THE ACADEMIC PERFORMANCE OF PUPILS WITH AUTISM AND PUPILS WITH INTELLECTUAL IMPAIRMENT IN SPECIAL AND INCLUSIVE PRIMARY SCHOOLS IN TANZANIA

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by the Open University of Tanzania a thesis titled: "***The Academic Performance of Pupils with Autism and Pupils with Intellectual Impairment in Special and Inclusive Primary Schools in Tanzania,"*** in fulfillment of the requirements for the degree of Doctor of Philosophy (Education) of the Open University of Tanzania.

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DECLARATION

I, **Peter Elisha Mwamwaja**, declare that this thesis is my own original work, and that it has not been submitted for a similar degree in any other University.

.....

Peter Elisha Mwamwaja

Date .....

DEDICATION

This thesis is dedicated to my beloved parents, Mrs. Anna Peter Mwamwaja who has gone in the immediate presence of the Lord and Mr. Elisha Angyelile Mwamwaja.

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To God be the glory great things He has done. Without Him, it would have been impossible to complete this thesis.

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ABSTRACT

In Tanzania, several initiatives have been made in establishing special and inclusive schools. The government and community at large show commitments in addressing the needs of pupils with disabilities including pupils with autism and the pupils with intellectual impairment. For learners with intellectual impairment the curriculum of 2008 in primary school was investigated. The question that arises is whether pupils with autism and pupils with intellectual impairment in special and inclusive classrooms in Tanzania perform well academically. It is on this premise that the current study was based. The study intended to assess performance of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms in Tanzania. The study examined teaching and learning resources and teaching and learning approaches for pupils with autism and pupils with intellectual impairment. This study also explored teachers' views on teaching and learning of pupils with autism and pupils with intellectual impairment. The study was guided by the Stimulus Control Theory. The study employed mixed methods research approach with a quasi-mixed design within mixed methods approach. Five inclusive primary schools were purposively chosen from two regions in Tanzania Mainland. There were 69 participants, including 19 special needs education teachers, and 21 pupils with autism and 29 pupils with intellectual impairment. Data were collected using interviews and pupils' assessment tool. Statistical Package for Social Sciences (SPSS) version 20 was used during data analysis. The paired t-test and chi-square were used to establish differences in pupils' academic performance. The data on teaching-learning resources and approaches and teachers' views were analysed qualitatively. The findings revealed that both pupils with autism and pupils with intellectual impairment performed lower level academic tasks. Further, pupils with intellectual impairment performed relatively higher in all selected tasks (number, communication and vocational skills) comparing to pupils with autism. The study also revealed that teaching and learning resources for pupils with autism and intellectual impairment in all the sampled primary schools were inadequate and less appropriate. In light of the findings of this study, it was concluded that pupils with autism and pupils with intellectual impairment managed to perform tasks involving low level of thinking. As such, some deliberate efforts are required for enabling them to acquire competencies as outlined in the curriculum for pupils with autism and pupils with intellectual impairment. This study, therefore, recommends for the deployment of more special education teachers and an increase in facilitation of teaching and learning processes for pupils with autism and pupils with intellectual impairment so that they can acquire knowledge and skills for them to live independent lives.

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LIST OF ABBREVIATIONS

AACT	Autism Awareness Care and Training Centre
APA	American Psychological Association
ASD	Autism Spectrum Disorder
EFA	Education for All
ICT	Information and Communication Technology
IQ	Intelligence Quotient
PDD	Pervasive Developmental Disorders
PECS	Picture Exchange Communication System
PEDP	Primary Education Development Programme
PhD	Doctor of Philosophy
PwA	Pupils with Autism
PwII	Pupils with Intellectual Impairment
RFT	Relational Frame Theory
SPSS	Statistical Package for Social Sciences
TEACCH	Treatment and Education of Autistic and related Communication Handicapped Children
TenMet	Tanzania Education Network/Mtandao wa Elimu Tanzania
T-L	Teaching and Learning
ToM	Theory of Mind
Tshs.	Tanzanian Shillings
UNESCO	United Nations Education, Scientific and Cultural Organisation
UNICEF	United Nations Children's Fund

URT	United Republic of Tanzania
USA	United States of America

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

Chapter one presents background information related to the research problem. It also covers statement of the problem, purpose and specific objectives of the study. It further presents research tasks and questions for the study. Lastly, it provides significance of the study, scope, limitations and conceptual framework of the study.

1.2 Background to the Study

One of the major aims of the Tanzania's education system is to enable learners to acquire various life skills for their own survival and lead a decent life. Bloom, Canning and Chan (2006) pointed out that, education is widely accepted as a key instrument for promoting economic growth in many nations. Since independence, the Government of Tanzania has recognised the central role of education in achieving the overall development goal of improving the quality of life of Tanzanians through economic growth and poverty reduction (URT, 2006; Woods, 2007).

It is unfortunate that people with disabilities in developing countries live in extreme poverty (Possi & Mboya, 2011). They are also exposed to discrimination, exploitation, and abuse. In reality, they either live with families and kept hidden in their homes or are on the streets begging (Polat & Kisanji, 2009). It should be known that such children have to be given their rights to education.

Magrab (2004) writes that among the goals of the Flagship on Education for All (EFA) and the Rights of Persons with Disabilities is:

> *"Recognizing the universal right to education, the flagship seeks to unite all EFA partners in providing access to and promoting completion of quality education for every child, youth, and adult with a disability." (p.13)*

Education for All means ensuring that all children have access to and participate in basic education of good quality. This implies creating an environment in schools and in basic education programmes in which children are both able and enabled to learn. Such an environment must be inclusive for children, friendly and welcoming for all children, healthy, gender sensitive and protective for children. The development of such child-friendly learning environments is an essential part of the overall efforts by countries around the world to increase access to and improve the quality of their school.

The 2006 Education Sector Review acknowledged the challenge of providing access for children from poor families, orphans, other vulnerable children including children with disabilities (United Republic of Tanzania [URT], 2008). The 2014 Education and training policy emphasise on consideration of gender disparity and nomadic education and calls for strategies for attracting teachers to teach in remote and difficult rural areas. Despite all efforts made to make education accessible for all in Tanzania (including the establishment of special schools and inclusive schools, and increasing enrolment of pupils with autism and pupils with intellectual impairment as indicated in Table 1.1), there are still individuals who still do not have access to education.

Table 1.1: Enrollment of Pupils with Autism and Pupils with Intellectual Impairment in Government and Non-Government Primary Schools in Tanzania

Years	Pupils with autism			Pupils with I/impairment		
	Male	Female	Total	Male	Female	Total
2011	86	71	157	293	202	495
2012	63	49	112	171	117	288
2013	432	314	746	2102	1529	3631

Source: URT (2013), Basic Education Statistics in Tanzania 2009-2013.

The government of Tanzania clearly stipulates that every child has a right to access and participate in proper primary education as a human right regardless of sex, colour, ethnicity and abilities (URT, 1995). Implicitly, the general education policy statement indicates that people with disabilities have the same rights as everyone else.

On the historical account, pupils with autism spectrum disorder and intellectual impairment have not benefited well in education (Cole & Meyer, 1991). They have been in inclusive schools with large class sizes. Some parents, teachers, and educational authorities had fear that such inclusion could affect academic performance of pupils without disabilities. This is not exclusively true, as Cole, Waldron and Majd (2004) and Dessemontet and Bless (2013) found that the inclusion of pupils with autism and pupils with intellectual impairment in primary regular education classrooms with support is not detrimental to the academic

progress of students without disability. Such findings are of critical importance, as it could help to alleviate fears among parents, teachers, and educational authorities, and might support efforts made to develop inclusive practices for children with intellectual impairment.

Negative attitudes impede the implementation of inclusive education in different settings of education and make pupils with disabilities face barriers to learning and participation in education (Mmbaga, 2002; Dagnew, 2013). Attitudes are one of the important factors for the successful implementation of inclusive education. According to UNICEF (2010) children with disabilities face extreme discrimination with 22% of parents and caregivers reporting negative attitudes at home, in the community and from educational institutions. Those who attend schools typically have teachers who are not trained to cater for pupils' special needs.

Pupils with autism are those with autism spectrum disorder, which means pupils with deficits in developing social and communication skills (National Autistic Center - Kenya, 2009). They have difficulty with communication and social relationships; display behaviors not typical of their peers; and respond to sensory stimuli by screaming or reacting strongly to light, sound, or motion (Sicile-Kira, 2004; Hart & Whalon, 2011).

Intellectual impairment is a term used when a person has certain limitations in mental functioning and in skills such as communicating, taking care of him or herself, and social skills. Pupils with intellectual impairment have difficulty remembering information and have trouble attending to relevant features of learning task and so

may focus on distracting irrelevant stimuli (Luckasson, Borthwick-Duffy, Buntinx, Coulter, Craig & Reeve, 2002).

It is estimated that about 25% of persons with autism have intelligent quotient higher than 70 (Kosslyn & Rosenberg, 2001). Intellectual functioning or intelligent quotient is usually measured by the intelligent quotient (IQ) test. The average score is 100. People scoring below 70 are thought to have a cognitive disability. Thus, most persons with autism spectrum disorder have intellectual impairment (Kosslyn & Rosenberg, 2001). Therefore, education is the primary form of treatment for autism, and thus curriculum is crucial to allow such pupils attain a quality education. Consequently, educational planning must be further individualized to treat a constellation of disabilities.

According to Boyd and Shaw (2010), once pupils with autism enter the school system and become part of the classroom make-up, it is important to consider how their specific presentation of autism may affect academic achievement and social acceptance. Pupils with autism can have difficulty in processing auditory information (Siegal & Blades, 2003). Thus, it may take them longer to follow multistep or complex adult directives. Individuals with autism and intellectual impairment may also have a rigid cognitive processing style where they over-focus on details and are unable to meaningfully integrate information (Happe, 1994). It is further important to note that, a generalization of learned skills to new people or situations is hard for those with autism and intellectual impairment. The individuals face significant interpersonal, communication and behavioural deficits in learning with others in inclusive classrooms. They require intensive treatment in a specialized setting (Allen,

Paasche, Cornell & Engel 1994; Nolen-Hoeksema, 2004). This calls for changes in decisions to fit in with the various types of disabilities including autism.

In 2008, the government introduced syllabi for pupils with intellectual impairment, the question of relevance of the curriculum becomes crucial since it is important to ensure that education provided to pupils with autism and pupils with intellectual impairment enables them to live independently for the rest of their lives (Hippensteel, 2008; URT, 2008c). Living independently refers to the ability of an individual to engage in social relations as well as making appropriate choices which affect their well-being. This study intended to assess the academic performance of pupils with autism and pupils with intellectual impairment in special and inclusive schools in Tanzania.

1.3 Statement of the Problem

In 2013, about 746 pupils with autism and 3631 with intellectual impairment were enrolled in primary schools (URT, 2013). Several initiatives such as, establishment of special units and inclusive schools, increased funding for teaching and learning resources, made by the government and community at large show commitments in meeting the needs of pupils with autism and pupils with intellectual impairment in Tanzania including the curriculum for learners with mental disabilities of 2008 in primary schools (URT, 2007; Mmari, Mzee & Frankenberg, 2008; Mboya, Mbise, Tungaraza, Mmbaga, Kisanji, & Madai, 2008; Polat & Kisanji, 2009). The question that arises is whether pupils with autism and pupils with intellectual impairment in special and inclusive classrooms in Tanzania perform well academically. It is on this premise that this study was based. The study assessed the academic performance of

pupils with autism and pupils with intellectual impairment, teaching and learning resources as well as teaching approaches in order to come up with appropriate educational measures and mechanisms for handling educational needs of pupils with autism and pupils with intellectual impairment in Tanzania.

1.4 Purpose and Objectives of the Study

1.4.1 Purpose of the Study

The general objective of this study was to assess the academic performance of pupils with autism and pupils with intellectual impairment in Tanzanian special and inclusive primary schools.

1.4.2 Specific Objectives

i) To compare academic performance of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms.

ii) To assess the adequacy and appropriateness of teaching-learning resources for pupils with autism and pupils with intellectual impairment in special and inclusive classrooms.

iii) To examine teaching-learning approaches for pupils with autism and pupils with intellectual impairment in special and inclusive classrooms.

iv) To find out teachers' views on teaching and learning of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms.

1.5 Research Questions for the Study

To achieve the stated objectives, the following research questions were used in the study:

i) What are the differences in academic performance between pupils with autism and pupils with intellectual impairment in special and inclusive classrooms?

ii) How adequate and appropriate are the teaching-learning resources for pupils with autism and pupils with intellectual impairment in special and inclusive classrooms?

iii) What are teaching-learning approaches for pupils with autism and pupils with intellectual impairment in special and inclusive classrooms?

iv) What are the views of teachers on teaching and learning of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms?

1.6 Significance of the Study

The findings of this study would be of great support in several ways: Firstly, the findings provide support in addressing issues related with teaching and learning for pupils with autism and pupils with intellectual impairment. Secondly, the findings may assist in increasing peoples' awareness on how to assist families and societies in general to accept and live happily with persons with disabilities, especially those with autism and intellectual impairment. Consequently, support of community-based rehabilitation can be acquired and sustained within the Tanzanian societies and elsewhere. Thirdly, the study can contribute to improved learning environment that is more conducive for pupils with autism and pupils with intellectual impairment. This study also adds to the body of existing knowledge on the understanding of the needs of pupils with autism and pupils with intellectual impairment, especially in the provision of primary education that can help learners to be self-supportive.

1.7 Scope of the Study

This study focused on assessment of the academic performance of pupils with autism and pupils with intellectual impairment in special and inclusive schools. The study addressed the pupils' academic performance on the selected academic tasks (i.e. number, communication and vocational skills) tasks in their different settings of learning. It covered two administrative regions in Tanzania, Dar es Salaam and Mbeya. In these regions, only five primary schools with special and inclusive classrooms for pupils with autism and pupils with intellectual impairment were involved in this study.

1.8 Limitations of the Study

While conducting the study, the researcher experienced some limitations. Firstly, the study dealt with the pupils with autism and pupils with intellectual impairment. Such pupils face communication barriers, they couldn't speak fluently. This made interaction between the researcher and pupils complicated, hence difficulty in collecting the required data. In handling this challenge the researcher asked for assistance from the special needs education teachers who were able to communicate with the pupils with autism and pupils with intellectual impairment. The close supervision by the researcher resulted into the collection of robust data.

Secondly, some respondents, especially special needs education teachers had a feeling that the research had funding hence high expectations of being given money. They asked for some allowances before they could be involved in the study. This gave the researcher an indication that such respondents only accepted to be part of the study just to collect the allowances if any. The researcher had to make it clear

that there were no any allowances to be offered and the door was open for any respondent who thought that he/she could not participate in the study without being given the allowances. This was necessary for two reasons: One, if a respondent is participating in the study because he/she just want to collect an allowance, he/she can give false or exaggerated information which in turn can affect with validity and reliability of the study's findings. Two, this was an academic study, so the researcher had no extra money for respondents' allowances, hence only those who understand the value of academics were asked to participate. Fortunately, respondents realized the importance of this study and were unconditionally ready to participate. This added value and trustworthiness to the information they gave to the researcher, hence valid and reliable data was collected.

1.9 Delimitation of the Study

It is important to point out the delimitation of this study. The study was on assessing the academic performance of pupils with autism and pupils with intellectual impairment in Tanzanian special and inclusive primary schools. However, due to limitation in time, materials, and financial resources, this study was delimited to assess academic performance of pupils with autism and pupils with intellectual impairment in three academic tasks including number skills, communication skills and vocational skills.

The study was also focused on issues that directly influence academic performance of pupils, these were teaching and learning resources and teaching and learning approaches. Furthermore, it was importantly limited to teachers' views on teaching

and learning of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms.

1.10 Operational Definition of Key Terms

Academic Performance: Refers to achievement in standardized tests or examinations shown by a learner (Bossaert, *et al*., 2011). In this study, academic performance referred to achievement of pupils with autism and pupils with intellectual impairment in learning tasks that these pupils were assigned to accomplish.

Autism Spectrum Disorder: This term commonly referred to as autism, is a group of diverse developmental disorders that have a wide range of behavioural and communication difficulties with varying severity (Riccio, 2011). Autism Spectrum Disorder is a complex neurological disorder that affects the functioning of the brain. In recognition of the current usage, therefore, this study used it in reference to a disorder of development affecting social and communication skills, often with accompanying learning difficulties.

Intellectual impairment: Refers to sub-average general intellectual functioning which originates in the developmental period and is associated with impairment in adaptive behaviour (Parmenter, 2011). A pupil/learner with intellectual impairment is the one with a pervasive delay in development generalised across aspects of cognitive growth through infant and childhood years.

Teaching-Learning Approaches: These are set of principles, beliefs, or ideas about the nature of learning which is translated into the classroom. A teaching-learning approach is treating something in a certain way as strategies determined partly on subject matter to be taught and partly by the nature of the learner.

Teaching-Learning Resources: These include materials (such as, photographs, magazines, toys, baskets, shelves and containers) used by the facilitator (a teacher) and the learner in facilitating lesson effectively and/or learn effectively.

1.11 Organisation of the Thesis

This thesis is divided into six chapters. Chapter one presents the background to the problem and its statement. Research objectives and the research questions, significance of the study, limitations, conceptual framework, operational definition of key terms and the organization of the thesis are also presented in the chapter.

In Chapter two, concepts and theoretical perspectives of autism spectrum disorder and intellectual impairment are analytically presented. The teaching and learning approaches for pupils with autism and pupils with intellectual impairment are highlighted. Empirical studies and comparisons surrounding education for pupils with autism and pupils with intellectual impairment in Tanzania and selected parts of the World are elucidated. Chapter three provides general methodological issues regarding assessment of the performance of pupils with autism and pupils with intellectual impairment on selected academic tasks. The justification for the use of mixed methods research approach is discussed. The chapter also discusses the procedures involved in the data collection, data analysis, and ethical issues.

The next three chapters present the results, discussion, summary, conclusion and recommendations of the study. In Chapter four, the results which provide answers to the research questions which focused mainly on performances of pupils with autism and pupils with intellectual impairment and exploring views of teachers on the status of primary education provision for pupils with autism and pupils with intellectual impairment in Tanzania. The results of this study are discussed in Chapter five, while the last chapter, chapter six of this thesis presents the summary, conclusion, and recommendations based on the findings of the study and suggestions relating to possible areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature related to the study. The review covers theoretical literature review on various perspectives on causes of autism and intellectual impairment, teaching and learning approaches for pupils with autism and pupils with intellectual impairment and comparison of the pupils with autism and those with intellectual impairment. The chapter also presents empirical literature review based on objectives guiding this study. Lastly, the chapter presents the literature summary and knowledge gap.

2.2 Theoretical Literature Review

The study was guided by the Stimulus Control Theory. Stimulus control theory was founded by B.F. Skinner (Sidman, 2008). The theory has potential impact on teaching and learning resources and the approaches in the performance of the pupils with autism and pupils with intellectual impairment. Spradlin and Brady (1999) identify a pupil's early years as critical to establishing socially appropriate stimulus control. How conditioned stimuli for feeding behavior, for instance, arise from the mother as she nurses her baby is used to illustrating the impact that impairments in stimulus control could have on the developing infant. In theory, impairments in respondent learning, for example, could relate to impairments in the upstream processes of habituation and sensitization and lead to impairments in the downstream processes of conditional discrimination and stimulus equivalence.

