt to understand the phenomenon of factors for low achievement in mathematics for children with mild – mental retardation from the teacher's point of view. The interviews were voice recorded with permission from the teachers and a prepared interview guide form used. The investigator also gave the notes to the mathematical teachers to read, so that they can clarify or add if something missed or misunderstood. Some of the situations were repeatedly observed to make it possible for the investigator to ask some questions in later interviews. The mathematics teachers were interviewed about what the investigator observed in the class during the lesson of mathematics.

#### **6.4.3 Questionnaire**

The study used a questionnaire as data collection tool (Cozby, 2007). The closed form questionnaires supported the investigator to make quantification and analysis of the results easier (Gall, Gall & Borg, 2007) of the factors influencing pupils with mild mental retardation in attaining mathematical skills, teaching strategies and assessment of learning. Questionnaires were disseminated to Specialist teachers and quality assurers as well as parents.

### **3.7 Validity and Reliability of the Instruments**

#### **3.7.1 Validity**

Data in the research must not only be authentic and believable, but it is worthless unless it is also valid and reliable (Charles, 1998). One of the main characteristics of

the case study is the use of multiple sources of information (Creswell 1998; Gall, Gall & Borg 2003; Johnson & Cristensen, 2012; Punch, 2009; Yin, 2003). The triangulation method was used to address a single validity threat (Maxwell, 2005). The triangulation method is a strategy which reduces the risk of chance associations and of systematic biases due to a specific method, and allows a better assessment of the generality of the explanations that the investigator develops (Charles, 1998). In that sense and with intentions to satisfy the principle of validity, this study used observation and interviews as research methods for data collection. Investigator had to build personal communication in order to deal with biases in the study and take a long time in collecting data with followed observations and interviews so as to collect rich and valid data. Both long term involvement and intensive interviews enabled the researcher to collect data that is detailed and varied enough that it provides a full and revealing picture of what is going on (Charles, 1998).

### **3.6 Reliability**

Reliability is the accuracy of work in the research. If the study can be repeated and provide the same result, then the work is reliable (Coleman & Briggs, 2007). From this definition of reliability, the study of investigating teaching methods for pupils with low mathematical skills is reliable for different reasons. First, this work has been repeated several times by many researchers who were investigating the causes of low mathematical skills including teaching methods or teaching strategies. This evidence is shown in the part of literature review. The second reason is retesting. During data collection, the investigator started by piloting study and interview the respondents more than once; this increased accuracy to the work of the investigator.

Cohen et al. (2007) argues that, “*when tests are developed, they are typically tested for reliability by giving them to a group of people then calling back those same people a week later to take the test again*” (p.49). For instance, in Ostad’s study, he retested mathematical less able. The third reason is that, all teachers who teach mathematics in grade three (interviewees) were asked the same questions which are in the interview guide.

### **3.8 Data Analysis procedure**

A researcher analysed the data obtained in the research by using tables and percentages to show factors influencing pupils with mild mental retardation in attaining mathematical skills. The study involves both qualitative and quantitative method in data presentation.

The study was mixed research which involved both quantitative and qualitative data. Therefore, the process of analysing data contained the combination of the two. Quantitative data was analysed through computer software commonly known as Statistical Package for Social Sciences (SPSS). Through the programme the data was coded and entered into a computer, then it was analysed through descriptive analysis in frequency and percentages. The analysed data were presented by tables and figures for the interpretation. Moreover, qualitative data was analysed through content analysis methods whereby data were assigned into themes category, summarization and interpretation.

### **3.9 Ethical Consideration**

The investigator considered ethical issues in order to ensure credibility of the study. I identified appropriate sites and working with gatekeepers in order to obtain

permission are critical steps in a case study (Gall et al., 1996). Because the research was conducted in a primary school as an institution, the Investigator followed ethical procedures (Gall et al., 2003 & 2007). Ethics covers the whole process of research and it is vital to recognize various sensitive aspects involved in a certain field. As Fluehr-Lobban (1979) says:

*This involves considering ethics in every phase of research, from the conception of the research project to the design of the research methodology. This includes how best to obtain informed consent; beginning and sustaining a dialogue about the intent, funding sources, and likely outcome(s); ensuring the voluntary participation of persons involved in the study and asking whether they desire anonymity or recognition; thinking about the impact the study may have on those studied through dissemination of results and publication; empowering those who are studied to ask questions, contribute to the research design, or improve methods; and considering reciprocal acts that might benefit the people or community studied (p.401).*

In this study, the investigator highlighted a consideration in three main issues. One is the recognition of the political and education authority. Second, is respecting and maintaining the informed consent and right of data dissemination from the interviewees and observations. The third issue was the maintenance of privacy and confidentiality.