In most cases teaching pupils with autism and pupils with intellectual impairment teachers need to be aware of certain difficulties. Pupils with autism and pupils with intellectual impairment may have several problems that inhibit teaching and learning (Lovaas & Smith, 1989). One pattern in pupils with autism is they have aversive reactions to changes in routines. Stimuli are presented continuously for some fixed period of time, a continuously available response is intermittently reinforced, and the dependent measure is response rate. With guidance of the Stumulus Control Theory teaching and learning approaches were assessed in order to compare learning outcome and teaching and learning procedures for pupils of different levels of intellectual impairment.

2.2.1 Perspectives on Causes of Autism Spectrum Disorder

While the exact cause of autism is unknown, theories and scientific evidence point to a combination of factors such as genetic, prenatal, and postnatal risk factors of child development. In developing countries such as Tanzania, cases of autism have been noted to appear after a particularly traumatic case of childhood malaria or rheumatic fever and this has been a confirmed source of autism following scientific research (Mankoski, Collins, Noah, Ndosi, Mgalla, & Folstei, 2006). Other researchers are more convinced by the genetics behind this developmental disorder. For instance, through monozygotic twin studies, it was found that when there is a diagnosis of autism, there is a 90% chance that both twins would present with some forms of the disorder (Rapin, 1997).

Poor nutrition, poverty, and improper child development are also considered a probable cause of autism in children. The cycle of poverty, poor maternal health and

poor child nutrition is believed to stunt cognitive development and lead to developmental disorders such as Autism (Walker & Unterhalter, 2007). Other sources of etiology such as prenatal development are not clearly understood (Claassen, Naude, Pretorius, & Bosman, 2008). The most likely hypothesis is damage to the brain, perhaps prenatally, though it has not been conclusively proved. The factors responsible may include genetic or chromosomal abnormality, viral agents, metabolic disorders, immune intolerance and prenatal anoxia (Frith, 1989). The causes of ASD are summarised in Figure 2.1.

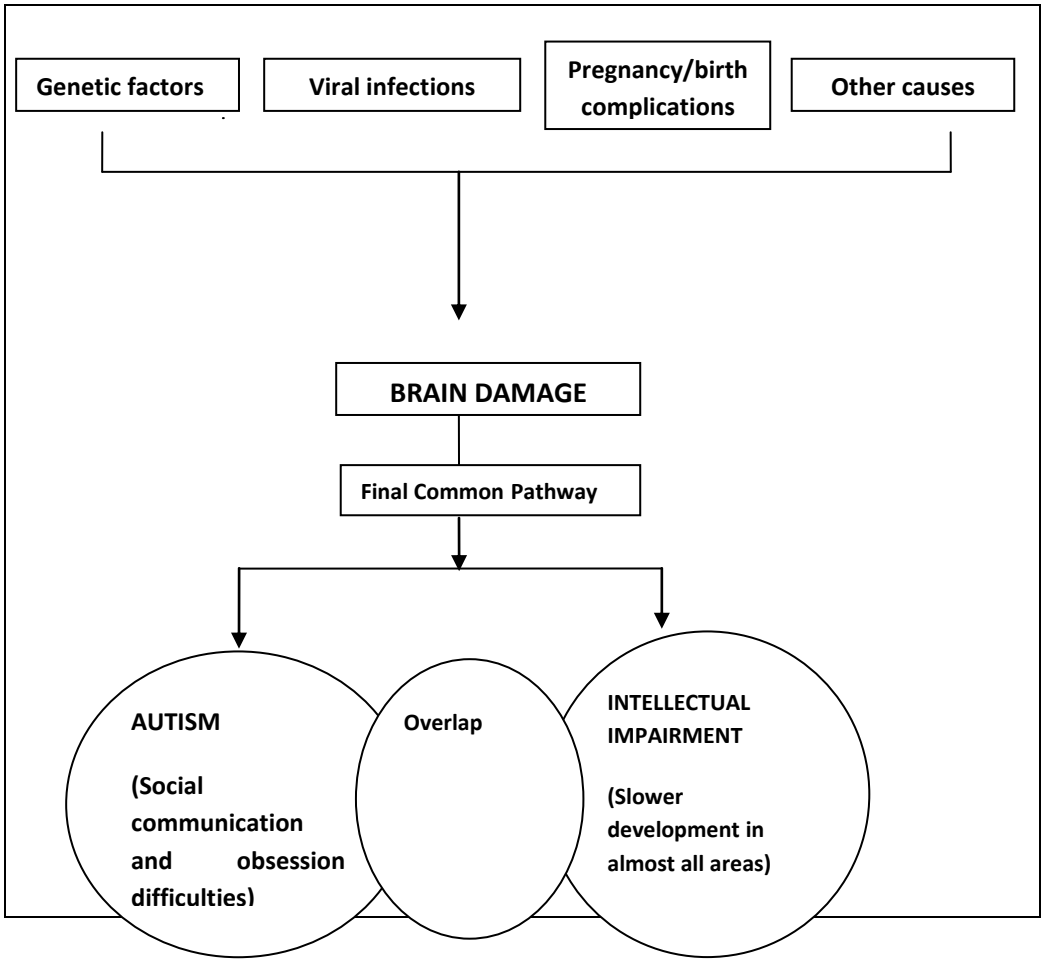

Figure 2.1: Causes of Autism Spectrum Disorder and Intellectual Impairment

Source: Frith (1989)

2.2.2 Perspectives on Causes of Intellectual impairment

The causes of mild intellectual impairment are more difficult to determine than causes for severe and profound intellectual impairment. Known causes can be classified into genetic factors, brain factors, and health factors (Beirne-Smith, Patton & Ittenbach, 2001). Firstly, intellectual impairment is closely associated with abnormal genes inherited from parents, errors when genes combine, or other reasons. Examples of genetic conditions are down syndrome, fragile X syndrome, and phenylketonuria (PKU). Secondly, intellectual impairment is said to be a result of problems during pregnancy. Intellectual impairment can result when the baby does not develop inside the mother properly. For example, there may be a problem with the way the baby's cells divide as it grows. A woman who drinks alcohol or gets an infection like rubella during pregnancy may also have a baby with mental retardation. This lead to unsafe behaviors of mothers during pregnancy, a condition referred to as fetal alcohol syndrome

Thirdly, some children acquire intellectual impairment due to problems at birth. If a baby has problems during labour and birth, such as not getting enough oxygen, he or she may have a intellectual impairment. Fourthly, diseases like a whooping cough, the measles, or meningitis can cause intellectual impairment. Intellectual impairment can also be caused by extreme malnutrition (not eating right), not getting enough medical care, or by being exposed to poisons like lead or mercury.

2.3 Teaching and Learning Approaches for Pupils with Autism and Pupils with Intellectual Impairment

2.3.1 Teaching and Learning Approaches for Pupils with Autism

A lot depends on how lessons are taught. When the teacher can encourage pupils and allow them freedom of expression, they can play a very positive role. A negative critical teacher can discourage self-expression and turn the pupil off art and make them feel inadequate or ashamed. It is necessary for the teacher to nourish their own creative expression so that they can feel confident within themselves to help the autistic child with their artistic expression. It is important that teaching goes both ways; as much as the student learns from the teacher, the latter must also learn from the pupils.

Whereas a pupil with autism will learn basic skills like listening and following directions and using materials properly, he/she may not understand words. Consequently, teachers have to communicate what they want pupils with autism to learn in different teaching techniques. The teacher has to be creative in getting across the lesson through other means rather than using verbal communication. This suggests for using various approaches to ensure that the learner comprehends the content (Butson, 2012). Despite challenges that pupils with autism face, there have been case studies and research that suggest that individuals with mental retardation can learn to express themselves rather successfully through various forms of writing (Kaderavek & Rabidoux, 2004).

There is a worldwide concern regarding “inclusiveness” of pupils with autism in schools and classrooms that should comfortably accommodate pupils with wide-

ranging disabilities, including autism (Kopetz & Lee Endowed, 2012). Schwartz, Billingsley, & McBride (n.d) as cited in Fukunaga, Simonell & Sperry (2004) suggest several strategies help teachers include pupils with autism in general education activities. They include: (i) *Teaching communication and social competence:* Interaction and communication with peers is a vital aspect of inclusive education and without these elements, inclusive classrooms provide for little outside of parallel instruction. Include social skills practice and role play in individual, self-directed learner activities for pupils with autism, (ii) *Including personalized individualized education programme goals into the natural flow of classroom instruction:* It is relatively simple to tailor an assignment originally created for the whole class to include one or two goals from a pupil's individualized education programme. For example, including a small matching assignment for a student with autism who is working on matching emotional states or the functions of objects into a larger assignment where the students are creating a collage, (iii) *Teaching and providing opportunities for independence:* By giving pupils with autism the freedom to explore, interact with their peers, and participate in general education activities throughout the day, they will have opportunities to independently work on functional social skills and communication. Skills trainers and classroom aides are there to support the pupils, but it is important to make certain that they do not become dependent on these adults.

(iv) *Creating a classroom environment that includes all pupils:* Activities that help to involve all students with a broad range of abilities are open-ended and support a variety of responses, are child directed, and teacher supported. Group activities are

an excellent way of promoting pupils membership by ensuring that every child has a role, either in a large or small setting. Allowing pupils with autism the chance to freely interact with peers during group work with support also enhances the feeling of being on the same level with other pupils, and (v) *Generalizing and maintaining new skills:* The wide range of activities that students participate in within a general education classroom require that new skills be both generalized across different situations and maintained over time. A useful strategy for teachers is to apply new skills across a variety of settings and activities, using varying materials that are available in the general education classroom.

Through print, television and radio media outlets, the Autism Awareness Care and Training Centre (AACT) of Accra in Ghana sponsors public awareness campaigns, provides life skills training; teaches language and communication skills, art classes and physical education; executes field trips and extra-curricular activities; and arranges respite care for the affected families (Kopetz & Endowed, 2012). Simpson and Myles (2008) confirmed in their work on pupils with autism spectrum disorder the advantages teachers gain when they learn and acquire skills and experiences to effectively collaborate with the many professionals and family members who team together to provide the child with autism the best educational programming possible.

Gaining confidence to provide adequate instruction in the inclusive classroom for pupils with autism entails not only keen awareness of the students' individual needs but also encouraging their communication by using pragmatic language; providing literal interpretation and conversation; applying positive behavioural support strategies; and incorporating social skills instruction and practice. Such skills help

students with autism make and keep friends, “read” and interpret social situations, better understand body language and proximity and assemble accurate judgments of specific people-to-people interactions (Mehring & Dow, 2001).

Other Teaching and Learning approaches for pupils with autism

(i) Visual rather than verbal mediation

Treatment and Education of Autistic and related Communication Handicapped Children (TEACCH) can be adapted for those with visual impairments. TEACCH is a special education program using structured teaching, a process designed to capitalize on the relative strength and preference for processing information visually in individuals with autism while taking into account the recognized difficulties (Spencer & Simpson, 2009). Individualized assessment and planning are used to create a highly-structured environment (organized with visual supports) to help the individual map out activities and work independently. A visual flow chart can be used with young people with autism to help them understand where they have choices in situations and to take responsibility for the consequences of their own behaviour.

Visualizing is a particularly abstract and mysterious form of covert behaviour. In essence, it involves “seeing” something that is not physically present (Skinner, 1974). No previous research of which we are aware has attempted to teach visualizing to pupils with autism but a recent pair of studies has done so with typically developing preschool pupils (Kisamore, Carr & LeBlanc, 2011; Sautter, LeBlanc, Jay, Goldsmith & Carr,. 2011), and the implications for pupils with ASD

are promising. In both studies, typically developing preschool children were tested on their ability to name stimuli that are members of particular categories (e.g., “Tell me some animals”). During baseline, the performance of all participants was low. During the intervention, children were taught to imagine cues for sub-classifications of the stimuli and then taught to name the stimuli that belong to the sub-classifications. For example, when asked to name some animals, children were taught to imagine a farm and name the animals in it, then an ocean and the animals in it, and then a zoo and the animals in it. Pupils were also prompted to use the imagining strategy and were given rules describing the use of it.

TEACCH classrooms use both general classroom schedules that outline the entire day for the whole class, and individual pupil schedules that explain what to do during the activities listed on the general schedule (Spencer & Simpson, 2009). Schedules are tailored to each pupil’s comprehensive ability and can utilize words, pictures, numbers, or objects based on the capability of each student. Individual pupils schedules can be placed in a notebook or on a student’s desk in inclusive settings and can also help pupils to maintain focus and complete undesirable work when they understand that a more desirable activity is next on their schedule for the day.

Visual strategies are defined as two-dimensional or three-dimensional representations of a particular concept used to communicate and teach that idea or concept. These can take the form of pictures, icons (black and white cartoon-like images), photographs or gestures to enhance the understanding of spoken words and communicate an idea (Tissot & Evans, 2003). Using visual environmental supports to mediate communication interactions and support understanding provides a non-

transient foundation essential for more effective communication. It builds on children's strengths rather than placing more demands on their area of greatest difficulty. When visual supports are used to give these children information and direction, child comprehension increases significantly (Hodgdon, 1995). Visual supports can be used in a variety of ways in the classroom. However, to be successful, they must fit the student's level of comprehension by being at the appropriate point on the continuum of complexity.

Visual supports are very useful and can be employed to: i) organize the student's activity—daily schedules, mini-schedules, activity checklists, calendars, choice boards, ii) provide directions or instructions for the student— visual display of classroom assignments, file cards with directions for specific tasks and activities, pictographs and written instructions for learning new information, iii) assist the student in understanding the organization of the environment— labelling of objects, containers, signs, lists, charts, and messages, iv) support appropriate behaviour—posted rules and representations to signal steps of routines, v) teach social skills—pictorial representations of social stories depicting a social situation with the social cues and appropriate responses, developed for a specific situation for the individual student (for further information on social stories, see the section in this chapter on strategies for teaching social skills) and vi) teach self-control—pictographs, which provide a cue for behaviour expectations (Hodgdon, 1996).

It is important to remember the following points about visual strategies (Tissot & Evans, 2003). Firstly, visual strategies do not exclude vocal exchange. The limited use of keywords is frequently used to try and reinforce the receptive meaning of

spoken words. Secondly, visual strategies should be viewed as a temporary support mechanism for communication and reduced when appropriate to the individual, and thirdly, the goal of visual strategies is to enhance the meaning of communication for the child. No one particular approach is right for every child in this subgroup and alternative types of visual strategies may need to be tried before a 'best' approach is discovered for any one individual child.

Types of visual strategies are categorised into two major groups of visual strategies (Figure 2.2): those that rely primarily on movement or gesture (Sign Language), and those that involve external materials (Picture Exchange Communication System (PECS) and Treatment and Education of Autistic and related Communication Handicapped Children (TEACCH) or Nina Lovaas' Reading and Writing Programme) (Tissot & Evans, 2003).

Movement based	**Materials based**
Sign language	Reading and writing programme
Gestures	TEACCH
Facial expressions	PECS (symbol systems)

Figure 2.2: Types of visual strategies

Source: Tissot & Evans (2003)

(ii) Bottom-up processing

The 'bottom-up' processing of early childhood persists into adulthood as a preferred mode, at least in many situations (Behrmann, Thomas & Humphreys, 2006).

Educators need to develop habits of giving ‘advance organisers’ (Ausubel, Koutsouki, Kourtessis & Charitou, 1978) to signal the content of the lesson (or part of the lesson) to come, reducing the guess work for the pupil with autism spectrum disorder, and benefiting many others who also struggle to be prepared to take in information. At the same time, the pupil with autism spectrum disorder needs to be helped to recognise the cues that indicate when educators change topic or addressee and to react accordingly.

(iii) Teaching cognitive skills to pupils with autism

Autism spectrum disorders are characterized by deficits in language, socialization, and the presence of restricted interests (American Psychiatric Association, 2013). Cognition is an area of functioning that is critical to everyday functioning across all three of these areas. A large amount of research has documented cognitive deficits in individuals with autism spectrum disorder, in terms of general intellectual disability and specific areas of cognition, in individuals with or without intellectual disability.

Cognitive abilities that can be applied under circumstances other than those in which they were directly trained are called “arbitrarily applicable derived relational responding” in the relational frame theory (RFT) research literature. RFT is a theory of cognition that states that cognition consists largely of the behaviour of relating events. Of course, there are many ways in which humans relate events in their daily lives. Two or more events can be similar, they can be different, they can be related in terms of a variety of comparisons (e.g., more/less, bigger/smaller, better/worse, taller/shorter, etc.), in terms of temporal relations (e.g., this happened before that), in terms of causal relations (e.g., A caused B, B was caused by A), in terms of

categorical relations (e.g., apples are a type of fruit, fruits are a kind of plant, etc.), and in terms of perspective relations (e.g., I versus you), among others.

RFT proposes that the cognitive activity of relating stimuli in each of these ways is learned operant behavior. In addition, each of these abilities is generalized operant behavior, learned via a history of multiple exemplary training. Most importantly, the defining feature of generalized operant behavior is that it occurs in situations other than those present during training—it is "arbitrarily applicable," in the sense that the learner can apply the repertoire in the novel, untrained situations that bear no physical similarity to those present during training. The strength of treating cognitive abilities as generalized operant behaviour is that it does not rely on invented unobservable, inoperable mechanisms, but rather makes specific, testable predictions regarding how these abilities can be trained and tested. If a particular cognitive ability is generalized operant behaviour, it should be teachable through MET. We will now consider research in which that tactic has been used.

(iv) Working memory

Working memory is the cognitive ability to keep information online and process it a short time later (Klingberg, Fernell, Olesen, Johnson, Gustaffson, Dahlstrom, Gillberg, Forssberg & Westerberg, 2005). Working memory is implicated in virtually every aspect of daily life, and working memory function is positively correlated with a large variety of meaningful outcomes, including numeracy and literacy achievement and long-term academic success (Alloway & Alloway, 2010). Pupils with autism spectrum disorder have documented deficits in working memory (Hill, 2004). It therefore seems likely that intervention is needed in this area.

However, constructing intervention approaches on the basis of the existing literature on working memory is difficult to be accessed because most current models of working memory are hypothetical and refer either to general regions of brain structure or to hypothetical mechanisms which have never been directly observed (Baddeley, 2000). In either case, until surgical or pharmacological interventions are invented, which can act directly on these mechanisms (which seems unlikely), these models are of little practical utility for remediating working memory deficits. Of course, all episodes of working memory involve behaviour occurring in relation to environmental stimuli. Therefore, it seems reasonable that such behaviour should be amenable to improvement through multiple exemplary training. A recent series of three experiments have evaluated this possibility. Taken together, the three experiments on multiple exemplary training for improving performance on working memory tasks in pupils with autism spectrum disorder provide initial evidence that working memory deficits may be amenable to treatment via behavioral intervention, and multiple exemplary training in particular. Perhaps the most encouraging findings of the studies were a continuation of maintenance after reinforcement and generalization to untrained stimuli for all participants, suggesting improvements in the overarching repertoires involved in working memory tasks, not merely rote memorization of particular tasks or behaviors (Tarbox & Najdowski, 2014).

(v) Metaphorical reasoning

Metaphors are a form of non-literal language that is commonly used in everyday speech. It has been estimated that the average person contracts up to four metaphors per minute in daily conversation (Garner, 2005). It is likely that merely through

common usage and through contacting metaphors repeatedly in particular contexts that one may come to respond to them appropriately. However, to actually *understand the meaning* of a metaphor, a relatively complex form of reasoning is required. A metaphor consists of calling a thing something that it is not. By definition, there is a property that is shared between the two things, which constitutes the meaning of the metaphor (Tarbox & Najdowski, 2014).

A significant amount of research has documented deficits in the non-literal language in general and metaphors in particular in pupil with autism spectrum disorder (MacKay & Shaw, 2004). However, few or no previous studies have attempted to teach pupils with autism spectrum disorder to understand metaphors. One recent study used multiple exemplary training to teach three pupils with autism to understand novel metaphors (Persicke, Tarbox, Ranick & Clair, 2012). A metaphorical statement generally consists of calling an object something other than what it literally is. For example, upon seeing a particularly fast runner, one might say, "He is a rocket!" In RFT perspective, understanding a metaphor involves relating each stimulus to its own attributes (an example of hierarchical relating), and then relating each of the attributes of one stimulus to those of the other (Stewart & Barnes-Holmes, 2001).

(vi) Perspective taking

Perspective taking refers to a very large and complex repertoire of behaviors, and a very large amount of developmental and cognitive research has documented deficits in perspective taking in pupils with autism spectrum disorder, most of which was conducted in the area of work referred to as "Theory of Mind" (Baron-Cohen, 2000).

Despite the hundreds of studies published on documenting perspective-taking deficits in children with autism, very little research has been published on effective treatments for perspective-taking deficits.

(vii) Visual perspective taking

This is one of the complex skills that are contained in the unexpected transfer task was isolated and taught: identifying what someone else can see based on the direction of their eye gaze (Gould, Tarbox, O'Hora, Noone & Bergstrom, 2011). In this study, multiple exemplary training was used to teach children with autism spectrum disorder to follow the direction of others' eye gaze and to therefore correctly answer questions about what the other person sees. The intervention was effective and produced generalization to untrained stimuli; however, no programming was done to encourage generalization from contrived table-top teaching to the natural environment, and therefore, participants had difficulty with the skill in completely natural contexts. This result was not surprising and merely emphasizes the need to include programming for generalization to the natural environment, or merely teaching skills in natural settings, to begin with.

2.3.2 Teaching and Learning for Pupils with Intellectual Impairment

Pupils with intellectual impairment are less efficient at learning than are others. This impairment in learning efficiency is roughly consistent with overall IQ level. Specific cognitive deficits often exist in such areas as memory, attention, or language (Luckasson, *et al.*, 2002). They have difficulty remembering information. As would be expected, the more severe the cognitive impairment, the greater the deficits in memory. The rate at which individuals with intellectual impairment acquire new

knowledge and skills is well below that of typically developing children. A frequently used measure of learning rate is trials to criterion—the number of practice or instructional trials needed before a student can respond correctly without prompts or assistance. The ability to attend to critical features of a task (e.g., to the outline of geometric shapes instead of dimensions such as their colour or position on the page) is a characteristic of efficient learners. Pupils with intellectual impairment often have trouble attending to relevant features of a learning task and instead may focus on distracting irrelevant stimuli. Individuals with severe intellectual impairment are more likely to have brain damage, which in turn is associated with such physical disabilities as cerebral palsy and seizure disorders (epilepsy) and their associated physical characteristics.

Importantly, systematically promoting generalization is a significant component of teaching writing to pupils with intellectual impairment. For instance, strategies such as aim for natural contingencies of reinforcement, teach enough examples, program common stimuli, teach loosely, program in-discriminable contingencies, and self-management) may be used to promote generalized learning outcomes (Joseph & Konrad, 2009).

Baine (1991) suggested eight modes for parents' involvement in the education of their pupils with intellectual disability: i) It is necessary for parents to break down each activity into small steps. For example, drinking is an activity which includes these steps: hold the mug, pour water in the glass, take a mug to mouth and drink water. Parents should teach one step at a time with rewards. ii) Repetition and drill method are frequently used for pupils with intellectual disability. Parents have ample

time opportunities to repeat the same activity every day for 2-3 times, iii) Demonstration of the task is very important in teaching the task to children with intellectual disability, iv) Parents can demonstrate different activities to their children during their daily interaction with children, v) Learning through games is recommended for children with intellectual disability, vi) Parents can play different games with their children, vii) Reward helps to increase the possibility of desired behaviour and parents are capable delivering rewards in their daily routines, and viii) It is necessary for parents to remain in touch with health professionals in rural areas for proper guidance and support about their children with intellectual disability.

Despite challenges that pupils with intellectual impairment face, there have been case studies and other research that suggest that individuals with mental retardation can learn to express themselves rather successfully through various forms of writing (Kaderavek & Rabidoux, 2004). Despite challenges in learning pupils with intellectual impairment have their learning styles that suit with cognitive deficits including poor memory, slow learning rates, attention problems, difficulty generalizing what they have learned, and lack of motivation (Heward, 2010):

i) Memory: Pupils with intellectual impairment have difficulty remembering information. As would be expected, the more severe the cognitive impairment, the greater the deficits in memory. Merrill (1990) reports that pupils with intellectual impairment require more time than their nondisabled peers to automatically recall information and therefore have more difficulty handling larger amounts of cognitive information at one time. Other researchers suggested that once persons with mental retardation learned a specific item of information sufficiently to commit it to long-

term memory—information recalled after a period of days or weeks—they retained that information about as well as persons without a intellectual impairment.

ii) Slow learning Rate: The rate at which pupils with intellectual impairment acquire new knowledge and skills is well below that of typically developing children. A frequently used measure of learning rate is trials to criterion—the number of practice or instructional trials needed before a student can respond correctly without prompts or assistance. For example, while just 2 or 3 trials with feedback may be required for a typically developing child to learn to discriminate between two geometric forms, a child with mental retardation may need 20 to 30 or more trials to learn the same discrimination. Because pupils with a intellectual impairment learn more slowly, some educators have assumed that instruction should be slowed down to match their lower rate of learning. Research has shown, however, that pupils with a intellectual impairment benefit from opportunities to learn to "go fast" (Miller, Hall, & Heward, 1995).

iii) Attention: The ability to attend to critical features of a task (e.g., to the outline of geometric shapes instead of dimensions such as their color or position on the page) is a characteristic of efficient learners. Pupils with a intellectual impairment often have trouble attending to relevant features of a learning task and instead may focus on distracting irrelevant stimuli. In addition, pupils with a intellectual impairment often have difficulty sustaining attention to learning tasks. These attention problems compound and contribute to a student's difficulties in acquiring, remembering, and generalizing new knowledge and skills.

iv) Generalization of Learning: Pupils with disabilities, especially those with a intellectual impairment, often have trouble using their new knowledge and skills in settings or situations that differ from the context in which they first learned those skills. Such transfer or generalization of learning occurs without explicit programming for many children without disabilities but may not be evident for pupils with mental retardation without specific programming to facilitate it. Scholars and educators are no longer satisfied by demonstrations that individuals with mental retardation can initially acquire new knowledge or skills. One of the most important and challenging areas of contemporary research in special education is the search for strategies and tactics for promoting the generalization and maintenance of learning by individuals with mental retardation. Some of the findings of that research are described later in this chapter and throughout this text.

v) Motivation: Some pupils with intellectual impairment exhibit an apparent lack of interest in learning or problem-solving tasks. Other pupils with a intellectual impairment develop learned helplessness, a condition in which a person who has experienced repeated failure comes to expect failure regardless of his or her efforts. In an attempt to minimize or offset failure, the person may set extremely low expectations for himself and not appear to try very hard. When faced with a difficult task or problem, some individuals with mental retardation may quickly give up and turn to or wait for others to help them. Some acquire a problem-solving approach called outer-directedness, in which they seem to distrust their own responses to situations and rely on others for assistance and solutions.

2.3.3 Comparison of Pupils with Autism and those with Intellectual Impairment in Learning

Pupils with autism and pupils with intellectual impairment generally have poor performance in academic tasks and face cognitive and learning problems. Cognitive failures include absent-mindedness, memory-related problem, unintentional mistakes and not remembering the names (Wallace, 2004). Several studies (such as, Odom *et al.*, 2010; Asonitou, Koutsouki, Kourtessis & Charitou, 2012) indicate a meaningful positive correlation between cognitive failures and task performance. These studies determined that pupils with autism and pupils with intellectual impairment are faced with significant problems in cognitive functions and lower scores in attention and learning (reading, writing, and spelling) compared with their normal peers.

In Tanzania, syllabi for pupils with intellectual impairment in 2008 are comprised of subjects such as mathematics, upbringing, health education, communication skills and psychomotor and vocational skills (URT, 2008c). Following the difficulties facing by pupils with intellectual impairment in learning, the curriculum for pupils with intellectual impairment was prepared to specifically reduce the following: difficulties in learning within and outside the school environment, difficulties in everyday living, difficulties in communication, and delay in developmental stages. As inclusive education is to be practiced in all schools, it is not possible to re-train all the teachers by sending them to teacher colleges (Mnyanyi, 2014). As such in Tanzania, pupils with related special needs (such as pupils with autism and those with intellectual impairment) are taught in the same classrooms as a means to solve expertise challenges.

The primary education curriculum has four main objectives. The first objective is to provide pupils with autism and pupils with intellectual impairment with opportunities to recognize themselves and their environment. The second one is to mold the character of the child and enable him/her to acquire acceptable norms of social conduct and behavior. The third is to encourage and promote the pupils with autism and pupils with intellectual impairment acquire skills for self-reliant life. The fourth is to provide pupils with autism and pupils with intellectual impairment with opportunities to acquire and develop reading, writing, and numerical skills. The main subjects in the curriculum are mathematics, caring, health skills, communication skills and psychomotor and vocational skills (URT, 2008c). After completing primary school, pupils with autism and pupils with intellectual impairment should have the following competencies: to be able to socialize with people of different status, to live independently, to be employed or self-employed, to develop academically and finally to recognize, preserve and utilize the environment sustainably.

In order to enable pupils with autism and pupils with intellectual impairment learn effectively, teachers are advised to utilize various strategies/activities in teaching/learning the respective topics. The strategies suggested in the curriculum are those which actively involve the learner in the learning process. Some of the strategies are demonstration, games, songs, excursion, role play, questions and answers, project work and motivations (URT, 2008c). It is important to look into the implementation and relevance of the curriculum for pupils with autism and pupils with intellectual impairment so as to look into its practicability and way forward.

2.4 Empirical Literature Review

2.4.1 Academic Performance of Pupils with Autism and Pupils with Intellectual Impairment in Special and Inclusive Classrooms

Saint-Laurent, Fournier and Lessard (1993) studied on efficacy of three programs for elementary schools with moderate mental retardation involving forty-one students with intellectual handicaps (25 boys and 16 girls). The study found no significant differences in academic outcomes for students with moderate developmental disabilities in inclusive, community-based, or traditionally segregated classrooms. These researchers concluded that integration proved to be advantageous for social and behavioural outcomes and that it provided academic, functional, and basic skills instruction that was equal to that provided in more segregated settings.

Three studies have investigated these numerical estimation skills in autism, both targeting the exact number system. The first one by Jarrold and Russell (1997) investigated counting abilities and possible implications for central coherence theory in United States of America. This was done by investigating whether pupils with autism would rapidly and automatically enumerate a number of dots presented in a canonical form or counts each dot individually to obtain the total. The study found that pupils with autism showed less benefit than comparison children in counting dot stimuli presented in canonical (dots on dice) than non-canonical (distributed randomly) form, and used a less efficient dot-by-dot counting strategy. The second study by Gagnon, Mottron, Bherer and Joanette (2004) examined the hypothesis of superior qualification abilities of persons with high functioning autism in Canada. Findings showed that, when asked to judge numerosities between 2 and 9 (e.g., “how

many squares are on the screen?"), persons with autism seemed to show evidence of a smaller range than non-autistic persons, although the groups were not compared statistically. It was also revealed no effect of local and global bias of stimuli presentation in the two groups' performance, and no superior quantification abilities in high functioning autism participants.

The third study by O'Hearn, Franceroni, Wright, Minshew and Luna (2013) focused on the development of individuation in autism in United States of America. They investigated core visual processes that contribute to holistic processing—namely, individuation and element grouping—and how they develop in participants with autism and typically developing (TD) participants matched for age, IQ, and gender. Although all three studies assessed precise enumeration both using experimental methods none is suggestive of superiorities in the exact system in autism.

Several studies investigated academic performance of pupils with autism in communication skills. Maurice (1996) conducted a study on behavioural intervention for young children with autism. The researcher evaluated pragmatic language skills (functional and social communication) as well as semantic language skills (the meaning of language including content and context). Because of the unique nature of autism, the assessment requires a team effort, involving family, teachers, and others who know the child well and it should include more than standardized testing. A complete picture of the child is needed to make treatment decisions and to provide a baseline by which progress can be measured. Maurice further asserts that a communication assessment for a child with autism can provide valuable information

to help parents, teachers, and specialists to understand the child's strengths and deficits, to set realistic goals, and to plan an effective program.

Wetherby, Prizant and Schuler (1997) studied on enhancing language and communication to pupils with autism. Enhancing language and communication skills of pupils with autism is one of the greatest challenges for teachers and families. This is due to the fact that, the development of language and communicative abilities is a major challenge faced by persons with autism. Most people are unaware of the complexity of normal communication because children develop these skills automatically, usually by the age of three or four. The study found that many pupils with autism spectrum disorder did not develop the skills they need for spontaneous communication, and must, therefore, be taught these. Helping pupils with autism spectrum disorder develop communication skills–so that they can express their wants and needs, interact socially, share information, express emotions, and protest or escape aversive situations, is a priority.

Another study by Argyropoulou and Papoudi (2012) examined the effectiveness of intensive interaction during interactive play between a preschool boy with autism and his teacher and, as a consequence, improve the social interaction between the boy and a non-autistic girl in an inclusive class in Greece. Results indicated significant improvement and post-training maintenance in the social interaction of the two children. Findings also added that pre-school children, when involved in more interactions in scheduled activities, are the ones they usually prefer or when the material is predictable and familiar.

A study conducted in USA by Hodgdon (1995) on solving social-behavioral problems through the use of visually supported communication found that the use visual input to aid comprehension of oral speech. Findings revealed that visual supports are helping children who do not have conventional communication systems to become more able communication partners. Accompanying spoken language with relevant objects, pictures, and other visual supports can help with comprehension. Experienced teachers of pupils with autism suggest the use of photographs support understanding of the content of oral language communication. Interestingly, many pupils with autism use reading to support oral comprehension rather than the expected reverse of using oral language to support reading, making reading instruction even more significant for these students.

Blackorby, Chorost, Garza and Guzman (2004) assessed the academic performance of elementary and middle school students with disabilities in USA. Among other findings, it was found that pupils with autism and pupils with intellectual impairment or multiple disabilities, who are nearly one-half year further from grade level in mathematics than pupils with learning disabilities, have WJIII (Tests of Cognitive Abilities) calculation test scores more than 7 points lower, controlling for other factors. The researchers also reported that while among the measures of academic performance considered here, having ADD/ADHD, independent of other disabilities, relates only to lower grades.

2.4.2 Teaching and Learning Resources for Pupils with Autism and Pupils with Intellectual Impairment

Hume, Wong, Plavnick and Schultz (2014) investigated on the use of visual supports with young children with autism spectrum disorders in USA. According to these researchers essential visual aids for pupils with autism and pupils with intellectual impairment comprise maps, labels, timelines, graphic organizers, visual boundaries, and a number of other examples. While these can certainly be categorized as a visual support, which is deemed evidence-based, there may not be enough evidence for each of these supports to independently be considered an evidence-based practice. Visual aids and symbols range in complexity from simple and concrete to abstract. Their study found that, visual supports play a significant role in organizing the environment and providing clarity for young children in early childhood settings, as they provide clues to young children about what activity will be occurring and what behavioural expectation is required in each activity space. They further argued that continuum moves from real object or situation to facsimile, colour photography, colour picture, black and white picture, line drawing, and finally to the graphic symbol and written language. Graphic symbols, although far along the continuum in terms of complexity and abstraction, have been widely successful with pupils with autism.

Wills (2009) studied on the strategies that work for young children with autism spectrum disorder. In this study the researcher discusses major characteristics associated with autism and offers some simple strategies for helping children with autism function in preschool settings. The author document several teaching

approaches that capitalise on the visual learning strengths of many pupils with autism spectrum disorder by employing visual schedules (using objects, pictures, symbols, words, etc, depending on the needs of the individual student), structured visual work systems where tasks are broken down and individually labelled, and clearly designated physical spaces for activities.

Other studies have made significant contribution in the teaching and learning of the pupils with autism and pupils with intellectual impairment. These include studies by Hall and Isaacs (2012) on seven keys to unlock autism that make miracles in the classroom and the other by Baker, Gersten, and Scanlon (2002) on procedural facilitators and cognitive strategies and tools for unraveling the mysteries of comprehension and the writing process and for providing meaningful access to the general education curriculum. Both studies emphasize on consistency across environments that work together to make the pupils feel accepted, cherished, and productive. For pupils with these disabilities, these studies describe instructional methods that extend the typical adaptations and help to promote progress in the core content areas for all students (including those without disabilities). These include graphic or advanced organizers, self-regulation strategies, semantic maps, mnemonics, chunking, questioning, and visualizing strategies.

Hall and Isaacs (2012) very specific added that taking the time to plan and prepare the environment of the classroom is a key component in preparing students with autism for school success. When creating an optimal learning environment for pupils, teachers first should consider the organization of the physical environment. The

nature of the physical structure is essential in for setting up and organizing a learning environment for pupils with autism and pupils with intellectual impairment

Spencer and Simpson (2009) studied on approaches for teaching children with autism in the general classroom. They came with a proposed variety of seating options can be placed in different areas of the classroom. These include rocking chairs, seat cushions, floor mats, lounge chairs, couches, armchairs, and bean bag chairs can be used in a classroom library area, a quiet spot, or writing area. Their findings revealed that by planning the placement and organization of the materials and furniture, teachers help students with autism to define the basic organization of the classroom and decrease visual and auditory distractions, reduce anxiety and promote independence, as well as more effective and consistent work. Further added that, in order to work and arrange the classroom in accordance with the need of pupils with autism and pupils with intellectual impairment other facilities such as containers, letter trays shelves and desks are equally essential.