### **3.7.1 Protocol recognition and permission**

Due to the presence of rules and power relations in the Tanzanian Ilemela Municipal Council context, the investigator submitted a permission for research, a clearance letter from the Open University of Tanzania, in order to get permission for conducting the study. Gall et al., (2007) states that, *“when conducting research in institutions, you must follow certain procedures in order to obtain permission for*

*your study and to gain cooperation from individuals who are affected by it” (p.88).*

For example, the hierarchical nature of teacher-pupil relationship does not allow students to speak critically or against their teachers. In that case, if pupils have to give the right, valid and realistic information about the subject of the research, the investigator needs to recognize this ethical dilemma and resolve it by ensuring privacy and anonymous or pseudonymous tactic to the teachers. The same tactic was used on different sensitive issues that may arise in the field.

In order to enter into that area, the investigator need to ask for permission from such authorities which are the Regional Education Officer (REO) who deals with educational administration in the whole region. The third in line of the protocol to observe was the District Educational Officer (DEO) who deals with educational administration in the district or area of the participating school. The fourth category is the Head Teacher (HT) of the school selected for research purpose. The fifth and last category is mathematics teachers observed during classroom observation and interview. These authorities gave the investigator the permission and endorsement for the right to reach the places and find recognition from those to be interviewed.

### **3.7.2 Informed consent and right of data dissemination**

At the same time informing the respondent of the way the investigator is going to use their information following the objectives of the study. Consent letters also which is introduction letter to the teachers was given to teachers. Also, the informed consent form was filled in by the teachers to sign and return to the Head Teacher and investigator. Teachers had option to participate and or not to participate in the study.

### **3.7.3 Maintenance of privacy and confidentiality**

Gall et al., (2007) argue that confidentiality must be further protected by not using the names of individuals or sites of any institutions that the study conducted unless agreed upon by all sides. For example, the hierarchical nature of teacher-pupil relationship does not allow students to speak critically or against their teachers. The same tactic was used on different sensitive issues that may rise in the field. In order to secure the schools' and the teachers' privacy and anonymity, their names were not used in this study (only pseudonyms). However, there is still a risk because the teacher and her or his class may be recognized by colleagues and administrators in the participating school. According to ethical issues, the investigator offered to the participating school a written report and presentation of study on a school meeting after the study as a means to validate ethical consideration and the findings.



## CHAPTER FOUR

### DATA PRESENTATION, ANALYSIS AND DISCUSSION

#### 4.1 Introduction

This chapter presents the research findings and analyses data concerned with the classroom management of children with mental retardation in facilitating learning of mathematical skills: a case of Huruma special unit in Tanzania. The section comprises participants' characteristics, presentation, analysis and interpretation of the findings basing on the research objectives:

- (iv) To examine teachers' perception on enhancing attainment of mathematical skills among pupils with mild mental retardation in primary schools.
- (v) To explore strategies teachers, use to manage classroom when facilitating learning of mathematics skills for children with mild mental retardation in primary schools
- (vi) To find out how do teachers assess learning of pupils with mild mental retardation in attaining mathematical skills in primary schools.

#### 4.2 Characteristic of respondents

A total of 32 respondents participated in this study. This includes 14 males and 18 females. Table 3 shows the number of respondents. Among of these respondents, teachers were 03, parents 28 and school quality assurance officer 01. This is shown in table 3 below.

**Table 4.1. Sample of respondents**

<b>Sex</b>	<b>Mathematical Teacher</b>	<b>Parents /Guadians</b>	<b>School Quality Assurance Officer</b>	<b>Total</b>
Male	1	12	1	14
Female	2	16	-	18
<b>Total</b>	<b>3</b>	<b>28</b>	<b>1</b>	<b>32</b>

### **4.3 Parents and teachers views on enhancing attainment of mathematical skills among pupils with mild mental retardation**

Parents and teachers indicated issues that hinder development of mathematical skills among pupils with mild mental retardation to include teachers' morale, cooperation between teachers and parents with pupils with mild mental retardation, transport, teaching materials, availability of adequate specialist teachers, use of non-active teaching methods and status of teaching and learning environment. Use of appropriate methods of teaching is among the factors which influencing pupils with mild mental retardation attaining mathematics/ skills in primary schools.

#### **competence of mathematics teacher**

A researcher also investigated the competences of mathematical teachers have during teaching and learning mathematics through interview and questionnaire. Result shows that 31% teachers lack competence in teaching pupils with mild mental retardation, while 19% teachers have enough competence and 50% of respondents said that they do not know.

**Table 4.2: Competence of mathematics teacher**

Respondents	Able in curriculum translation		Annabel in curriculum translation		They don't know		TOTAL
	Males	Females	Males	Females	Males	Females	
Parents/Guardians	03	05	2	14	03	01	28
Mathematical Teachers	—	01	2	—	—	—	03
Quality assurer officer	01	—	—	—	—	—	01
<b>Total</b>	<b>04</b>	<b>06</b>	<b>4</b>	<b>14</b>	<b>03</b>	<b>01</b>	<b>32</b>

#### 4.3.1 Availability of appropriate of teaching materials

The researcher wanted to know the availability of appropriate teaching materials for pupils with mild mental retardation. In order to get valid and reliable data, a researcher used questionnaires interview and observation to the respondents.