Other scholars studied on appropriateness of the teaching and learning resources for addressing needs of pupils with autism and pupils with intellectual impairment who are considered to possess unique characteristics. Howell and Pierson (2010) explored parents' perspectives on the participation of their children with autism in Sunday school. They found that although children with autism may look different from one another depending on their unique characteristics, there should be various strategies with meaningful ways for children that may be beneficial in the teaching and learning processes for pupils with autism and pupils with intellectual impairment. In one of the materials-based systems known as Nina Lovaas' Reading and Writing

programme emphasizes on the use of written pictures to communicate with pupils with autistic spectrum disorder. The similar findings were revealed by Tissot and Evans (2003) who added that the programme (Nina Lovaas' Reading and Writing programme) teaches the pupils with autism spectrum disorder to read words by matching these with the pictures. It does this both receptively and expressively, and then eventually leads to having the child write (or type) as a means of communicating their thoughts.

Contrary to sufficient supply of teaching and learning facilities, Hall and Isaacs (2012) cautiously comment on careful arrangement of the teaching and learning resources in the classroom that, too many posters, hanging objects, busy word-filled walls, bright colors, and cluttered furniture can be overwhelming and distracting for all learners and particularly for pupils with autism and pupils with intellectual impairment. Pupils tend to feel a sense of being out of control in an overcrowded and over stimulated space, making it impossible to learn and concentrate. Hall & Isaacs suggest that containers can be labelled with a word and a picture to explain the contents. Letter trays can be placed in specific areas to indicate where to place completed homework and class work. Pupils can be taught how to store their own materials in a desk or locker. A map of the contents of the desk or locker can be created to help pupils with storing their materials in an orderly manner

One of the advantages of using visual aids is that pupils with autism and pupils with intellectual impairment can use them for as long as they need to process the information. Oral information may pose problems for students who have difficulty processing language, and who require extra time. It may also be difficult for the

pupils with autism and pupils with intellectual impairment to attend to relevant information and to block out background stimulation. Wetherby and Prizant (2000) studied on the necessity of the teaching and learning resources that cater to the needs of pupils with autism and pupils with intellectual impairment. They argued that classrooms and school environments must provide a wealth of opportunities for developing functional communication within social contexts. However, opportunity alone will not address the communication needs of the pupils with autistic spectrum disorder. The specific skills requiring instruction and strategies for developing the targeted skills must be identified.

2.4.3 Teaching and Learning Approaches for Teaching Pupils with Autism and Pupils with Intellectual Impairment

The study conducted in UK by Reed and Osborne (2014) on mainstreaming education for children with autism spectrum disorders found that sometimes pupils with autism are in mainstream schools without well developed strategies to cope with the problems that this form of education presents for them. Failure than that, a remarkably high number of pupils in mainstream school may display signs of autism in diagnostic tests, but those children either do not require or do not receive any help.

Despite the weaknesses observed by Reeds and Osborne, other studies have recorded positive outcomes on the inclusion of the pupils with autism and pupils with intellectual impairment in the learning processes. Hunt, Staub, Alwell and Goetz (1994) investigated the academic achievement of students with multiple, severe disabilities in the context of cooperative learning groups in inclusive classrooms. They demonstrated empirically that pupils with disabilities could acquire basic

communication and motor skills through interactions with peers without disabilities who provided them with cues, prompts, and consequences.

Hollowood, Salisbury, Rainforth and Palombaro (1994) studied on the use of instructional time in classrooms serving students with and without severe disabilities. They investigated on the degree to which the presence of pupils with severe disabilities in inclusive classrooms affected the time allocated for instruction, the actual time used for instruction, and students' engaged time. Classrooms with and without pupils with severe disabilities were compared on all three variables. The average time allocated and used for instruction was comparable for both types of classrooms. Findings revealed that there were no differences in the percentage of time typical pupils were engaged in instruction across the two classroom types. This was a significant finding, as it demonstrated that the presence of pupils with severe disabilities, even those with challenging behaviours, did not negatively impact the amount of engaged time for typical learners. Such kind of research made it necessary for the current study to undertake the assessment of the performance of pupils with autism and pupils with intellectual impairment in Tanzania.

Berg (2004) studied on the advantages and disadvantages of the inclusions of students with disabilities in regular education classrooms in USA. It was found that one advantage of inclusion for a special education learner is the opportunity to make new friends and share new experiences. The pupil is exposed to a whole new sector of the student population that they are typically not exposed to in special education classroom. The most important thing is to develop friendships with their same age peers, which leads to greater acceptance by their peers in and out school community.

This also enables pupils with disabilities to develop friendships in their neighbourhood. However, pupils with disabilities sometimes leave the regular education classrooms with low-self esteem and a low self-concept.

Generally, a large body of research has identified effective instructional options for inclusive classrooms, including the use of specific educational contexts (e.g. grouping strategies), techniques, curricula, and assessment methods. Katz and Merinda (2002) examined the educational outcomes of inclusion for pupils with and without developmental disabilities in the early grades. They found that the use of these strategies appears to facilitate the academic and social success of pupils both with and without disabilities. They also document the effectiveness of collaboration as a strategy for improving student outcomes in inclusive settings. Emphasise on successful teaming of teachers, related service providers, and parents in implementing support plans for pupils with severe disabilities and typical peers considered academically at-risk.

Furthermore, UNESCO (2004) clearly put it as essential that, education must be viewed as a facilitator in everyone's human development and functionality, regardless of barriers of any kind, physical or otherwise. The disability must never be a disqualifier. Adequate resources must be matched with political will, and constitute pressure maintained to governments to live up to their obligation. In a similar argument, Tanzania Education Network [TEN/MET] (2007) advocated for Tanzania in which all people, especially pupils, enjoy access to participatory, meaningful, learning opportunities, in order to realize their fullest potential and to enhance social integration. Pupils with mental health and learning disorders including pupils with

autism face frequent discipline and school failure, which can lead to problems later in life. Emotional and behavioral problems can lead to office discipline referrals, school avoidance, suspension and being left back. Pupils with autism and pupils with intellectual impairment can also lead students to drop out of school entirely.

Pupils with autistic spectrum disorder often lack sufficient speech to communicate their social or academic needs or have impairment in play skills such as symbolic or socio-dramatic play including imaginative or pretend play (Lydon, Healy & Leader, 2011). The skill to play the simplest game requiring interaction with a peer often fills the child with autism with fear and anxiety. Despite the challenges in forming friendships pupils with autism still, want to be part of a group of friends and the school playground is the place where this can happen.

2.4.4 Teachers' Views on Teaching and Learning for Pupils with Autism and Pupils with Intellectual Impairment in Primary Schools

Parents of children with disabilities may be influenced by the substantial nature of their parenting role into accepting positions that meet the needs of the family but are not necessarily ultimately satisfying. For example, Watt and Wagner (2012) conducted a study on parenting a child with autism spectrum disorder: parental work context, community, work & family. Findings suggested that parents raising a child with autism self-report higher parenting stress and more mental health symptomatology, as well as lower overall job satisfaction, less satisfaction with supervisors and less workplace contentment.

When reporting on perspectives of parents on participation of pupils with autism in Sunday school, Howell and Pierson (2010) point out that parents had many ideas of how inclusive programs might be developed and were sensitive to the effect of having a disabled sibling on their children at home and in a public place like a church. Howell & Pierson added that the parents' foremost consideration was on positive feelings of pupils with autism toward the church is also very encouraging.

More importantly, Ghezzi, Doney and Bonow (2014) who studied on psychological theories of childhood autism raised concerns of the psychological need of the pupils with autism that indicate the need of visual aid that, it deals exclusively with observable and verifiable variables and relationships between the behaviour of a child and his or her physical and social environment. Hypothetical variables and mental processes such as the "inability to represent mental states" are excluded precisely because they are unobservable and unverifiable, and because they are not useful in advancing the goals of predicting and controlling behaviour.

Breitenbach, Armstrong and Bryson (2012) studied on the implementation of best education practices for a pupil severely affected by autism. They brought concern of the staff dealing with pupils with autism and pupils with intellectual impairment need basic knowledge about autism and must be familiar with specific strategies that will be in use for a particular student in order to maintain some consistency. Some training on an overview of the learning characteristics of individuals with autism and an introduction to behavioural teaching strategies. Errorless learning and incidental teaching methods were key training components. While this provided good basic

information, more practice was needed in order for the staff to become skilled at implementing these methods in the classroom.

Najjingo (2009) studied on challenges of accessing all-inclusive education services by pupils with disabilities and observed that inclusive schools are faced with a lack of awareness and ignorance of disability friendly facilities (facilities like ramps, special toilet facilities, learning materials by the parents). Teachers and key respondents by virtue of their education levels, roles and responsibilities being policy formulators and implementers have been exposed to the requirements of pupils with disabilities. The study found that most teachers during interviews commented on the deliberate effort of employing special education teachers and supporting staffs for handling teaching and learning tasks in class as well as during co-curriculum activities.

Findings in Najjingo (2009) are similar to those studied by Mmari, Mzee and Frankenberg (2008) and Mboya, Mbise, Tungaraza, Mmbaga, Kisanji and Madai (2008) who suggested for improving training of teachers in teacher training colleges would help teachers to acquire skills to cope with education for the learners with disabilities within inclusive education. It is equally essential that the Tanzanian government and responsible parties to focus on enabling capacity of addressing the needs or to develop technologies that are appropriate for pupils with disabilities including ICT facilities, other related basic technologies or aids pertinent to special needs education such as glasses, crutches, and braillers.

Several studies found it essential to train sufficient number of the competent special needs teachers in order to attain successful learning. Such as Mcconkey and Bhlirgri (2003) investigated on the experiences and perceptions of staff on pupils with autism attending preschool facilities. This study found that training opportunities for preschool staff are also very limited. They document that there has been a growth in courses relating to pupils with special needs but these do not address the specific needs of pupils with autistic spectrum disorders. Hence the development of local training courses for preschool personnel should be a priority. The main requirement for this to happen is to have knowledgeable tutors with expertise in autism and also in early childhood education.

Teacher training and teacher effectiveness are essential in successful teaching and learning of the pupils with autism and pupils with intellectual impairment, Koegel, Matos-Fredeen and Lang (2011) comment that, aides and instructional assistants that often spend the bulk of the day working with pupils with autism report that they feel underqualified and undertrained for their position. Koegel, *et al*. (2011) studied on interventions for children with autism spectrum disorders in inclusive school settings.

In line with the argument that places the teacher as paramount in effective learning of pupils with autism research, findings by Davis (2013) stresses on the teacher's understanding, training and experience in developing relationships with pupils with autism is key to working with these students. It is also important that the teacher knows and understands a variety of strategies that work specifically for that particular child. The teacher needs to understand how a pupil with autism truly learns and can work to build an accepting environment with other students and staff on site.

Parents also play a role in the child's education. In addition to that Davis demarcate on the role of parents that the parent needs to be supportive of the teacher. Parent communication, parent training, and validating parent input all help build an education that is consistent and collaborative. Success for the student depends upon a parent who also understands the strategies that work for the organization, sensory regulation and social thinking and implements them at home.

Other scholars focused on collaboration among special education teachers, regular teachers and other related service providers as a critical factor in implementing effective inclusive education. Soto, Müller, Hunt and Goetz (2001) in particular, investigated critical issues in the inclusion of students who use augmentative and alternative communication. Their study found that opportunities to collaborate and consult with professional peers show evidence of increased instructional skills as well as decreased tendencies to make referrals to special education in the education system where they are scarce. Similar findings were revealed in the study by Eni-Olorunda (2013) that the regular teachers felt they do not have adequate experience in teaching these pupils. The researcher found that majority of the teachers (84.1%) disagreed that culture has nothing to do with the exclusion of pupils with intellectual impairment in the regular classroom. It is further not linked to differences in cultural beliefs.

Educational supports for teachers are critical. Teacher who feels supported has more energy and enthusiasm in his/her classroom. Support can come in the form of physical tools (such as visual charts, audiotapes, manipulatives) and other teaching and learning support (lighting source, window distractions, doors and bells, quiet

spaces). Similar to arguments by Hall and Isaac (2012), Aro, Jere-Folotiya, Hengari, Kairuki and Mkandawile (2011) came out with other more challenging conditions including lack of adequate teaching and learning resources as a problem that is faced by many African countries; lack of teachers in some schools, especially rural schools, affects the learning and teaching process in more general; number of pupils is quite high in most classes, sometimes more than 60 pupils per class, depending on the location of the school. Thus these challenges complicate further provision of special education for pupils with autism and pupils with intellectual impairment.

2.5 Conceptual Framework for the Study

The conceptual framework for the proposed study comprises of the context, input, process and output variables as presented in Figure 2.3. The interactions among these variables are very important in determining the academic performance of pupils with autism and pupils with intellectual impairment in special and inclusive schools. The context variables consist of curriculum, societal attitudes and school environments. In Tanzania there are still needs for curriculum that take on board special educational needs of all pupils with disabilities (Tungaraza, 1994; Mankoski, *et al*., 2006). Similarly, positive and supportive societal attitudes and teaching and learning environments are essential ingredients for effective learning outcomes.

Input variables include issues surrounding teaching-learning processes such as teachers' competencies, the involvement of pupils with autism and pupils with intellectual impairment in special and inclusive schools as well as in teaching and learning resources in relation to the basic requirements to fulfill learning for pupils with autism and pupils with intellectual impairment. Jordan (2005) asserts that what

is special about teaching of pupils with autism and pupils with intellectual impairment is limited not only to resources and pedagogic skills but also to teacher's knowledge about the disability and the distinctive processes by which pupils with autism and pupils with intellectual impairment learn.

The process variable focused on teaching-learning processes, particularly, the effective methods for learning, including individualized supports and services, systematic instruction, comprehensible/structured learning environments (Iovannone, Dunlap, Huber & Kincaid, 2003). The variable further emphasised on supportive and structured learning environments and specialized curricular for pupils with autism and pupils with intellectual impairment. Finally, the output variable assessed academic performance such as the acquisition of number skills, communication skills, and vocational skills which ultimately revealed the academic performance of pupils with autism and pupils with intellectual impairment in special and inclusive schools. The output variables are the outcome of the interaction among and between context, input and process variables.

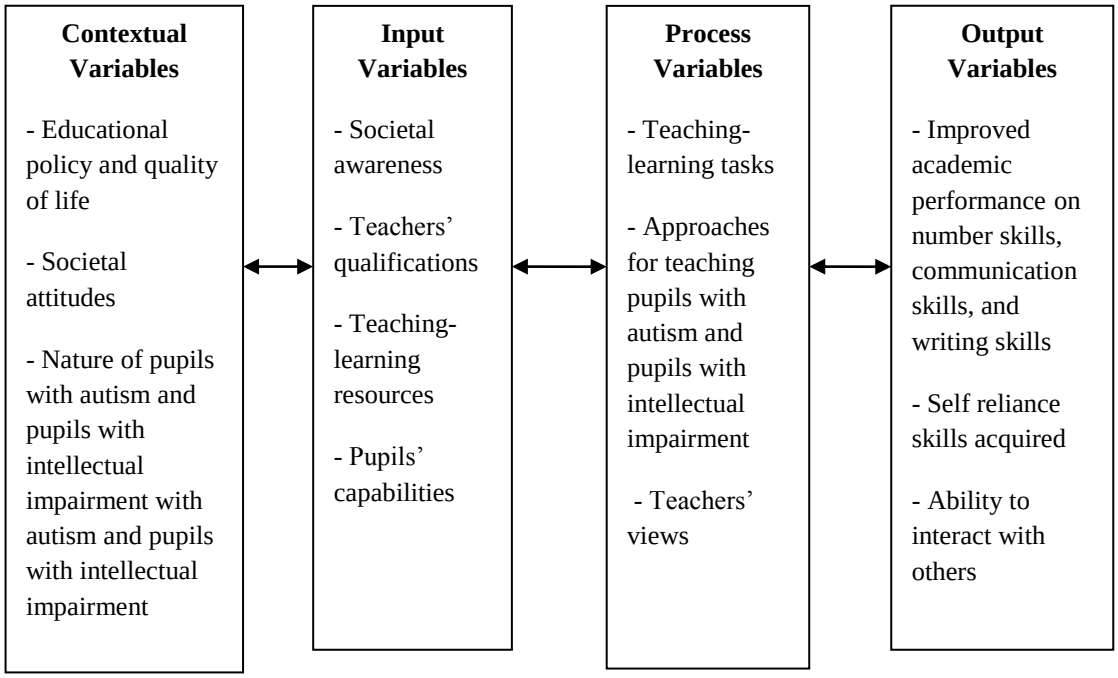

Figure 2.3: Conceptual Framework for Assessing Academic Performance of Pupils with Autism and Pupils with Intellectual Impairment in Primary Schools

Source: Own Construction, with insights from Stufflebeam & Shinkfield (2007)

Importantly, the arrows in the conceptual framework indicate possible interactions and outcomes among the study variables as they are all interdependent to each other.

2.6 Literature Summary and Knowledge Gap

Several studies reveal that performance of pupils with autism and pupils with intellectual impairment were lower comparing to other pupils (Maurice, 1996; Gagnon et al., 2004; O'Hearn et al., 2013), but variation in performance of the pupils with autism and pupils with intellectual impairment have not been specifically researched. Therefore, this study deliberated on the course so as to fill in the gap. Similarly, previous studies have indicated that teaching and learning resources for

pupils with autism and pupils with intellectual impairment facilitate processing of information and normally made it easier for teachers to communicate with them (Wetherby & Prizant, 2000; Spencer & Simpson, 2009; Hall & Isaacs, 2012). Under this objective, the current study intends to unveil nature and variety of teaching and learning resources for pupils with autism and pupils with intellectual impairment in the surveyed schools.

On the aspect of teaching and learning approaches, scholars have recorded positive outcomes of inclusion for pupils with autism and pupils with intellectual impairment learning processes (Reeds & Osborne, 2014; Hunt, *et al*., 1994). For Tanzania, various teaching and learning approaches have been adopted, it is therefore imperative to compare with practices that take place in typical educational settings. For the case of views on teaching and learning of the pupils with autism and pupils with intellectual impairment in primary schools, several issues have been raised, including: concern of parents on improved treatment of pupils with autism and pupils with intellectual impairment as a means of proper care and safety for the pupils with disabilities, increasing accessibility of education services and ensuring that schools are well equipped with friendly facilities for pupils with autism and pupils with intellectual impairment and other disabilities as well; recruitment of more special needs education teachers and provision of relevant training for the learning requirement of pupils with autism and pupils with intellectual impairment. On the same, it was essential for this study to explore views in relation to provision of primary education to pupils with autism and pupils with intellectual impairment in Tanzania.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology used in this study. The chapter presents and describes the philosophical underpinning of the study, research approaches, research design. Included in this chapter also are population of the study, sampling procedures, data collection methods and instruments. The chapter also discusses trustworthiness of research instruments, ethical issues as well as data analysis and presentation techniques. Finally, it presents the summary of the key issues in the chapter.

3.2 Philosophical Underpinning of the Study

Understanding the philosophical assumptions that underpin each paradigm is essentially important for the researcher to manifest him/herself within methodology and methods guiding investigation in question (Maykut & Morehouse, 2007). Having reviewed various research philosophical world views, and given the nature of this study that necessitated the collection of both quantitative and qualitative data to adequately respond to each research objective, pragmatism was found to be the most appropriate. In that case, this study was informed by pragmatism assumptions for a better understanding of the study variables.