This question was answered by 32 respondents including parents /guardians, mathematical teachers, and school quality assurer officer. About 31 respondents which is equal to 97% answered that there was low availability of teaching materials for pupils with mild mental retardation. These materials are writing boards, abacus, puzzles, blocks, charts, parachute, American dollars, European coins, tactical and touch Maths. While one respondent from parents group answered somehow is equal to 3%. Though it was observed that there were appropriate of teaching materials, maybe teachers do not utilize them well. This underutilization of teaching materials may be one of the factors for pupils with mild mental retardation not attaining mathematical skills (Table 4).

**Table 4.3: Summary of finding in availability of appropriate of teaching materials:**

Respondents	Available		Not available		Some how		Total
	Males	Females	Males	Females	Males	Females	
Parents/Guardians	13	14	—	—	01	—	28
Mathematical Teachers	01	02	—	—	—	—	03
Quality assurer officer	01	—	—	—	—	—	01
<b>Total</b>	<b>15</b>	<b>16</b>	—	—	<b>01</b>	—	<b>32</b>

On top of that, through observation method, even though there were enough teaching materials and learning materials, the distribution of them in the classroom was random which caused poor stimulation to pupil to learn mathematics. Also, the researcher observed poor usage some teaching aids especially those which were bought from abroad or given by donors due to lack of practical application of using them, such as the use of sample of American dollars and European coins. There for due to these problems and another could be the Couse of factors influencing pupils with mild mental retardation in attaining mathematical skills. Among 32 respondents only 3% indicated were using the donated resources.

Some children are slow reflective learners, while others like their learning to be fast. Some happily use trial and error but others work systematically through the problem until they get an answer. Some rely on intuitive thinking while others prefer concrete, practical ways of working things out. However, teachers making the decisions about differentiation have in mind the diversity of pupils and they believe that effective instruction is based on pupils' active participation in decision making and problem

solving (Tomlinson, 1995). Therefore, teachers should use different strategies and techniques for pupils with low mathematical skills so that they can learn the concepts in mathematics.

Other findings which were obtained indirectly from the respondents and considered by Researcher as the reasons for attaining mathematical skills for children with mild mental retardation are insufficient supply of funds, non-conducive infrastructure, and transport.

#### **4.3.2 Insufficient supply of funds**

Through interview with teachers a researcher wanted to know that if there is any fund from the government, Non-Governmental Organization (NGOs) or any Non-State Agency (NSA). Teachers responded that the government pays salaries for teachers and do provide capitation grants though is not enough.

*we have never received any fund from NGO's or only government provides capitation grants though not enough. It is only salary we are paid for' availability of funding makes it difficult to prepare diverse resources for learners [T1]*

Availability of resources contributes to ability of schools to hire experts and or procure teaching and learning resources for all learners including learners with mental retardation.

#### **4.3.3 Non-Conducive Infrastructure**

Through observation method, researcher found that the infrastructure was not conducive for pupils with mild mental retardation. This is because the classroom was small compared to number of pupils. For instance, the class had 102 pupils and one desk had 04 pupils. In addition to that, there was soil erosion which caused ponds

and river passing around the unit compound. This situation was a danger to pupils with mild mental retardation.

#### **4.3.4 Transport**

The researcher through interview with teachers and parents wanted to know a means of transport do pupils use in order to reach at school. The result showed that most of the teachers and pupils are living very far from the unit and the means of transport is very challenging. One parent said '*there is a big physical separation from home to school. In order my child to reach at school, it takes almost one hour and ten minutes*'. Another parent said'... *We parent with children with disabilities we face many challenges with bus conductors.* Most of the bus conductors do refuse to take our children. This information shows that the long distance from home to school is another factor which make pupils with mild mental retardation arrive at school late hours. These circumstances affect pupils' day to day attendance.

#### **4.4 Strategies Teachers use to Manage Classroom**

Mathematics teachers use teaching methods in different ways which is not accommodating all pupils with mild mental retardation. These methods may include lecture method, questions and answers.

##### **4.4.1 The use of Functional Skills**

A researcher wanted to know if pupils with mild mental retardation use functional skills during school hours as well as at home through interview method with Mathematics teacher, school quality assurance and parents/guardian. This question

was given to 28 and 01 teacher. Parents/Guardian 61% said yes, they use, while 28% said they don't use and 11% said they don't know. Mathematics teacher equal to 100% said that they use at school. School quality assurance equal to 100% said that does know. This is indicated in Table 4.

**Table 4.4. The use of functional skills**

Respondents	Yes, they use		They don't use		I don't know		Total
	Male	Female	Male	Female	Male	Female	
Parents/guardians	06	11	03	05	02	01	28
Mathematics teacher	01	02	—	—	—	—	03
School quality assurer officer	01	—	—	—	—	—	01
<b>Total</b>	<b>08</b>	<b>13</b>	<b>03</b>	<b>05</b>	<b>02</b>	<b>01</b>	<b>32</b>

The findings shows that functional skills are more practiced by female rather than male for those students with mild mental retardation at school as well as at home. This proved that most of females and mathematical teachers spend most of the time to stay with female students rather than males; at home they do not have enough time to stay with them. Again, they practiced at home whereby they are asked to buy things in shops and markets, collecting of eggs, buying returning the correct change and counting them at their poetry project. In short, the result indicated that there is a use of functional skills in relation to learning mathematics during the class hours. Teachers indicated a need to have a collaboration with parents so what is taught at school is practiced at home. One of the 3 teachers participated in this study said:

At our school, teachers are collaborating with parents of children with disabilities. The idea is to enhance functional skills. Our children with intellectual impairment learn though participating in activities. For proper

integration of home-school activities, parents are important partners we work with [T1].

On the other hand parents indicated the importance of the collaboration among parents and the teachers including improving functional levels of children with mental retardation.

*Following the collaboration with the teacher, previously did not allow my child to be involved in activities at home. Now I do involve her in doing some activities like taking care of the chicken by providing food, water, collecting eggs and now have started allowing her to sell eggs. She is improving and doing very well. [P5].*

Interview with Mathematics teacher, school quality assurance and parents/guardian, A researcher wanted to know if pupils with mild mental retardation have attained a maximally in the classes as well as in examinations. The result shows that most of pupils with mild mental retardation are not well attaining maximally in the classes as well as in examinations as they do have multiple disabilities. The multiple disabilities hinder attainment of cognitive functions. The question answered by 32 respondents as indicated in table 5 below.

**Table 4.5: Answers of pupils not attaining maximally in the classes**

Respondents	Multiple Disabilities			TOTAL
	Males	Females	They Don't Know	
Parents/Guardians	11	16	01	28
School quality assurer officer	01	—	—	01
Mathematical Teachers	01	02	—	03
<b>Total</b>	<b>13</b>	<b>18</b>	<b>01</b>	<b>32</b>

The findings shows that 27 parents which is equal to 84% said that multiple disabilities were the major reason for pupils with mild mental retardation not easily



perform well mathematics subject. This is due the fact that their class is taught by one teacher who specialized in only cognitive disability hence, most of those pupils who have more than one disability like visual impairment and speech disorder or hearing impairment is very difficult to them to understand well what is taught in mathematics by the teacher. Hence, they encounter mathematical difficulties. For instance, in t the interview one parent said “I don’t know’ while mathematical teachers and school quality assurer officer said that for almost 100% percent’s multiple disabilities is the major problem for pupils with mild mental retardation not perform well mathematics subject or attain mathematical skills

#### **4.4.2 Using concrete materials**

According to Hord and & Xin (2015) and Hord and Bouck (2012), teaching resources for learners with mental retardation enhance learning, makes teaching to be real, helps learners to remember, help learners to visualize activities, facilitate teaching new concept and associate material and skill. In this study teachers indicated to use concrete materials as a strategy to facilitate learning of mathematical skills among learners with mental retardation. For teaching multiplication, a teacher used a rectangular shape so the child can count blocks. Later managed to do multiplication without having an object.

*Using concrete materials supports development of basic mathematical skills among the learners with mental retardation. The concrete materials create specific, tailored and sometimes creative learning opportunities for the individual student for example when I explain the number system to a student and he has problems understanding it ... I take coloured pencils and demonstrate it. With use of concrete materials teachers and parents have to be creative [T2].*

The use of concrete materials facilitates the collaboration between the parent and the teacher as at home the child comes in contact with concrete materials used for everyday life activities at home like spoons, food utensils and other economic related tools. As one of the parent notes

*Initially, I thought collaboration with teachers on facilitating mathematical skills would increase cost of living at home. Just to learn that increased acceptance level of my child with mental retardation with peers at home. The materials used were that used at home. Buying and selling experience reduced burden for only children without disabilities to be used. Now all of us we work on the same way. I thank teachers for the initiative I think all parents of children with mental retardation could do the same [P 19].*

Parents and teachers find use of concrete materials a solution to supporting learners with mental retardation to learn mathematical skills. Parents and teachers find that use of concrete resources depend on health status of the child, if need to be carried to school then long distance from home to school, schools unfriendly environment and infrastructure; shortages of electricity, hence they have no refreshments like watching television and other enjoyment; having insufficient provision of funds that causes schools not to buy and motivate teachers; unavailability and proper use of teaching aids; having large number of children; and having no adapted and updated mathematics syllabus for children with mental retardation as such it becomes difficult to cover as most pupils have multiple disabilities which make to be slow learners.

#### **4.5 Assessment of learning achievement of pupils with mild mental retardation in attaining mathematical skills in primary schools**

Teachers and parents indicated a need to have structured assessment for children with mental retardation. Due to the existing educational conditions, traditions, or laws in a particular school system, the student learning assessment refers to a set of achievement aspects and depends on the learning or instructional criteria. Of course, requirements can differ between school systems and depends on type of learners and the age appropriateness. Different standards, both inside and outside of the educational system, may be used to evaluate low achievement of children. In this study parents were involved in evaluating children with mental retardation learning progress. For the case of parents indicated learning taking place as children were able to do things that previously were unable to do. One of the parents said.