Since Pragmatism is fundamentally practical rather than idealistic (Denscombe, 2008 in Cohen, Manion & Morrison, 2011), the researcher found it appealing as this study was also more practical, calling for the interaction with respondents in their study environment for better understanding of the research questions at hand. In

pragmatists line of thinking, the truth and reality may be sometimes subjective and sometimes objective, hence what matters is the ability of the researcher to answer his/her research questions regardless whether the data and methodologies are quantitative or qualitative (Feilzer, 2010 in Cohen, *et al*., 2011). To that end, the pragmatism assumption is that what works to answer the research questions is the most useful approach to that particular inquiry as far as it enhances the quality of the research outcomes (Cohen, *et al*., 2011). The author further argues that with pragmatism, the research is driven by research questions which are often more than one in number, and which may require different forms of data (i.e. qualitative and quantitative).

The current study has four research specific objectives, of which the first one required the quantitative data to be answered adequately, whilst the remaining required to be answered by qualitative data. This necessitated the choice of pragmatism over others so that the researcher could better sustain the needs of each research objective through the use of mixed research method approach. This enabled the researcher to undergo through a practical process of data collection, which yielded robust and valid findings for better understanding of pupils with autism and pupils with intellectual impairment.

3.3 Research Approach

This study employed a mixed methods research approach. Mixed methods research approach is a procedure for collecting, analyzing, and mixing both quantitative and qualitative methods in a single study or a series of studies to understand a research problem (Creswell & Clark, 2011). The basic assumption is that the use of both

quantitative and qualitative methods, in combination, provides a better understanding of the research problem and questions than either method by itself. The mixed method approach was considered most important for this study as it matches the philosophical underpinning informing this study.

According to Cohen *et al*. (2011), mixed methods are premised on pragmatism ontologies and epistemologies as it works beyond quantitative and qualitative exclusivity or affiliation. Mixed methods research has both qualitative and quantitative components, it is critical to adhere to their respective conventional quality principles (Tashakkori & Teddlie, 1998). This made the approach more suitable for this study in order to allow for the collection of both qualitative and quantitative data to adequately respond to each research objective needs.

The approach was also considered useful in carrying out in-depth investigation in order to obtain detailed information about performance of pupils with autism and pupils with intellectual impairment in inclusive primary schools. Hall and Howard (2008) describe it as a dynamic approach to mixed methods design, which they call the synergistic approach. The approach provides a way to combine a typological approach with a systemic approach. Varieties of research designs provide the researcher with a range of available options to consider that are well defined, facilitate the researcher's use of a solid research design for addressing the research problem, and help the researcher anticipate and resolve challenging issues.

The goal for researchers using the mixed methods approach to research is to draw from the strengths and minimize the weaknesses of either of the two research

approaches (Onwuegbuzie & Johnson, 2004). The strengths and weaknesses associated with various research approaches are neither absolute nor relative to the context and the manner in which researchers aspire to address the phenomenon under study. While the quantitative method provided an objective measure of reality, the qualitative method allowed the researcher to explore and better understand the complexity of a phenomenon.

3.4 Research Design

This study employed a quasi-mixed design within mixed research approach. It was chosen due to its rigor and power that allowed the researcher to describe the study variables as they were so as to bring out their details in totality (Creswell & Clark, 2011). In quasi-mixed designs, both quantitative and qualitative data are gathered to answer different research questions. The design does not necessitate the integrations of data to answering a particular research question, rather, quantitative data might answer one research question and qualitative data respond to another question, even though both research questions are included in the same piece of research (Teddlie & Tashakkori, 2009).

In this study, collection and combination of both quantitative and qualitative data was influenced by several issues. Both quantitative and qualitative data were crucial in the study due to nature of the pupils involved in this study. In order to determine differences in academic performance between pupils with autism and pupils with intellectual impairment conducting inferential statistical analysis was inevitable. Similarly, it was crucial using interviews to capturing views of teachers on teaching and learning of pupils with autism and pupils with intellectual impairment in primary

schools. The quasi-mixed design guided the researcher in collecting data from the selected samples at approximately the same time (Onwuegbuzie & Collins, 2007).

It should also be noted that many methods of data collection have limitations, so the use of multiple methods can neutralize some of the disadvantages of certain methods (e.g. the detail of qualitative data can provide insights not available through general quantitative research) (Creswell, Clark, Gutmann & Hanson, 2003). In that view, the design allowed the researcher to employ good use of different data collection techniques such as interview and observational checklist to capture the in-depth and robust data that answered the research objectives and questions.

3.5 Area of the Study

The study was conducted in Dar es Salaam and Mbeya regions, focusing on special and inclusive schools enrolling pupils with autism and pupils with intellectual impairment. The two regions were purposefully selected for this study because of their nature and socio-economic differences. The regions represent differences in communities, both at economic and cultural orientations levels. It was also evident that the two regions, given their economical, social and educational status (URT, 2008a; URT, 2012), could provide the researcher with sufficient experiences and practices from the special needs education teachers who were the key respondents and capable to provide information required for answering the study questions.

3.6 Population and the Sample of the Study

3.6.1 Target Population

Krishnaswami (2003) states that the population is the target group to be studied. It is the total collection of elements about which the researcher wishes to make inferences. The population is the entire group of persons or objects that are of interest to the researcher, in other words, that meet the criteria that the researcher is interested in studying. URT (2013) indicates that there were a total of 746 pupils with autism and 3631 with intellectual impairment in primary schools across the country. The target population for the study included pupils with autism and pupils with intellectual impairment and teachers in special and inclusive classrooms for pupils with autism and pupils with intellectual impairment in Dar es Salaam and Mbeya regions. Dar es Salaam has 8 inclusive primary schools and Mbeya region has 6 inclusive primary schools with pupils with autism and pupils with intellectual impairment.

3.6.2 Sampling Techniques

The researcher employed purposive sampling techniques. According to Patton (2002), the reason lies in selecting information-rich cases for in-depth study. Information rich cases are those from which a researcher can learn a great deal about issues of central importance to the purpose of the research (Patton, 1990). For instance, in qualitative research, purposive sampling seeks groups, settings, and individuals where the processes or phenomenon being studied are most likely to occur (Denzin & Lincoln, 2000). Therefore, in this study, the researcher opted for mixed purposive sampling scheme was suitable for this study. In this scheme the

researcher choose more than one sampling strategy and comparing the results emerging from both samples (Onwuegbuzie, & Collins 2007). The sample of the respondents was obtained only from those schools accommodating pupils with autism and pupils with intellectual impairment. On the other hand, purposive sampling was used to select respondents in order to obtain sufficient data, especially among pupils with autism and pupils with intellectual impairment as well as special education teachers in special units and inclusive schools. The procedures for selection are hereunder described.

3.6.2.1 Selection of the schools

The purposive sampling procedures were employed to obtain the appropriate schools for the study. The primary schools selected for the study included three primary schools (A, B, C) out of eight inclusive primary schools in Dar es Salaam and two primary schools (D and E) out of six primary schools in Mbeya regions respectively. The choice of these schools was mainly based on school age factors, hoping that such oldest schools which were established earlier and that have been enrolling such pupils in question had enough and sufficient experiences in the provision of SNE. This actually enabled the researcher to learn a great deal about issues of central importance to the purpose of the research. Such schools gave the researcher an opportunity to meet SNE teachers and pupils with varied life experiences form different cultural backgrounds.

The two regions were also important as the researcher anticipated that most of parents of children with autism and intellectual impairment had good affluent and well educated, hence great awareness on the importance of educating their children.

Therefore, the researcher expected to meet many pupils with autism and pupils with intellectual impairment from different social and economical backgrounds as it was the case. This helped in capturing reliable and valid data that adequately answered the research questions in this study.

3.6.2.2 Selection of pupils with autism and pupils with intellectual impairment

The purposive sampling technique was used to select pupils with autism and pupils with intellectual impairment from the sampled primary schools. Since the population of pupils with autism and pupils with intellectual impairment in the selected schools was small, all of whom were able to participate in the study were involved. Most important, convenience sampling was employed to obtain pupils who attended classroom routines at time this study was undertaken. For this category of pupils, it was also fundamentally practical to consider the severity of the disability in the selection process of participants. So to speak, only those pupils with less severe autism and intellectual impairment were selected to participate in the study.

3.6.2.3 Selection of SNE teachers

In selecting SNE teachers, purposive sampling was employed. SNE teachers were considered as vital participants as they are most knowledgeable and experienced in teaching and learning of the pupils with autism and pupils with intellectual impairment. In this study, only those SNE teachers teaching pupils with autism and pupils with intellectual impairment in the studied schools were sampled. They provided useful information about academic performance of the pupils, teaching and learning resources and approaches and views on the current status of the teaching and learning of pupils with autism and pupils with intellectual impairment. SNE teachers

assisted the researcher in the pursuit of documenting performance of pupils in given tasks while undertaking this study.

3.6.3 Sample Size

The study used the sample of pupils with autism and pupils with intellectual impairment for an extensive observation to obtain data related to the performance of the pupils with autism and pupils with intellectual impairment. The sample for this study included 21 pupils with autism, 29 pupils with intellectual impairment. A minimum of 50 participants is suitable for two-tailed hypotheses (Onwuegbuzie, Jiao, Bostic, 2004; Leech & Onwuegbuzie, 2008). Thus, a total of 50 pupils with autism and pupils with intellectual impairment were used in the study. Since the data from teachers were obtained through interviews, therefore the use of 19 special needs education teachers was sufficient for this study (Guest, Bunce, & Johnson, 2006). Categories of respondents for the study are indicated in Table 3.1.

Table 3.1: Number of Pupils and Teachers involved in the Study

	Schools	**Selected Pupils**		**Teachers**
		Pupils with autism	**Pupils with intellectual impairment**	
1.	School A	7	0	4
2.	School B	0	16	5
3.	School C	9	0	4
4.	School D	1	11	3
5.	School E	4	2	3
	Total	**21**	**29**	**19**

3.7 Data Collection Instruments

The data for the study were collected through interviews, observations and pupils' assessment tool. These tools helped the researcher to obtain data that answered research questions. The data collection techniques are hereunder described.

3.7.1 Interview Schedules

Unstructured interviews were utilized to collect information from head teachers in order to complement information collected through non-participatory observation by having direct conversations with the interviewees. Semi-structured interviews were helpful in gathering information from SNE teachers on appropriateness of the teaching and learning resources, examining teaching and learning approaches for pupils with autism and pupils with intellectual impairment. It also enabled the researcher to gathering views of special needs education teachers on current status in teaching and learning of pupils with autism and pupils with intellectual impairment in the studied primary schools.

One of the advantages of the interview is its flexibility that enables multi-sensory channels to be used: verbal, non-verbal, spoken and heard (Cohen, Manion & Morrison, 2007). Interviews are strong methods for capturing spoken and non-spoken information. The in-depth interview is a technique that helped the researcher to draw out a vivid picture of the participants' perspectives on the research topic. In that case, the researcher's role was not to influence or direct interviewees' reaction to the questions but rather to probe the interviewees in order to make the question clear or to seek more information about the question and/or direct the interviewees' responses to the research objectives. According to Creswell (2008), the dialogue is

facilitated by a subjective theory, which views interviewees as having a broad knowledge about the research problem. When participants are reluctant to list their results on a questionnaire, they will volunteer the information to a skillful interviewer who asks the right questions and probes for more information through the semi-structured interview (Creswell, 2008). However, Cohen, *et al.* (2007) caution that interviews run the risk of being subjective and biased. Hence, the researcher was much more aware of such risk and tried his best to remain objective.

Mack, Woodsong, MacQueen, Guest, and Namey (2005) suggest that in-depth interviews involve researcher's physical meeting and freely interacting through conversation with the interviewee. They also propose that the aim of ensuring safety during the interview process suggest that it is necessary to have two interviewers. In these situations, however, care must be taken not to intimidate the participant. The use of interviewing to acquire information is so extensive today that it has been said we live in an interview society (Cohen, *et al*., 2007).

An interview in this sense is taken to mean the conversation between two people (the interviewer and the interviewee) based on a guiding set of questions aiming at obtaining specific information. It makes possible to capture what a person knows (knowledge or information), what a person likes or dislikes (values and preferences) and what a person thinks (conceptions, attitudes, and beliefs).

Interviewing is one of the most common and powerful ways in which the researcher tries to understand the world from the participants' point of view, to unfold the meaning of their experiences, and to uncover their lived world. The interview guides

used in this study were semi-structured in the sense that there were pre-determined questions that were asked to each participant (*Appendix B*). This list of questions was developed in advance to ensure continuity between the subjects at the same time to help the interviewer cover the topic. The main advantage of semi-structured interviews is that all the participants answered all the questions.

In this study, the interview was carried out with heads of schools and special needs education teachers. Each interview lasted for about 30 to 40 minutes. Prior to the interview sessions, the researcher, in advance visited the schools, met the respondents and introduced himself, describing the research objectives and the importance of the study. Thereafter, arrangements were made with regard to convenient time, venue and the appropriate day. This prior arrangement was very important in order to avoid disruption of normal school time table. The interview with school heads took place in the offices of the heads of schools, while with the special needs' education teachers, arrangements were made to find unused offices or classes to meet convenience and comfortability of the respondents.

3.7.2 Observation Checklist

The non-participatory observation was employed. The observation schedules were used in assessing availability of teaching-learning resources and teaching-learning approaches for pupils with autism and pupils with intellectual impairment in special and inclusive classrooms. Creswell (2008) cautions that a researcher may be seen as intrusive, for which the researcher will be keen on maintaining freedom and normal routine of pupils. In this study, therefore, working with special education teachers of

the studied schools helped the researcher to avoid interference of pupils' normal learning routine.

The observation checklists (*Appendix A*) helped the researcher to assess adequacy and appropriateness of teaching-learning resources available in the surveyed schools.

The rationale for using observations emanates from its power to gathering open-ended, first-hand information by observing activities in the research site (Creswell, 2008). Observation can be in form of structured or unstructured depending on the approach, philosophical paradigm, and research questions that underpin the study (Cohen, *et al*., 2007). Observation usually consists of a detailed notation of behaviours, events and the context surrounding the events and behaviour (Ritchie, 2003; Best & Kahn, 2006). Data collected through observation were simultaneously analysed together with those collected through interviews. The aim was to see if what the participants perceived and experienced reflected what they actually did.

During classroom observation, the researcher was interested in gaining understanding of: (a) How sufficient are the teaching and learning resources for pupils with autism and pupils with intellectual impairment for acquisition of intended skills (*Appendix A*); (b) How special needs education teachers utilize available teaching and learning resources and approaches in facilitating learning for the pupils with autism and pupils with intellectual impairment. Some of the advantages of using classroom observation in this study are that they (a) permitted the researcher to study the processes of education in naturalistic settings, (b) provided more detailed and precise evidence than other data sources, and (c) was used to stimulate change and

verify that the change occurred (Best & Kahn, 2006; Cohen, *et al*., 2007; Mtitu, 2014). Another advantage of observation is that the findings from research studies using them have provided a coherent, well-substantiated knowledge base about effective instruction. Many of the reviews and summaries of the classroom observation research have consistently found that a number of classrooms behaviours significantly relate to students' academic achievement.

3.7.3 Pupil's Assessment Tool (Pupil's test)

This tool enabled the researcher to be acquainted with the nature of the learning for pupils with autism and pupils with intellectual impairment and school environment. The assessment tool was used to obtain data on the pupil's academic performance in selected skills (such as number skills, communication skills, and vocational skills) of identified pupils in level two of the syllabus for pupils with intellectual impairment. The researcher observed on how pupils participate in the learning process and determined the variability in their academic performance in number skills, communication and vocational skills (indicated in *Appendic C*).

3.8 Validity and Reliability

This study employed a mixed method research approach of which qualitative formed a larger part of the data collection and analysis. Each data set from either approach (i.e qualitative or quantitative) was intended to answer different research objectives. However, in any research undertaking, the basic question a researcher asks is 'how can I persuade my readers that the research findings are worthy paying attention?' (Lincoln & Guba, 1985). Thus, every researcher should ensure that his/her research

process follows some procedures and employ some mechanism to maintain reliability and validity of the study and the quality of the findings.

Reliability refers to a measurement that supplies consistent results with equal values (Blumberg, Cooper & Schindler, 2005). Reliability is used to evaluate the stability of measures administered at different times to the same individuals and the equivalence of sets of items from the same test (Kimberlin & Winterstein, 2008; Chakrabartty, 2013). The better the reliability is perform, the more accurate the results; which increases the chance of making correct decision in research.

Reliability of the research tools was assured by pre-testing of data collection instruments. The researcher pre-tested the research instruments for the purpose of ensuring their reliability and validity as well as to determine if the questions in the instruments met the research questions of the study. In addition, the purpose of pre-testing was to identify parts of the instrument package that were difficult for pretest subjects to read or understand or that may have been misinterpreted by them. Kimberlin and Winterstein (2008) state that the purpose of pre-testing is to test whether the instruments would obtain the responses required to achieve the research objectives, to test whether the content of the instruments is relevant and adequate, to test whether the wording of questions is clear and suited to the understanding of the respondents. The researcher pre-tested the pupil's assessment tool for determining academic performance of the pupils in number, communication and vocational skills. A total of ten (10) pupils with autism and ten (10) pupils with intellectual impairment from two primary schools were pre-tested. Answers from the assessment provided a

critical view of the instruments. The responses were discussed with the supervisors and decisions were made on how to implement the changes.

Validity of research tools addresses the acceptability of a measure. Content validity considers whether or not the items on a given test accurately reflect the theoretical domain of the latent construct it claims to measure (Gregory, 1992; Taherdoost, 2016). In this study content validity of the instrument was achieved by ensuring that the items covered all variables and objectives of the study. The researcher analyzed the items one at time against the objectives. The researcher further reviewed the instrument together with the supervisors and fellow PhD students at the Open University of Tanzania to ascertain their appropriateness and relevance.

3.8.1 Triangulation

Triangulation refers to a comparison of a number of different data sources and methods to confirm the findings. In this study, the researcher compared the performances of the pupils, views of the special needs education teachers on pupils' performance through interviews and observational checklists. One important advantage of triangulation is that it can bring strength to the conclusions or identify areas for further work (Berg, 2006).

Triangulation in this study was restricted to the use of multiple data-gathering techniques to investigate the same phenomenon. It was actually done via the use of different data sources with a diversity of respondents, which included heads of schools, special needs education teachers and pupils. For instance, on the academic performance of the pupils both interviews and observations of learning tasks were

used to collect data from teachers as well as pupils with autism and pupils with intellectual impairment. Similarly, there was a triangulation of sources of data. For example, similar information regarding availability and appropriateness of the teaching and learning resources was collected observation checklist and interview with special needs education teachers. This helped the researcher to collect an in-depth data that helped in verification and qualifying the research findings.

3.8.2 Credibility

Credibility is about the truth value (Lincoln & Guba, 1985). To ensure credibility of this study, the researcher adopted techniques suggested by Lincoln and Guba (1985) which recommends a prolonged field engagement. The researcher therefore had a prolonged field engagement to understand factors that could have affected the credibility of the results, such as school culture, testing possible distortions of information by the respondents and also building the trust of the research participants. The researcher also has shown clearly that selected research design consists of procedures and processes which were adhered throughout the study. Observations of teaching and learning resources and approaches for pupils with autism and pupils with intellectual impairment allowed to comprehend the physical, emotional and cognitive characteristics of the pupils. This practice, therefore led to collection of valid and reliable data.