*My child was unable to eat by herself, now can eat and is able to wash the dishes. Previously, was unable to do this activity, I am thinking one day will be able to cook food by herself [P12].*

On the side of the teachers, they indicated challenges in both facilitating learning and assessing their learning progress. Assessment and learning evaluation systems are often focused on academic performance rather than individual progress and therefore can also be restrictive for children with special education needs (UNESCO, 2009).

*It is difficult to teach and assess mathematical skills due to shortages of teaching materials in the class, large number of pupils in the class compared with the number of teachers. Children with mental retardation require varieties of teaching resource for their understanding as well as enough and quality teachers. Our school resources for teaching are insufficient to accommodate the increasing number of students with special needs. With this regard it brings a burden to teachers to manage teaching and assessment of children with mental retardation [T2].*

The proper intervention strategies which that support pupils with mild mental retardation in attaining mathematical skills in primary schools may include amending curriculum, regularly training for specialist teachers, strengthening cooperation between teachers and parents with pupils with mild mental retardation. In the assessment teachers indicated a need for materials for teaching and learning assessment that are appropriate to the learning environment.

*I feel as a teacher, there is a need to have professional training on preparing and using proper use of instructional materials, identifying each learner's needs and attending, on dealing with individual learners and having effective ways of offering incentives/rewards to both the teachers and involving parents [T1].*

Provided children with mental retardation have to learn how to enhance their life skills, there is a need to facilitate learning of functional skills and basic mathematical skills. Above all they have to learn vocational skills. As such assessment is important for both functional skills and basic academic skills.

*The children have to be motivated to learn functional skills. At home as a parent, I involve my child in doing specific activities like counting money and sometimes, I ask my child to go for shopping. Before I do that I do communicate with the shopkeeper on the activity I am doing with my child. my child has improved in doing cognitive mathematics as can participate well in shopping. I planning to start practicing on selling items [P11].*

Christenson et al. (1989:28) regard the degree to which the environment is constructively active as being the hallmark of an effective learning environment for learners with mild intellectual disabilities. According to Weiss et al. (2018), school teachers have to develop the ability to apply customised and differentiated instruction and develop learning materials for educating students with disabilities. Similarly,

leadership and counselling skills are also necessary to define roles and hierarchies and negotiate job distribution and expectations. The teacher-student relationship should be marked by gratitude, openness, and an emphasis on the positive (Weiss et al., 2018).

## **CHAPTER FIVE**

### **SAMMARY, CONCLUSION AND RECOMMANDATIONS**

#### **5.1 Introduction**

This chapter presents the summary, conclusions and recommendations of the study in relations to the study findings. The chapter is organised into four sections. The first section presents introduction. The second section covers brief summary of the study findings. The third and fourth sections provide conclusion and recommendations made by the study.

#### **5.2 Summary of the Study**

##### **5.2.1 Parents and teachers views on enhancing attainment of mathematical skills among pupils with mild mental retardation**

Parents and teachers in this study indicated for children with mental retardation to learn effectively needed a strong collaboration among parents and teachers. Teachers on their side need resources to facilitate learning also need professional learning to adapt curriculum to the learning needs of the learners. Parents needed skills to adapt their children to their daily life activities at home like taking care of chicken and buying and selling of items. Where parents and teachers collaborated to develop children, functional skills results were positive and there were change noticed among the children.

At school level teachers needed motivation as had to teach a large class and at the same time do collaborative activities with parents of children with mental retardation. Parents and the teachers identified issues that hinder development of mathematical skills among pupils with mild mental retardation to include teachers'

morale, cooperation between teachers and parents with pupils with mild mental retardation, transport, teaching materials, availability of adequate specialist teachers, use of non-active teaching methods and status of teaching and learning environment. Use of appropriate methods of teaching is among the factors which influencing pupils with mild mental retardation attaining mathematics/ skills in primary schools.

### **5.2.2 Strategies teachers use to manage classroom**

Teachers used functional skills mathematics teaching strategies, the same was communicated to parents so pupils can practice at home. At home initially, parents were not involving children with mental retardation that affected in developing independent living skills. With use of strategies that are used by teachers in schools created seamlessly transition to the development of academic life skills and the functional skills.

### **5.2.3 Assessment of learning achievement of pupils with mild mental retardation in attaining mathematical skills in primary schools**

In this objective, parents and teachers were asked to review on how they collaborated in terms of doing assessment of learning achievement of pupils with mental retardation. Parents and the teachers were of the view that assessment needed doing concrete activities that would engage them through out their life. For the parents it was important collaboration as started collaborating with other members in the community to shape the behaviour of their children. Assessment was done using concrete activities like selling eggs, participating in feeding animals and shopping skills.

Modifying the curriculum, regularly training specialised teachers, and fostering collaboration between educators and parents of children with mild mental retardation are all appropriate intervention strategies that support students with mild mental retardation in acquiring mathematical skills in primary schools. Teachers expressed a desire for teaching and learning assessment resources that are suitable for the learning environment in the assessment.

### **5.3 Conclusion**

From the research findings the researchers conclude that there is a need for facilitating teachers to develop classroom management skills to facilitate learning of mathematical skills among children with mental retardation. For enhancing learning of mathematical skills among learners with mental retardation there is a need for teachers and parents to collaborate in creating proper learning environment at home and at school. Teaching and assessment should use concrete resources with a view to develop functional skills necessary to develop independence.

### **5.4 Recommendations**

On the basis of this research, the following recommendation may be of greater help to raise the performance of mathematics for pupils with mild mental retardation. These recommendations are;

#### **5.4.1 The government**

- a. The government should increase the number of teachers with special education knowledge by including special needs education in curriculum of teacher training programme.



- b. The pupil with multiple disabilities such as mild mental retardation associated with other disabilities like in our case should be attended by different specialists depending on the type of disabilities.
- c. The government should increase the number of institutions offering degrees, diploma and certificates in special needs education and support public and private institutions offering such education.
- d. Due to lack of enough centres which are near to pupils' home for children with mild mental retardation, the government is advised to establish the inclusive education in regular schools in the district in order to accommodate children with mild mental retardation instead of leaving this responsibility to the religious institutions and unit in the school.
- e. The government should cooperate with the religious institutions which own those centres, register them and pay salaries to that specialist as well as supplying enough teaching and learning materials needed to the centres.

#### **5.4.2 School Management**

- a. School management should organize fund raising events in order to improve the infrastructure of the centres.
- b. The mathematics teachers have to facilitated to develop skills in adapting curriculum for learners with mental retardation
- c. School management collaborate with non- government organizations in conducting workshops and seminars to the teachers.
- d. School create opportunity for advocacy and awareness raising among community members.

### **5.4.3 Further Areas for the Study**

The study recommends that further research need to be undertaken by interested researcher that focus on teaching methods to improve the performance of mathematical skills to children with mild mental retardation. Research may focus on use of technology to facilitate learning of children with mental retardation.

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## APPENDICES

### Appendix A: Observational Protocol

1. Observing how pupils with mild mental retardation learn mathematics and apply out of classroom areas.
  2. Observing pupils with mild mental retardation engaging in various school activities with a view of identifying their different levels of mastery and application of mathematics skills.
  3. Observing teaching strategies do mathematical teachers use for pupils with mild mental retardation in acquisition of mathematics skills.
  4. Observing how mathematical teachers do use teaching materials they facilitating learners in acquisition of mathematics skills.
  5. Observing teaching and learning environment for pupils with mild mental retardation in acquisition of mathematical skills.
  6. Observing interaction among pupils with mild mental retardation as well as Mathematics teachers and pupils with mild mental retardation in acquisition of mathematical skills.
- Satisfactory of teaching and learning materials
    - Books
    - Pens
    - Teaching aids
  - Teaching methodology.
    - Participatory method
    - Concrete-representational-abstract method

- Environment inside and outside the classroom
  - Classrooms
  - Offices
  - Furniture
  - Toilets
  - Kitchen and dining hall
  - Path ways
  - Garden
  - Cleanliness
  - Other services (water, electricity, computer, transportation)
- Number of teachers and pupils.
- Playground.
  - Number of grounds
  - Sports gears
  - See-saw



**Appendix B: Interview Protocol for Mathematics Teachers**

1. Are the available teaching and learning materials helpful in facilitating learning mathematical skills to children with mild mental retardation? If the answer is yes how?
2. What kind of classroom activities do you give to your children with mild mental retardation?
3. Which instructional strategies do you normally use to equip the mathematical skills to children with mild mental retardation?
4. What teaching techniques excite and animate pupils with mild mental retardation to learn mathematics?
5. What are the assessment procedures do you use for pupils with mild mental retardation?
6. Do you provide feedback after assessing the pupils with mild mental retardation?
7. Do you have any opinion regarding the teaching and learning of mathematical skills to children with mild mental retardation?
8. What should be done in order to enhance the teaching and learning process of mathematics among pupils with mild mental retardation?
9. As a specialist teacher, why there is low performance in mathematics for children with mild mental retardation at your school?
10. Do you have relevant materials for teaching children with mild mental retardation?
11. Do you have special needs education for teaching children with mild mental retardation?

12. Can your pupils able to measure areas, volume and distance of different objects such as garden, exercise books, windows and doors? If not, what do you suggest?
13. Do your pupils learn functional skills practically such as buying and selling by taking them to the market or shops apart from the classroom?
14. What is the average score in mathematics for pupils from 2018 to 2019?
15. Is the curriculum used effective to your pupils in learning mathematics?
16. Do you get support from the government, Non-government Organizations (NGOs) and community?
17. If yes what kind of support do you get?
18. If not why?
19. Is there any meeting to discuss academic issues between parents and teachers? If yes how many times do you meet in a year? If not, what are the reasons?
20. What methods do you employ when teaching mathematics to your pupils?
21. Is the present Curriculum which you are using appropriate to your pupils?
22. What is the number of teachers per students?
23. Do you have teaching and learning materials such as real object, diagrams and pictures when teaching mathematics?
24. Do you get your salaries on time? Is it satisfactory?
25. Do you live in school house or you rent outside the school?
26. Do you have enough time to cover the syllabus?
27. What is the attendance of your pupils?
28. What is the distance of the pupil's homes from the school?
29. How does the society support your school?