3.8.3 Transferability

The study was positioned within a naturalist perspective which accepts that knowledge generated from research is generalizable beyond the context in which it is meaningful (D'Cruz & Jones, 2004; Gray, 2009). These conditions exist when the

context in which the research is carried out shares sufficient features with another context under which particular knowledge claims are made. In this study, the researcher has adequately provided description of the research steps and explanation of the context within which the study was conducted, conceptual framework, methodologies used, sampling procedures and sample selection. The researcher further provides detailed description of the study area and data analysis procedures. This information allows readers to determine the degree of similarity and/or differences between the current study site and other contexts, consequently the ability to determine the transferability of the findings.

3.8.4 Confirmability

Confirmability is the degree to which others can confirm the results. According to Bryman (2004), confirmability indicates that the researcher tries to confirm that he or she acted in good will, based on the insight that it is impossible to reach total objectivity in social research. Several strategies were used to ensure confirmability in this study. For example, data triangulation was used in which the data was collected using different tools as explained elsewhere in the document. Similarly, data collection procedures are carefully documented indicating that different source of data from interviews and observation checklists were employed in the process of data collection. The researcher in this study kept field notes and documentary materials during the whole investigation. These records helped to cross-check the data whenever deemed appropriate in the process of writing the final report of the study.

3.9 Data Presentation and Analysis

Data analysis was a continuously carried out since the collecting and analysing quantitative and qualitative data are integrated to form a single study (Yin, 2006). The data analysis procedure involved the following patterns: coding, tabulation, and determining the level of measurement. In this study, the data presentation and analysis was carried out into two levels. Level one included the presentation and analysis of qualitative data, whereas level two was concerned with handling quantitative data. This was very important as each data set was answering different research objective(s) and question(s). For instance, the first objective of this study required quantitative data set.

3.9.1 Presentation and Analysis of Quantitative Data

Quantitative data analysis involved coding, classification, cleaning and entering data into the computer software programme. Raw data were cleaned, coded, verified and analysed by using Statistical Package for Social Sciences (SPSS) version 20.0. Data for academic performance of pupils with autism and pupils with intellectual impairment from pupil's assessment tool were recorded in percentage, mean scores and standard deviations. The presentation of these data aimed at providing comparison of the academic performance of the pupils. To aid interpretation of the operational tasks, the study adopted interpretive scale, that; 1 represent 0-10% (means completely failed); 2 represent 11-50% (partially performed); and 3 represent 51-100% (excellent performance). The paired t-test was used to analyse the counting skills of the pupils, while the differences in their academic performance was established by the use of chi-square test.

Adequacy of teaching-learning resources in schools was also rated in four different levels as follows; very inadequate, inadequate, adequate and very adequate in the relation to the number of pupils registered for the specific class. The researcher used symbols *"√"* to indicate the availability of several categories of teaching-learning resources or *"X"* to indicate unavailability. Henceforth, data were presented in tabular forms.

3.9.2 Presentation and Analysis of Qualitative Data

The researcher therefore analysed qualitative data (from interviews with heads of schools and SNE teachers) using following steps: Firstly, the data was organised and prepared for analysis through transcribing interviews, typing field notes and arranging data into different types depending on the sources. Secondly, the researcher generated and re-read the data to get a sense of the overall data. From there, the existed broad themes were listed. Thirdly, once the themes were identified, the researcher generated relationships among the established themes and other salient features within the themes. In this way, the entire data was divided into a number of classes. Finally, the researcher chose one category and related all the other categories to that category. Thereafter, a detailed analysis for each theme was conducted and written in relation to the research questions. The views of teachers on current status in teaching and learning of pupils with autism and pupils with intellectual impairment were presented as narratives supported with direct quotations using the respondents' language as drawn from the interviews. The aim was to air the voices of respondents.

3.10 Ethical Consideration

Ethical practice is an essential element in research, for all parties involved (Piper & Simons, 2011). Ethical concepts include informed consent from all participants, confidentiality, anonymity, access to data, equity, treaty obligations, basic human rights, analysis and produced findings. Ary *et al*. (1996) maintain that researchers should strike a balance between the demands placed on them as professional scientists in pursuits of truth, and their respondents' rights and values potentially threatened by the researcher.

In this study, the researcher was aware of these concerns; hence several issues were adhered to and maintained. Before proceeding to data collection, the researcher sought research clearance from the Directorate of Research, Publications and Postgraduate Studies of the Open University of Tanzania (*Appendix G and N*). Such clearance was important for introducing the researcher to various government authorities including Regional Administrative Secretary, District Administrative Secretary and others. The researcher also sought permission from various authorities in the study areas (*Appendices H to K* for Dar es Salaam region and *Appendices O to Q* for Mbeya region). Thereafter, the researcher presented himself and the introductory documents to the heads of selected primary schools, explained the intention of his visit and asked them to conduct the study. This was supported by permission letter from District Education Officers (*Appendices L, M and R*).

After being permitted to conduct the study in specified primary schools, the researcher had to ensure informed consents of the participants are obtained. At this stage, the researcher provided detailed information about the research objectives and

how the respondents were likely to benefit to allow the prospective participants to make an informed decision on their possible involvement. Greener (2011) emphasized that this consent should be sought in written form and signed off by the research subject; based on the objective of conducting research without deception, with research, without consent only being sanctioned as a last resort where no other approach is possible.

In this study, all respondents were assured of confidentiality and of their right to withdraw at any point of the study for any reason. Upon free acceptance, every participant signed a consent agreement form (*Appendix F*) which was retained by the researcher for future reference. The special needs education teachers assured the pupils that the end of the term's assessment would not in any way be affected by their performance or participation or non-participation in the study.

For the sake of maintaining confidentiality, names of special and inclusive primary schools involved in the study were hidden to avoid disclosure of the identity. These schools were represented using pseudonyms: '*School A, B, C, D and E'.* In so doing, private data identifying participants and their working places have not been reported in this study.

3.11 Summary of the Chapter

This Chapter explained the research methodologies employed in this study. This study was informed by pragmatism assumptions and employed mixed methods approach. A quasi-mixed design found relevant since qualitative and quantitative data were collected with the intention of answering different research questions.

With the use of purposive and convenience sampling procedures five inclusive primary schools were sampled from which 69 participants were involved in the study. Data were collected using interviews and observations.

The Chapter elaborates several techniques for data trustworthiness which were applied in the study. These include triangulation, credibility, transferability, dependability and confirmability. Data were analysed in relation to their nature and need of the study. Quantitative data were coded and classified with the use of SPSS. Both descriptive and inferential tools of analysis were used in testing academic performance of pupils with autism and pupils with intellectual impairment. Qualitative data followed four steps of analysis including: organization of data after transcribing interviews, generation of the initial codes and searching for themes, reviewing and re-organisation of themes into coherent manner.

The Chapter also highlights ethical issues guided the research undertaking. Researcher obtained research clearance from authorities (such as the office of the Directorate of Research, Publications and Postgraduate Studies of the Open University of Tanzania, Regional and District Administrative Secretaries). The researcher made sure that informed consent was obtained from participants, particularly from special need education teachers. Other procedures for maintaining confidentiality are also presented in this Chapter.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This study assessed the academic performance of pupils with autism and pupils with intellectual impairment in special and inclusive primary schools in Tanzania. The specific objectives of the study were to:

i) Compare academic performance of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms.

ii) Assess the adequacy and appropriateness of teaching-learning resources for pupils with autism and pupils with intellectual impairment in special and inclusive classrooms.

iii) Examine teaching-learning approaches for pupils with autism and pupils with intellectual impairment in special and inclusive classrooms.

iv) Find out teachers' views on teaching and learning of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms.

This chapter presents and analyses the study findings derived from the interviews, observations and pupil's assessment tool. The findings are analysed and presented according to specific objectives and questions. The study investigated the academic performance of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms in five selected primary schools in Dar es Salaam and Mbeya regions. Out of 19 special needs education teachers involved in this study, 5 (26%) were male and 14 (74%) were females. 50 pupils with autism and pupils with

intellectual impairment were involved, 21 (42%) were males and 29 (58%) were females.

4.2 Academic Performance of Pupils with Autism and Pupils with Intellectual Impairment in Special and Inclusive Classrooms

The first objective of this study sought to compare academic performance between pupils with autism and those with intellectual impairment in special schools and inclusive classrooms in terms of number skills, communication skills and vocational skills. To answer this objective, tasks were designed and administered to suit level two of pupils with autism and pupils with intellectual impairment.

4.2.1 Academic Performance of Number Skills at Level Two

To assess the academic performance of number skills, some selected tasks were designed, of which pupils were given numbers/pictures and required to recognise numbers one to thirty (1-30), count from 1 to 30, write numbers and perform mathematical tasks ranging from 1 to 30 as designed in the curriculum for pupils with autism and pupils with intellectual impairment.

4.2.1.1 Counting skills

Pupils with autism and pupils with intellectual impairment were assigned to count 1 to 30. For this task, the researcher displayed pictures of various things and pictorial representation of things. These comprised pictures of 5 butterflies, 11 goats, 13 shoes, 19 houses and 21 cats. The performance of counting things was categorized in three different intervals in varying levels of difficulty, including an interval that

identifies learners who failed to perform the assignment. Table 4.1 presents the academic performance of the pupils involved in the assignment.

Table 4.1: Academic Performance in Counting Things from One to Thirty

Ability to count	Pupils Disability		Total (%)
	Autism	Intellectual Impairment	
1 to 10 (n=16)	81.25%	18.75%	100.00
1 to 20 (n=21)	33.33%	66.67%	100.00
1 to 30 (n=12)	0.00%	100.00%	100.00
None (n=1)	100.00%	0.00%	100.00
Total (*N*=50)	42.00%	58.00%	100.00

(X^2=21.0, *df*=3, *p*=0.05)

Table 4.1 shows that more than half of the pupils with autism were able to count things 1-10 and the remaining counted only up to 20, while most of the pupils with intellectual impairment managed to count 1 to 30 of the real things given for the assignment. Pupils with intellectual impairment managed to perform tasks in all categories but one pupil with autism failed to attempt any of the tasks given. The association of the differences in academic performance between pupils with autism and pupils with intellectual impairment was statistically significant (x^2=21.0, *df*=3, *p*=0.05); suggesting that pupils with intellectual impairment were able to count things from one to thirty compared to those with autism.

4.2.1.2 Number recognition

In assessing academic performance of pupils to recognize numbers, cards with numbers from 1 to 30 were displayed for the pupils to recognize them. Each pupil with autism and intellectual impairment was required to recognise numbers shown in the cards (*Appendix C*). Each pupil was given at least ten minutes (time for the assignment depended on pupil's competence) to accomplish the assignment. The findings are presented in Table 4.2.

Table 4.2: Recorded Academic Performances in Number Recognition (1 to 30)

Number rows	Pupils disability		Total (%)
	Autism	Intellectual impairment	
Between 1-10 (n=19)	57.89%	42.11%	100.00
Between 11-20 (n=18)	22.22%	77.78%	100.00
Between 21-30 (n=7)	0.00%	100.00%	100.00
None (n=6)	100.00%	0.00%	100.00
Total (*N*=50)	42.00%	58.00%	100.00

(X^2=18.27, *df*=3, *p*=0.05)

Table 4.2 shows that pupils with autism who managed to identity numbers displayed to them fall under category one and two of the assignment which are below 20. More than half of pupils with autism recognised numbers, 1-10 and other few of them recognised 11-20. Majority of the pupils with intellectual impairment managed to recognise numbers 11-20 and all of those recognised numbers 21-30 were pupils with intellectual impairment, while none of the pupils with autism managed to

perform the third category (21-30) of this assignment. For those who failed to recognise any number given for the assignment were pupils with autism. These findings reveal that pupils with intellectual impairment were more capable in recognition of numbers comparing to pupils with autism. The variation in pupils' academic performance on number recognition was statistically significant (x^2=18.27, *df*=3, *p*=0.05). This suggests that pupils' ability to recognise numbers varied. While most pupils with autism were capable in recognising numbers 1-10 and very few exceeded up to 11-20 category; pupils with intellectual impairment were capable to work with second and third categories (i.e. 11-30).

Apart from that, findings from this assignment present an important fact about pupils with autism, that some of the pupils in this group managed to recognize the number but failed to count any of the real things presented to them. This can be observed through comparison of data presented in Table 4.1 and Table 4.2, while 6 pupils with autism failed to recognize numbers, only one pupil with autism failed to count numbers at any of the things presented to them. The pupils with autism had a tendency of counting using their pencils to get correct placement of the number for the assignment given on particular number skill.

4.2.1.3 Writing numbers and mathematical operations

This section presents the data on pupils' abilities of writing numbers and performing mathematical operations. In order to assess the abilities, pupils were provided with simple mathematical tasks involving numbers that ranged from 1 to 30 (*Appendix C*). With the aid of activity-based assignments, the pupils were assigned to perform

addition, subtraction, multiplication and division of simple arithmetic. The findings are presented in Table 4.3.

Table 4.3: Performance of Pupils with autism and pupils with intellectual impairment in Writing Numbers & Mathematical Operations

Operation	Autism (n=21)		Intellectual impairment (n=29)	
	M	*SD*	*M*	*SD*
Addition	1.24	.44	1.34	.48
Subtraction	1.05	.22	1.41	.50
[t=0.29, p=0.05]				

Key: 1= (0-10)%; 2=(11-50)%; 3=(51-100)%

Table 4.3 indicates that in addition task, pupils with intellectual impairment performed slightly higher than pupils with autism On the other hand, there was a greater variation in the subtraction task where the mean performance of the pupils with intellectual impairment was higher (M=1.41, SD=.50) compared to those pupils with autism who attained lower performance (M=1.05, SD=.22). However, this pupils' differential performance in both operations were statistically not significant (t=0.29, p=0.05). This suggests that pupils' academic performance on these tasks were almost equal.

Consequently, with regard to mathematical operations; all the pupils failed to perform in multiplications and division tasks. Pupils with autism managed to participate in addition and in sign recognition. Nearly half of pupils with autism managed to differentiate signs and symbols used in mathematical operations. In the

assignment of signs recognition, half of the pupils with autism performed well in the identification of addition and subtraction signs. The operation signs used helped learners to focus on the correct operations by directing relevant stimulus while helping them discriminates among operations.

4.2.2 Academic Performance in Communication Skills at Level Two

The researcher assessed communication skills with the aid of some selected tasks including brief expressions, storytelling and listening and description of the family. The findings of this assessment are presented in Table 4.4 to Table 4.6.

4.2.2.1 Short expression

Under this item, the aim was to assess the ability of pupils communicating on issues of their day-to-day situations. In this assignment, special education teachers were involved in asking pupils to introduce themselves, name their school, teachers and friends. Findings for this task are presented in Table 4.4.

Table 4.4: Performance of Pupils with Autism and Pupils with Intellectual Impairment in Short Expressions

Task	Autism (n=21)		Intellectual impairment (n=29)	
	M	*SD*	*M*	*SD*
Self introduction	1.48	.51	1.07	.26
Naming of parents	1.81	.40	1.59	.50
Naming school	1.76	.44	1.17	.38
Name of a teacher	1.76	.44	1.21	.41
Name of friend	1.67	.48	1.45	.51
[*t*=0.008, *p*=0.05]				

Key: 1= High performance; 2= Low performance

Table 4.4 indicates the pupils' variations in the abilities to express themselves. On self introduction the findings indicate that pupils with intellectual impairment performed high (*M*=1.07, *SD*=.26) than those with autism (*M*=1.48, *SD*=.51). On naming the parents, although the task was almost difficult for both categories of pupils; but those with autism performed higher (*M*=1.81, *SD*=.40) in naming their parents compared to those pupils with intellectual impairment (*M*=1.59, *SD*=.50). This task was given to pupils in a common way similar to when someone need to familiarise to other people usually their first and surnames.

For the task that required the pupils to name their schools and teachers, the capabilities were equally distributed despite the differences in the pupils' ability on separate tasks. In naming a school and a teacher pupils with autism scored higher

(*M*=1.76, *SD*=0.44) compared to pupils with intellectual impairment although variations among pupils with autism were relatively high. Pupils with intellectual impairment scored slightly lower in naming a school and a teacher (*M*=1.17 and *M*=1.21 respectively). In naming a friend higher academic performance was recorded to those pupils with autism (*M*=1.67, *SD*=.48) compared to those with intellectual impairment (*M*=1.45, *SD*=.51).

Moreover, findings indicate that the difference in the pupils' academic performance to short expressions were statistically significant (*t*=0.008, *p*=0.05); which reveal that the pupils abilities on self introduction, naming parents, schools, teachers and friends were significantly different. Findings reveal that some pupils with autism performed low in communication tasks which may signify a lack of social skills and competencies; presumably, they were not frequently exposed to socialize more with other pupils. Pupils with intellectual impairment in inclusive schools recorded minimum variations due to the fact that being in inclusive schools had helped them to basic communication skills through interactions with pupils without disabilities who provided them with cues, prompts and consequences.

It was also found that opportunities to interact with pupils without disabilities in inclusive schools have positively influenced educational outcomes for pupils with autism and pupils with intellectual impairment. Pupils with autism lack the ability to comprehend spoken words. This is among the characteristics of pupils with autism who are severely limited in spoken language. Pupils with autism are able to tune out much of the language addressed to them and do not easily learn new words just by hearing other people using them.

The study also observed the inability of pupils with autism to express their needs or even to understand when others express their needs. This is also accompanied by their disruptive behaviour. Pupils with autism mostly demonstrated antisocial behaviour, especially when attempting to communicate with others, particularly when assigned to work with things. Pupils with autism had difficulty in generalizing learned speech to new situations and people, due to their overly selective attention and had the tendency to respond to only a limited number of cues.

4.2.2.2 Telling and listening to stories

As part of communication skills assessment, a brief story was presented to pupils with autism and pupils with intellectual impairment. The pupils were asked to repeat the story, to identify names of the characters and key themes narrated in the study. The findings are presented in Table 4.5.

Table 4.5: Performance of Pupils with Autism and Pupils with Intellectual Impairment in Telling and Listening to Stories

Task	Autism		Intellectual impairment	
	M	*SD*	*M*	*SD*
Reproducing a story	1.43	.51	1.66	.48
Naming people	1.33	.48	1.72	.45
Recall issues	1.14	.36	1.59	.57
[t=0.013, p=0.05]				

Key: 1= Failed; 2= Average performance; 3=Higher performance

Table 4.5 shows that in this assignment of telling and listening stories pupils with intellectual impairment recorded a higher performance in almost all tasks assigned compared to those with autism. Findings indicate that although pupils with autism underperformed in almost all tasks, but the worst performance (M=1.14, SD=.36) was recorded on the task related to recall of issues. Generally, the differences in the pupils' ability to tell and listen to stories were significant (t=0.013, p=0.05). This however, indicates that although the relationship in the pupils' academic performance was inversely scored but those with intellectual impairment performed higher than pupils with autism in telling and listening to stories.