**Appendix C: Interview Protocol For Parents/Guardians Children With Mild Mental Retardation**

1. What do you see as progress in your child's acquisition of mathematical skills?
2. What are the roles of the school in contributing mathematical skills to your child?
3. As parent/guardian, what do you do to test your child's progress in mathematics while at home?
4. Do you cooperate with mathematics teacher of your child?
5. How do you cooperate with mathematics teacher to enhance your child's acquisition of mathematical skills?
6. What do you do to enhance your child's acquisition of mathematical skills at home?
7. What is your opinion towards enhancement of your child's acquisition of mathematical skills at home and school?
8. By comparing the performance of Mathematics, English, and Swahili which subject does your child performing well?
9. What reasons do you think enhance your child to perform well or bad in these subjects?
10. Is your child able to go to shop and buy things and return change?
11. Is there any visit done at your home by teachers?
12. What do they advise you?
13. What kind of disability does your child have?
14. Do you have another child having the same problem?

15. Do you have any problems which affect the attendance of your child in school?
16. What types of support do you get from government and Non-government Organizations?
17. Which activities do you give your child at home?
18. Do your child able to hold spoon and eat food him/her self?
19. Do your child able to go to toilet independently?
20. Does your child able to dress and undress independently?
21. Does additional and subtraction mathematics help your child in home activities?

**Appendix D: Interview Protocol for Quality Assurance Officer**

1. How many years have you been a quality assurer in inspecting pupils with mild mental retardation in Mathematics subject?
2. How do teachers utilize the pedagogical practices to enhance pupils with mild mental retardation in acquiring mathematical skills?
3. What are the assessment procedures do you use to inspect mathematics teacher so as to enhance pupils with mild mental retardation acquisition of mathematical skills?
4. Is the feedback you provide useful for teachers to enhance pupils with mild mental retardation acquisition of mathematical skills?
5. Are you contented with the progressive report on mathematical skills acquisition among pupils with mild mental retardation n your district? If the answer yes, Why?
6. What should be done to improve the acquisition of mathematical skills among pupils with mild mental retardation?

**Appendix D: Questionnaire To Mathematics Teachers**

**Please tick whichever applicable even more than one place**

1. Which components of mathematical skills are most used in teaching pupils with mild mental retardation?
  - a) Mathematical ideas
  - b) Mathematical reasoning
  - c) Apply mathematics to everyday situation
  - d) Measurement
  
2. What are the mathematic competencies are your pupils with mild mental retardation have to go beyond simple computing in order to attain mathematical skills?
  - a) Add
  - b) Subtract
  - c) Divide
  - d) Multiply or manipulating numbers
  
3. How can pupils with mild mental retardation can do mathematics in a good way and attain mathematical skills?
  - a) Problem solving
  - b) Reasoning
  - c) Connections
  - d) Communication
  - e) Representation

4. Mention six aspects that may cause mild mental retardation fail to attain mathematical skills.

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.....

5. What mathematical skills should primary school pupils with mild mental retardation acquire by primary graduation?

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6. What are the challenges you face when facilitating the acquisition of the mentioned mathematics skills to pupils with mild mental retardation?

.....  
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.....

7. How do you support pupils in and outside classroom to do activities that reflect mastery of certain mathematical skills, such as quantity, and numbers?

.....  
.....

What intervention would you recommend in order to address the challenges pupils with mild mental retardation face in attaining mathematical skills?

.....  
.....  
.....

**Appendix E: Questionnaire to Quality Assurance Officer**

**Please tick whichever applicable even more than one place**

1. What are the most factors influencing pupils with mild mental retardation?
  - a) Unqualified teachers
  - b) Few teaching methods
  - c) Non-conducive teaching and learning environment
  - d) Shortage of textbooks
  - e) Shortage of teaching aids
  - f) Lack of cooperation between parents with children with mild mental retardation and teachers
  
2. Which teaching methods are most appropriate to enable pupils with mild mental retardation attain mathematical skills?
  - a) Group discussion
  - b) Participatory
  - c) Problem solving
  - d) Questions and answers
  - e) Games or play
  - f) Participatory
  - g) Oral testing
  - h) Written testing



3. What professional support do you give to teachers of mathematics for pupils with mild mental retardation?

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.....  
.....

4. What is the specific or general report on the level of attainment of mathematical skills of children with mild mental retardation?

.....  
.....  
.....

5. What should teachers of mathematics do to help children with mild mental retardation attain mathematical skills?

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.....

**Appendix G: Questionnaire to Parents/Guardians**

1. Mention five methods do you teach your child according to the things you have at home as well as the surrounding environment.

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2. What mathematical skills your child seem to attain as a result of studying mathematics at school?

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i.

3. What can your child do that illustrates his or her mastery of mathematical skills?

.....  
.....  
.....

4. How do you support your child to do activities that reflect mastery of certain mathematical skills, such as quantity, and numbers?

.....  
.....  
.....

## RESEARCH CLEARANCE

### THE OPEN UNIVERSITY OF TANZANIA

*DIRECTORATE OF POSTGRADUATE STUDIES*

P.O.BOX 23409  
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REF: PG201400349

29<sup>th</sup> January 2020

**REGIONAL ADMINISTRATIVE SECRETARY,  
P.O.BOX 119.  
MWANZA.**

The Open University of Tanzania was established by an act of Parliament no. 17 of 1992. The act became operational on the 1st March 1993 by public notes No. 55 in the official Gazette. Act number 7 of 1992 has now been replaced by the Open University of Tanzania charter which is in line the university act of 2005. The charter became operational on 1st January 2007. One of the mission objectives of the university is to generate and apply knowledge through research. For this reason, staff and students undertake research activities from time to time.

To facilitate the research function, the vice chancellor of the Open University of Tanzania was empowered to issue a research clearance to both staff and students of the university on behalf of the government of Tanzania and the Tanzania Commission of Science and Technology.

The purpose of this letter is to introduce to you **Mr. LUCIAN JOSEPH MALUNGO, PG 201400349** who is a Master student at the Open University of Tanzania. By this letter, **Mr. LUCIAN JOSEPH MALUNGO** has been granted clearance to conduct research in the country. The title of his research is **“AN INVESTIGATION ON FACTORS**

**INFLUENCING PUPILS WITH MILD MENTAL RETARDATION IN ATTAINING MATHEMATICAL SKILLS IN PRIMARY SCHOOLS IN MWANZA”**. The research will be conducted in ILEMELA MUNICIPALITY. The period which this permission has been granted is from 10/02/ 2020 to 10/03/2020.

In case you need any further information, please contact:

The Deputy Vice Chancellor (Academic); The Open University of Tanzania; P.O. Box 23409; Dar Es Salaam. Tel:  
022-2-2668820

We thank you in advance for your cooperation and facilitation of this research activity.

Yours sincerely,

**Prof Hossea Rwegoshora**

**For: VICE CHANCELLOR**

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Ofisi ya Mkurugenzi,  
 Manispaa ya Ilemela,  
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**MWANZA.**

*Unapojibu tafadhali taja:*  
 KUMB.NA.IMC./E.10/203/65

20 Februari, 2020

Lucian J. Malungo,  
 Afisa Elimu ya Watu Wazima Misungwi  
 S.L.P. 20,  
**MISUNGWI.**

K.K Afisa Elimu Msingi  
 S.L.P 20,  
**MISUNGWI.**

*Lucian J. Malungo*  
 AFISA ELIMU YA WAZIMA  
 MISUNGWI

**YAH: KIBALI CHA KUFANYA UTAFITI WA KIELIMU KITUO CHA  
 HURUMA PASIANSI**

Rejea barua yako ya tarehe 12/02/2020 ya kuomba kibali cha kufanya utafiti wa kielimu juu ya watoto wenye ulemavu wa akili.

Kwa barua hii ofisi inakujulisha kuwa ombi lako limekubaliwa la kufanya utafiti wa kielimu katika kituo cha huruma pasiansi.

Nakutakia utekelezaji mwema.

*Redemptor F. Kibiti*  
**Kny:MKURUGENZI WA MANISPAA,  
 ILEMELA.**

**Nakala:**

Mwalimu mkuu shule ya msingi pasiansi – Mpe ushirikiano



MWALIMU MKUU  
 SHULE YA MSINGI PASI  
 ILEMELA-MWANZA  
*Redemptor F. Kibiti*  
 25/2/2020

THE UNITED REPUBLIC OF TANZANIA  
PRIME MINISTER'S OFFICE  
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

**MWANZA REGION**

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In reply please quote:



REGIONAL COMMISSIONER'S OFFICE  
P.O. Box 119,  
MWANZA.

18<sup>th</sup> February, 2020

Ref. No. FA 222/264/01/75

**District Administrative Secretary  
Ilemela District  
MWANZA**

**RE: RESEARCH PERMIT FOR Mr. LUCIAN JOSEPH MALUNGO**

Refer to the above caption.

The named above is allowed to conduct his Research titled "AN INVESTIGATION ON FACTORS INFLUENCING PUPILS WITH MILD MENTAL RETARDATION IN ATTAINING MATHEMATICAL SKILLS IN PRIMARY SCHOOLS IN MWANZA" as part of his Masters degree requirement of The Open University of Tanzania in Ilemela Municipal Council. His research is planned to be conducted at Huruma Centre, Pasiansi Primary school for a period of two Months as from 20<sup>th</sup> February, 2020.

Please accord him with any possible assistance to accomplish his duty.

Yours Sincerely,

B.J. Sheja

**For: REGIONAL ADMINISTRATIVE SECRETARY**

**MWANZA**

**N. N. Y. KATIBU TAWALA (M)**

**MKOA WA MWANZA (9)**

Copy: LUCIAN JOSEPH MALUNGO  
The Open University of Tanzania  
MWANZA