4.2.2.3 Description of the family

The study assessed the ability of pupils with autism and pupils with intellectual impairment in sharing self-knowledge about the family. Pupils were asked three questions designed for this purpose. In identifying the number of family members, pupils were asked to give number of persons that are staying with them at home (or in their families). Most pupils gave numbers of their choice which was never related to the count of the family members. Findings are presented in Table 4.6.

Table 4.6: Performance of Pupils with Autism and Pupils with Intellectual Impairment to Identify Family Members

Task	Autism		Intellectual impairment	
	M	*SD*	*M*	*SD*
Identify family members	1.86	.36	2.17	.71
Name two family members	1.81	.75	2.31	.71
Identify number of family members	1.62	.67	2.03	.68
[t=0.032, p=0.05]				

Key: 1**=** Failed; 2= Average performance; 3=Higher performance

Table 4.6 shows the performance of pupils involved in the description of the family task. In identifying family members, pupils were asked to name members who are staying with them at home. In general, higher performance was recorded among pupils with intellectual impairment in almost all tasks. Criteria for assessing performance based on the number of persons a pupil managed to name. Those who named parents/guardians and any other three members were regarded as higher scores, while less than that was considered as failed and average performance. Performance of pupils with autism was low compared to those with intellectual impairment. The interpretation of the performance with regard to pupils' ability in managing the description of the family reveal that with exception of identifying family members (among pupils with autism), there was a high variation in the pupils ability to manage all other tasks despite the differences in their disabilities; this suggests that there were few pupils who performed high while the rest had average performance.

Generally, the pupils' ability in identifying family members was significantly different. Those with intellectual impairment performed higher in almost all assigned tasks compared to pupils with autism. The difference was statistically significant (t=0.032, p=0.05); showing that the pupils with intellectual impairment had higher academic performance in communication skills, specifically in responding to issues related to families comparing to pupils with autism. This can be influenced by social interactions in the schooling processes and the social setting of the home environment.

4.2.3 Academic performance in Vocational Skills at Level Two

The third task was geared towards establishing the extent to which performance of pupils with autism and pupils with intellectual impairment differ in the recognition of vegetables, distinguishing picture and building puzzles. The performance of the pupils with autism and pupils with intellectual impairment is indicated in sections 4.2.3.1 and 4.2.3.2.

4.2.3.1 Vegetable recognition and distinguishing pictures

For this task, varieties of vegetables were displayed and the pupils with autism and pupils with intellectual impairment were asked to name them. These types of vegetables were familiar to pupils and were from the surrounding (these included tomatoes, lady finger, capsicum and onion) and easily found in the nearby markets, if not available in their family gardens. Findings are presented in Table 4.7

Table 4.7: Performance of Pupils with Autism and Pupils with Intellectual Impairment in Vegetable Recognition and Distinguishing Pictures

Task	Autism		Intellectual impairment	
	M	*SD*	*M*	*SD*
Vegetable recognition	1.86	.36	2.28	.59
Distinguish picture	1.90	.54	2.66	.55
[t=0.13, p=0.05]				

Key: 1=1= Failed; 2= Average performance; 3=Higher performance

Table 4.7 indicates the pupils' scores in the recognition of vegetables and distinguishes pictures. Although the mean score slightly varied despite the differences in the pupils' disability, but those with intellectual impairment attained a higher performance compared to those with autism in both categories. Nevertheless, pupils with autism had almost similar ability (M=1.86 and M=1.90). Pupils with intellectual impairment performed higher (M=2.28). However, the deviation was high among pupils with intellectual impairment in both tasks assigned. However, this difference was not significant (t=0.13, p=0.05); suggesting that academic performance of pupils with autism and those with intellectual impairment were almost similar.

4.2.3.2 Building puzzle

The study aimed to examine academic performance of pupils with autism and pupils with intellectual impairment in playing with puzzles and build complete image of tomatoes and zebra. Pupils were assigned to play puzzle games and rearrange the

blocks to display pictures of tomatoes and zebra. This task involved only the pupils with autism and pupils with intellectual impairment who showed awareness of participating in this assignment. Table 4.8 presents the findings.

Table 4.8: Performance of Pupils with Autism and Pupils with Intellectual Impairment on Tomato and Zebra Puzzles

Task	Autism		Intellectual impairment	
	M	*SD*	*M*	*SD*
Tomato puzzle	1.86	.65	2.24	.69
Zebra puzzle	1.90	.54	2.41	.63
[t=0.10, p=0.05]				

Key: 1**=** Failed; 2= Average performance; 3=Higher performance

Table 4.8 indicates that more pupils with autism had average performance in both tasks (*M*=1.86 and *M*=1.90). However, the standard deviation recorded high (*SD*=.65) on tomato puzzle, meaning that few pupils with autism had average performance on the task. The pupils with intellectual impairment attained higher performance in almost all tasks assigned compared to those with autism. Their mean score recorded higher on tomato puzzle (*M*=2.24, *SD*=0.69) and on zebra puzzle (*M*=2.41, *SD*=.63).

In the light of the findings, pupils managed to work easily with real things which are recognizable in other tasks. In zebra puzzle pupils with autism demonstrated similar performance as in tomato puzzle, that majority of the pupils with autism also performed partially in this assignment. In this puzzle task the difference in academic

performance was also not statistically significant (t=0.10, p=0.05); meaning that academic performance for pupils in both categories were similar.

Findings on the performance of pupils with autism and pupils with intellectual impairment vividly demarcate variations in their academic performance. On one hand, in most of the assignments pupils with autism performed simple tasks and failed to address much more demanding tasks (such as multiplication and division). Other the other hand, pupils with intellectual impairment managed to perform all simple tasks and few of them showed some managed to perform well on higher order assignments.

4.3 Adequacy and Appropriateness of Teaching and Learning Resources for Pupils with Autism and Pupils with Intellectual Impairment

The second objective of this study was to assess the adequacy and appropriateness of teaching-learning resources for pupils with autism and pupils with intellectual impairment in selected schools. Assessment of the teaching and learning resources were categorized into four groups including, visual availability and placement; furniture and fittings; teaching and learning environment; and teaching and learning resources for selected tasks. The data were collected through observations and interviews. Each of these categories is hereunder presented and analysed separately.

4.3.1 Availability and Placement of Visual Aids and Photographs

The researcher was interested in ascertaining teaching and learning resources which were available in the sampled schools. Data were collected through observations. The researcher used an observation checklist that contained a range of important T-L

resources. From the checklist, the researcher observed and recorded the available T-L resources. Where necessary, some resources which were not on the checklist, but available at the unit/school were recorded depending on their importance in the process of teaching and learning of pupils with autism and pupils with intellectual impairment. The items included in the checklist were, but not limited to visual symbols/photos, visual organization, available letter trays, visual/photos placement and the available newsletter and magazines.

Visual organization and visual placement differ in the sense that the former is the relatively permanent appearance of visual teaching and learning resources, while the latter is about keeping of visual/photos after use. Letter trays are vessels/baskets that every learner is supposed to have in a class for independent or group assignments. Newsletters and magazines are usually availed in schools for enabling pupils with autism and pupils with intellectual impairment to develop inquisitive as well as creative thinking in relation to their learning experiences. The findings are presented in Table 4.9 and Figure 4.1.

Table 4.9: Availability and Placement of Visual Aids and Photographs

Schools	Visual Symbols & photographs				Visual organization				Available letter trays				Visual placement				Newsletter & magazine			
	Very inadequate	Inadequate	Adequate	Very adequate	Very inadequate	Inadequate	Adequate	Very adequate	Very inadequate	Inadequate	Adequate	Very adequate	Very inadequate	Inadequate	Adequate	Very adequate	Very inadequate	Inadequate	Adequate	Very adequate
School A	×	√	×	×	×	√	×	×	√	×	×	×	×	√	×	×	√	×	×	×
School B	×	√	×	×	×	√	×	×	√	×	×	×	×	√	×	×	√	×	×	×
School C	×	√	×	×	×	√	×	×	×	×	√	×	×	√	×	×	√	×	×	×
School D	×	√	×	×	×	√	×	×	√	×	×	×	×	√	×	×	√	×	×	×
School E	×	√	×	×	×	√	×	×	√	×	×	×	√	×	×	×	√	×	×	×
Total	**0**	**5**	**0**	**0**	**0**	**5**	**0**	**0**	**4**	**0**	**1**	**0**	**1**	**4**	**0**	**0**	**5**	**0**	**0**	**0**

Note: √ = available

× = not available

Findings from Table 4.9 show that visual aids and photographs were extremely inadequate while photographs were inadequate in all the sampled schools. On the other hand, the findings revealed that letter trays were adequate at School C.

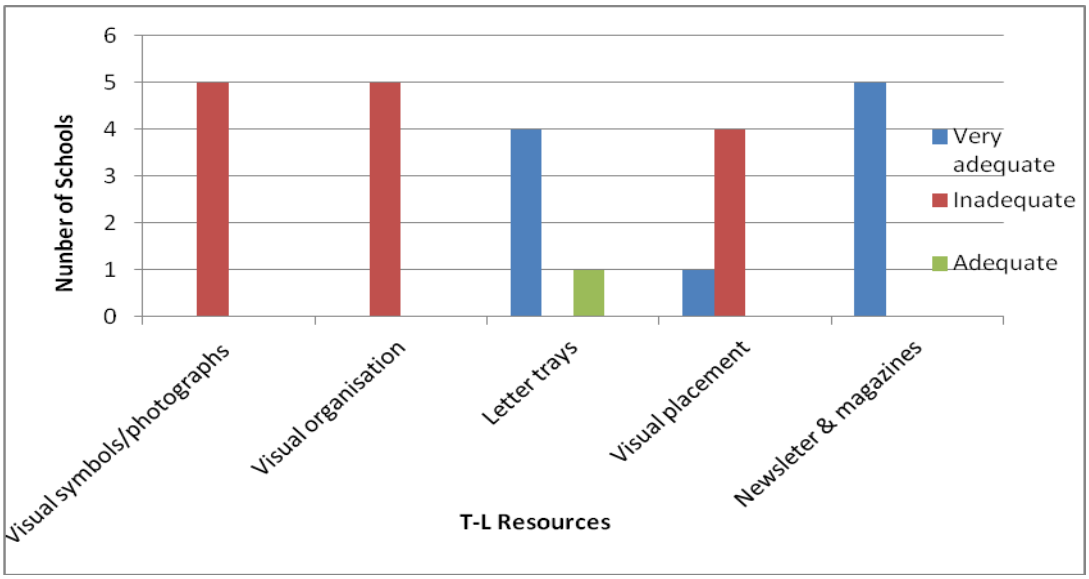

Figure 4.1: Availability and Placement of Visual and Photographs

Findings in Figure 4.1, indicate that all the five schools were inadequately supplied with visual and photographs. It was also found that classes had limited visual aids, such as photographs and other necessary materials related to teaching and learning of the pupils with autism and pupils with intellectual impairment. These findings implicate that classrooms were not made to support and attract pupils with autism and pupils with intellectual impairment to engage in active learning processes.

4.3.2 Furniture and Arrangement for Pupils with Autism and Pupils with Intellectual Impairment

This section presents types of furniture and other fittings that were observed in the classrooms. These included desks which are the primary and foremost required furniture in schools. Other materials observed were maps used by pupils with autism and pupils with intellectual impairment to locate things, as well as baskets/shelves and labeled containers. Table 4.10 and Figure 4.2 summarize and present the findings.

Table 4.10: Availability of Furniture and Fittings in Classrooms

Schools	Desks available				Labels location Contents				Baskets & shelves				Labelled containers			
	Very inadequate	Inadequate	Adequate	Very adequate	Very inadequate	Inadequate	Adequate	Very adequate	Very inadequate	Inadequate	Adequate	Very adequate	Very inadequate	Inadequate	Adequate	Very adequate
School A	×	×	√	×	√	×	×	×	√	×	×	×	√	×	×	×
School B	×	×	√	×	×	√	×	×	√	×	×	×	√	×	×	×
School C	×	×	√	×	×	×	√	×	√	×	×	×	√	×	×	×
School D	×	×	√	×	√	×	×	×	×	√	×	×	√	×	×	×
School E	×	√	×	×	√	×	×	×	√	×	×	×	×	√	×	×
Total	0	1	4	0	3	1	1	0	4	1	0	0	4	1	0	0

Note: √ = available

× = not available

Table 4.10 and Figure 4.2 demonstrate that desks in four schools were adequate and sufficed the needs of the number of the pupils registered in the four schools, except for School E. Similarly, the findings indicate that maps were inadequate in three schools, despite the fact that, they were adequately used at School C. Furthermore, the findings showed that baskets, shelves and labeled containers were extremely inadequate at Itiji primary school, compared to the remaining four schools.

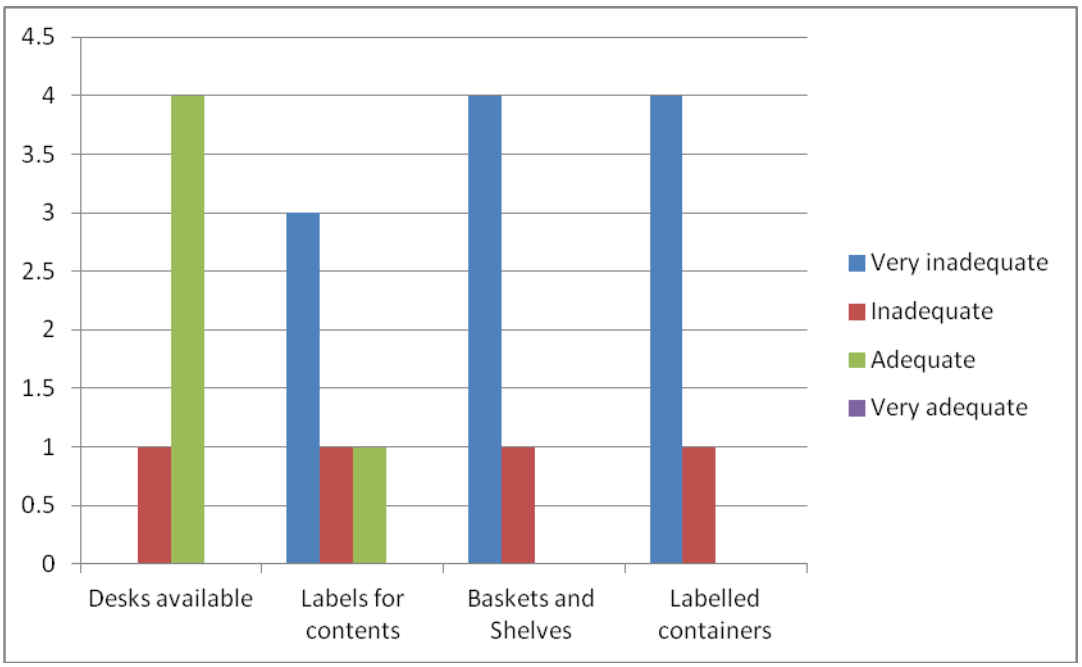

Figure 4.2: Availability of Furniture and Appearance of Fittings in Classes

It was also revealed that desks in special units and inclusive classes were similar to those available in ordinary classes. Such findings imply that there were no special desks for pupils/ with autism and intellectual impairment. Thus, educational needs of the pupils with autism and pupils with intellectual impairment were not fully addressed.

4.3.3 Learning environment for pupils with autism and pupils with intellectual impairment

With regard to this item, the researcher observed some selected components of learning environments, including the extent to which learning environment supports learning. Areas looked into included, arrangement of furniture (desks), the sufficiency of light and lighting system in classes and area preserved for library and its facilitation. The results are presented in Table 4.11 and Figure 4.3.

Table 4.11: Nature of the Learning Environment for Pupils with Autism and Pupils with Intellectual Impairment

Schools	Supportive environment				Arranged classroom furnitures				Light in classroom				Library available			
	Ext.Inadequate	Inadequate	Adequate	Ext.Adequate	Ext.Inadequate	Inadequate	Adequate	Ext.Adequate	Ext.Inadequate	Inadequate	Adequate	Ext.Adequate	Ext.Inadequate	Inadequate	Adequate	Ext.Adequate
School A	×	√	×	×	×	√	×	×	√	×	×	×	√	×	×	×
School B	×	√	×	×	×	×	√	×	√	×	×	×	√	×	×	×
School C	×	×	√	×	×	×	×	√	×	×	√	×	×	√	×	×
School D	√	×	×	×	×	×	√	×	√	×	×	×	√	×	×	×
School E	×	√	×	×	×	√	×	×	×	√	×	×	√	×	×	×
Total	**1**	**3**	**1**	**0**	**0**	**2**	**2**	**1**	**3**	**1**	**1**	**0**	**4**	**1**	**0**	**0**

Note: √ = available

× = not available

Generally, the findings in Table 4.11 demonstrate that learning environment in the sampled schools was not supportive enough even though there were establishment and maintenance of the classes and compounds in some of the sampled schools. On the aspect of the arrangement of furniture, the findings revealed that schools B, C and E had sufficient desks which were properly arranged. In the remaining schools, desks were inappropriately designed for the needs of pupils with autism and pupils with intellectual impairment.

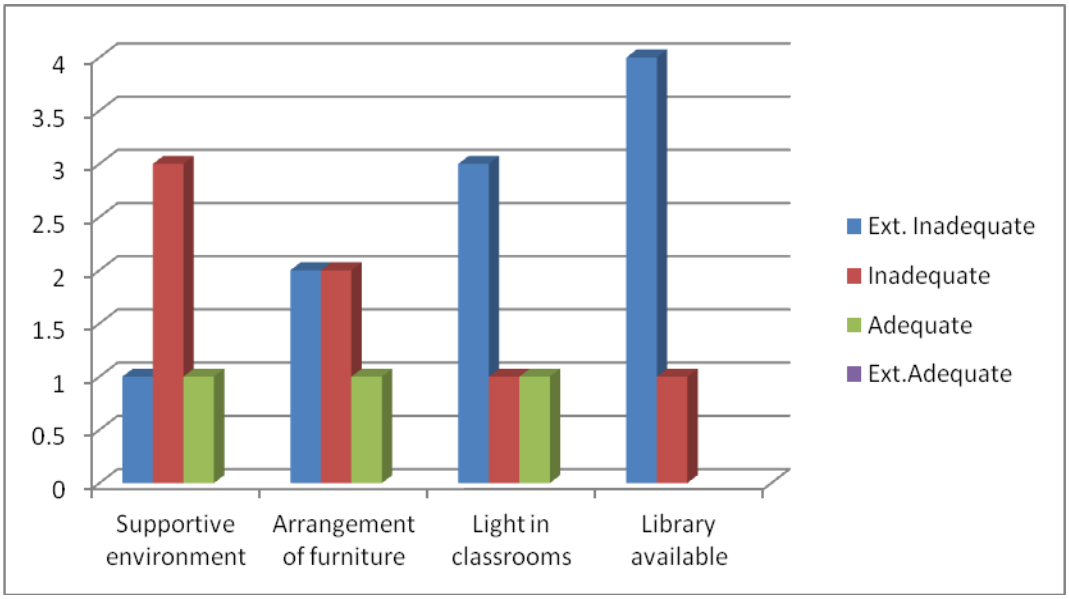

Figure 4.3: Adequacy of the Learning Environment for Pupils with Autism and Pupils with Intellectual Impairment

From Figure 4.3, the findings illustrate that there was inadequate lighting in classrooms and library facilitation in all the sampled schools. It was further found that electricity was available in all schools despite the fact that it was not part of teaching and learning processes. Furthermore, the findings obtained through observations revealed unavailability of library area. Similarly, no bookshelves were

placed to the reach of the learners in classes. The observational data also indicated that pupils were hardly encouraged to read and work independently in the sampled schools.

4.3.4 Teaching and Learning Resources for Selected Tasks

As part of the second specific objective, it was also important to assess the adequacy of specific resources in teaching and learning of the skills/subjects for pupils with autism and pupils with intellectual impairment. Three subjects were selected, including, number skills, vocational skills, and communication skills. Results for the specific teaching and learning resources are indicated in Table 4.12.

Table 4.12: Availability of Teaching and Learning Resources for Three Selected Tasks

Schools	T-L resources for Number Skills				T-L resources for Vocational Skills				T-L resources for Communication Skills			
	Ext.Inadequate	Inadequate	Adequate	Ext.Adequate	Ext.Inadequate	Inadequate	Adequate	Ext.Adequate	Ext.Inadequate	Inadequate	Adequate	Ext.Adequate
School A	×	√	×	×	×	√	×	×	√	×	×	×
School B	×	√	×	×	×	√	×	×	√	×	×	×
School C	√	×	×	×	×	√	×	×	×	√	×	×
School D	×	√	×	×	×	√	×	×	√	×	×	×
School E	×	√	×	×	×	√	×	×	√	×	×	×
Total	**1**	**4**	**0**	**0**	**0**	**5**	**0**	**0**	**4**	**1**	**0**	**0**

Note: √ = available

× = not available

Table 4.12 demonstrates an extreme shortage of the teaching and learning resources in terms of specific skills for pupils with autism and pupils with intellectual impairment. Findings reveal the fact that, the teaching of the skills-based subjects cannot be achieved as efficiently as planned due to acute shortage of teaching and learning resources observed in this study.

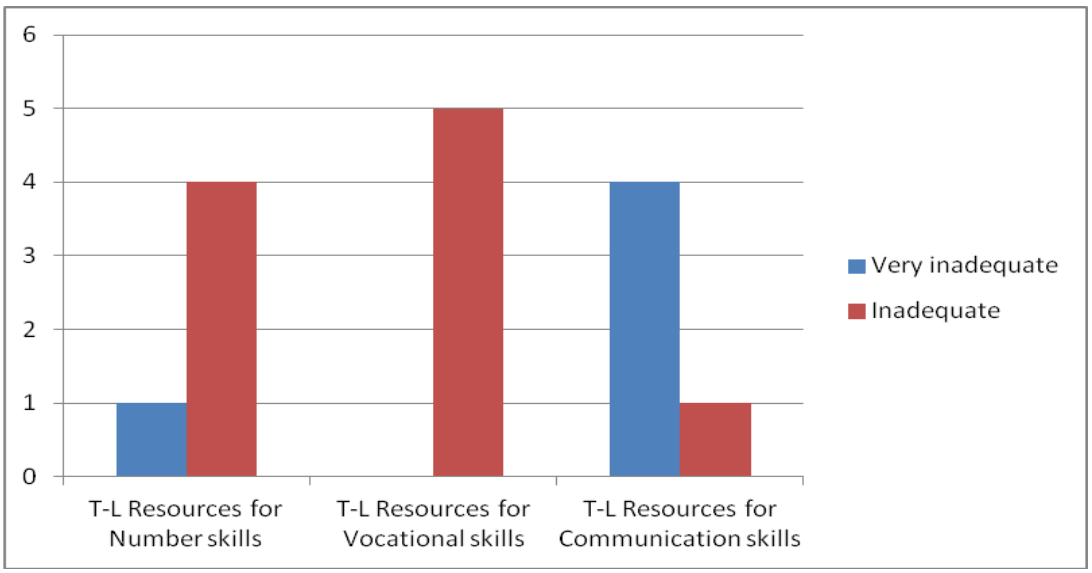

Figure 4.4: Availability of Teaching and Learning Resources for the Three Selected Tasks

Figure 4.4 indicates that the provision and purchase of teaching and learning resources for specific tasks in order to ensure that these tasks are taught efficiently are not given much emphasis. Teachers informed the researcher that almost all of the required teaching and learning resources required for pupils with autism and pupils with intellectual impairment were not available in schools.

Findings also reveal that all schools have inadequate teaching and learning resources. Facilities such as baskets and containers for storing individual pupil's learning

facilities were extremely inadequate and that the learning environment was less supportive with regard to learning requirements of pupils with autism and pupils with intellectual impairment. Furthermore, teaching and learning resources for selected tasks were found inadequately supplied. The inadequacy may hinder pupils from getting the intended knowledge and skills.

4.4 Teaching-Learning Approaches for Teaching Pupils with Autism and Pupils with Intellectual Impairment

The third objective sought to explore teaching and learning approaches used in teaching pupils with autism and pupils with intellectual impairment. During interviews, the informants discussed in detail on the types of teaching and learning approaches used in teaching and learning for pupils with autism and pupils with intellectual impairment and their suitability in achieving the stated learning objectives. With differing opinions and experiences, special education teachers had several comments on the teaching and learning strategies used for pupils with autism and pupils with intellectual impairment. The findings are presented in Table 4.13.

Table 4.13: Approaches for Teaching Pupils with autism and pupils with intellectual impairment in Primary Schools

Question	s/n	Approaches used by special education teachers
What are teaching-learning approaches for pupils with autism and pupils with intellectual impairment in primary schools?	1.	Individualized teaching and learning that take into account the learning needs of individual pupils with intellectual impairment.
	2.	Use of audio-visual aids and real things.
	3.	Adoption of facilitative strategies such as individualized instruction approach.
	4.	Use of programs that support pupils with autism and pupils with intellectual impairment acquisition of communication and social skills.
	5.	TEACCH with emphasis of comprehensive program of personal, interpersonal, and skill development.
	6.	Teaching and learning of the pupils with autism in collaboration with other parties.

Table 4.13 shows that there are a variety of teaching and learning approaches used in teaching and learning for pupils with autism and pupils with intellectual impairment. Some strategies are applicable in certain situations due to limitations of some skills that could have accomplished the utilities of the teaching approaches to fullest. In the interviews with informants there were teachers in special education who focused on the need to consider the individual needs of the learner. On the use of individualized teaching, two informants from different schools had the following:

> *Teaching strategies that accommodate pupils with a intellectual impairment can be applied so as to cater to learners' individual needs. For example, the individual needs may be remediation of skill deficits and reducing challenging behavior. The individualized teachings take into account the learning needs of pupils with intellectual impairment and are considered as the best teaching practice by teachers compared to the inclusion of the pupils with intellectual impairment into ordinary classes. (A male special education teacher, School C. 04/09/2014).*

> *Sometimes the application of teaching and learning strategies are complicated by communication problems that pupils with autism and pupils with intellectual impairment, particularly autistic children, where teachers may need to adopt facilitative strategies such as individualized instruction approach. This approach focuses on what the pupil is attending to recognizing and interpreting attempts to learning tasks, creating predictable routines and use of teaching and learning resources in making easier interaction and elaborations. (A female teacher, School D. 31/07/2014).*

Other special education teachers emphasized on the use of programs that emphasise on sensory abnormalities of pupils with autism and pupils with intellectual impairment so that they also acquire communication or social skills. One special education teacher in the field of intellectual impairment put it this way:

> *In dealing with pupils with autism, we actually focus on individual needs. There are those pupils who may be in acute need of remediating skill deficits and reduce challenging behavior. Such pupils can have difficulty processing auditory information, thus, it may take them longer to comprehend teaching/instructions and other directives in classrooms and others around school environment. They are affecting their ability to filter out background classroom noise for example, and thus affects their academic performance… (A female special education teacher, School D. 31/07/2014).*

In a similar account, teachers specialized in pupils with autism, pointed on use of TEACCH (Treatment and Education of Autistic and related Communication Handicapped Children) as crucial approach among all other teaching and learning strategies for the pupils with autism. A female special education teacher strongly argued that:

> *TEACCH is a family-centered, comprehensive program of personal and interpersonal skill development usually adapted for pupils with autism. TEACCH consists of special education program designed to capitalize on the relative strength and preference for processing information visually in individuals with autism while taking into account the recognized difficulties. Pupils with autism mostly benefit with the coordinated, interactive approaches designed to improve communication, social interaction, play skills, motor development, cognition, and participation in family life. (A male special education teacher, School C. 03/09/2014).*

Group teaching was among the strategies given priority by special education teachers, particularly those experienced in teaching pupils with intellectual impairment. A male teacher who specialized in educating pupils with intellectual impairment described on the use of group teaching by saying;

> *The use of group teaching is usually applicable in a special education setting for pupils with intellectual impairment. Situations in which a child is in a typical group setting with a fairly large number of peers teachers join the child to deliver a discrete trial within the group situation… success on what a pupil attain is measured by a number of time pupils are alone in a space with a teacher, compared with the amount of time they are in a group of peers. (A female teacher, School A. 28/08/2014).*

Apart from that, there were other different opinions in favour of inclusion techniques,

> *Inclusive education teaching of the pupils with autism need to be done in collaboration with other parties such as teachers, members of the community and the parents… In inclusive schools, teachers are often busy when the class includes several learners with special needs, such as pupils with autism and pupils with intellectual impairment. The presence of problem behaviours can quickly become an unsustainable situation and, complicate teachers in fulfilling their duties. Therefore it would be wise for the responsible parties (that is, the government and other education providers) to ensure that regular teachers, as well as special education teachers, are well informed on effective teaching and learning strategies for pupils with autism and pupils with intellectual impairment. (A male special education teacher, School C. 02/09/2014).*

It was also found that other informants, in fact with lack of enthusiasm argue on the possibilities of some demerits of having pupils with autism in regular classes. But, commented that they can be partly being included under caution that:

> *Inclusion of pupils with autism in regular classrooms often experience social isolation and loneliness and may become the victims of peer bullying. With the push from the Government that every school aged child has to attend primary education and free to all, enrolment of pupils with autism may increase. In inclusive education, teaching of pupils with autism need to be done in collaboration with other parties such as teachers, members of the community and the parents. (A female special education teacher, School A. 27/08/2014).*

A different side of expertise commented on teaching and learning approaches that greatly consider the use of audio-visual aids and real things. In different interviews, two informants argued on the following:

> *In teaching any approach used is equally important to be linked with the use of audio-visual aids and real things. So for me, any effective teaching and learning depend on the number of the teaching and learning resources. The structuring of activities of which a child can succeed and feel successful is an inherent part of teaching pupils with autism and pupils with intellectual impairment. The breaking down a series of actions into components can facilitate the linkage of teaching and learning resources and the teaching and learning approaches for pupils with autism and pupils with intellectual impairment. (A female special education teacher, School C. 03/09/2014).*

> *A number of different treatment programs emphasise treating the sensory abnormalities of pupils with autism and pupils with intellectual impairment with the implication that this will facilitate a child's acquisition of communication or social skills (e.g. auditory integration; sensory integration). Normally, the use of teaching and learning resources that attracts senses is recommended because they engage learners and trigger within the learners' mind. This approach helps to build intuition and broaden interaction between subject contents and skills, which are precious for competence building and social responses for pupils with autism and pupils with intellectual impairment. (Head, Intellectual impairment unit, School B. 04/09/2014).*

The teaching and learning of the pupils with autism and pupils with intellectual impairment need to be done in collaboration with other parties. Special education teachers had serious concern on involving other concerned parties for the everlasting benefits of the pupils. The idea of collaboration in this context of specialty in teaching and learning of pupils with autism and pupils with intellectual impairment was indeed a concern of some special education teachers:

> *Parents of pupils with autism and pupils with intellectual impairment should communicate more frequently with teachers to report on and to understand more about their child's community participation problems. Moreover, parents should also join one or two sessions in both the classroom component skills training and the simulated environmental training, other than the community-based training sessions. (A male special education teacher, School E. 26/09/2014).*

On a similar account, another special education teacher had this to add:

> *The collaboration would increase the public understand on the importance of community participation of pupils with autism and pupils with intellectual impairment. Pupils through primary education are in the process of becoming members of the society as such they acquire knowledge and skills essential for them to live as committed citizens in the society. To engage them with more opportunities to work with different shops or organisations for example create to them more community-based training programmes. (A male special education teacher, School B. 06/10/2014).*

With the use of practical experiences from special education teachers in teaching and learning of pupils with autism and pupils with intellectual impairment it is essential to recognize the fact that pupils with autism and pupils with intellectual impairment are unique learners who require effective use of approaches that would yield to required performances in pupils. Regarding the documentation of rules and principles developed in variety of approaches but still teachers' competence matter in ensuring

pupils with autism and pupils with intellectual impairment learn and realize their hidden potentials.

4.5 Views of Teachers on Teaching and Learning of Pupils with Autism and Pupils with Intellectual Impairment in Primary Schools

Findings for this objective are based on views of respondents on issues and problems facing teaching and learning of pupils with autism and pupils with intellectual impairment in the selected schools in Tanzania. Interview schedules were used to gather information from teachers. The results are presented in terms of responses as they were interviewed by the researcher basing on their experiences and commitment to teaching and performance of pupils with autism and pupils with intellectual impairment.

4.5.1 The Role of Primary Education on Making Pupils with Autism and Pupils with Intellectual Impairment Independent

The researcher sought to establish whether primary education enables pupils with autism and pupils with intellectual impairment to become independent persons in their lives. The findings showed that majority of respondents among teachers were in favour of the current educational practice which emphasizes on giving opportunities for pupils with autism and pupils with intellectual impairment in accessing primary education. The only point of departure in their opinion was that some were in favour of inclusion, while others were interested in special schools depending on the severity of disabilities. Some of the respondents argued that primary education make pupils with autism and pupils with intellectual impairment live independent life after

school cycle. For example, one experienced teacher argued in favour of inclusive schools that,

> *For pupils with autism, accessing primary education through inclusion helps them in several ways including the use of the toilet, eating by themselves and learning social collaboration with other peers as well as adults available at the school. The pupils with autism in inclusive schools have demonstrated some remarkable changes and general progressive development such as imitation and positive response to social requests. I have received experiences from some parents that their pupils with autism are slowly responding to their calls and indicate some significant improvements including playing games with other young members of the family. Some parents report that their pupils with autism are fully responding to the household chores with demonstrated interest to cleaning utensils, cleaning sitting room/dining room after meals. (Special education teacher, School C. 02/09/2014)*

Another male teacher in *School E* commented and insisted that the provision of primary education in inclusion settings is much more beneficial to pupils with autism and pupils with intellectual impairment. He had the following to say:

> *For the pupils with autism and pupils with intellectual impairment who acquire education in inclusive schools, some of them respond well to teachers' instructions and even do assignments collectively. I also find that society benefits much more when pupils with autism and pupils with intellectual impairment are in the education system, due to the fact that when engaged with schooling they are not stranded in streets begging rather, they acquire knowledge and skills of engaging in either petty business or self-employment. (A male teacher, School E. 25/09/2014)*

Other more benefits of inclusion for pupils with autism and pupils with intellectual impairment may include modelling of behaviour, improvement of social work, socialization and social acceptance, eradication of stigma, improved functioning in the real world and fostering daily life and self-care skills. One informant teaching at the unit for pupils with intellectual impairment put emphasis on benefits of inclusion and lamented the following:

> *Inclusion of pupils with a intellectual impairment helps them to cater for their rights, it eradicates stigma and provides opportunities for special needs pupils, particularly those with a intellectual impairment. Here, I should put it very clear that in our education system we are not keen in screening pupils before they are enrolled in pre-school or primary education, so this makes it difficult in locating them in classes with reference to the level of intelligence or severity of the disability. Normally with an inclusive system of education mentally retarded are equipped and prepare to function in the real world. Some pupils with intellectual impairment have been demonstrating their strength when participle in the learning environment together with other pupils of regular education. (Special education educator, School B. 04/09/2014)*

Apart from the said benefits, provision of primary education for pupils with disabilities fulfills the rights that Tanzania as a nation commits its government to ensure that through education every individual acquires knowledge and skills necessary for appreciating and adapting to the environment and ever-changing social, political and economic conditions. In contrary most parents after being aware that a pupil is either with autism or intellectual impairment, they become frustrated. Therefore, in order to support parents from this frustrating situation, the government needs to bear this constitutional obligation of making quality primary education accessible. One teacher, who is also a mother of a child with a intellectual impairment out rightly, shared the following:

> *As a mother of several children including one with a intellectual impairment, I have seen most of us treat pupils with autism and pupils with intellectual impairment as a failure. For most parent time looking to have a newborn is experienced with only positive hopes, particularly of receiving an ordinary baby not a child with any disability. So any outcome different from parents expectations become one of most stressful news. As a result, they turn into poor handling of their educational needs. In order to support these kinds of ignorant parents, the whole community needs to provide a helping hand to parents with pupils with autism and pupils with intellectual impairment so that these pupils are enrolled in primary schools. Being in schools help them to socialize and acquire self-skills in life. (Special education educator, School D. 28/07/2014)*

Another informant had this to say:

> *There is evidence that early interventions lead to improvements pupils with autism and pupils with intellectual impairment and that some pupils shift specific diagnoses within the spectrum and change in severity of cognitive delay in the pre-school years. After working with special education teachers pupils with autism and pupils with intellectual impairment start working with others, but not exactly perfect due to lack of resources. When a pupil with autism and intellectual impairment attend school and participate in the learning process fully changes do happen, and if you talk to their parents and those who take care of them can express the same. (Head, special Unit, School A. 26/08/2014).*

One interviewee shared a different thought and she pointed on the constraints of the centralized curriculum that practiced currently, that, "*... the present curriculum prohibits chances for pupils with autism and pupils with intellectual impairment to make progress to specific skills such social skill, language acquisition and non-verbal communication for handling challenging behaviours."*

4.5.2 Teaching and Learning Resources for Pupils with autism and pupils with intellectual impairment in Primary Schools

Under this question, adequacy of teaching and learning resources was explored in search for its influence in teaching and learning process of pupils with autism and pupils with intellectual impairment. The majority of teachers across the surveyed schools were of opinion that teaching and learning resources were inadequate and did not capture learning needs of the pupils with autism and pupils with intellectual impairment. For instance, to verify this argument one of the teachers was of opinion that:

> *Currently, we are facing an acute shortage of teaching and learning resources. Only that we can say the school possesses few sets of puzzles acquired as a gift from a visitor some years ago. Generally, there is an insufficient supply of teaching and learning resources that discourages the teaching and learning processes. Unavailability of teaching and learning resources makes provision of special education more problematic. These all together, complicate accommodation of the pupils with autism and pupils with intellectual impairment in schools. (Head, Special unit, School E. 29/09/2014).*

Another teacher from primary school specialized for pupils with intellectual impairment had a similar argument that:

> *Teaching and learning resources are highly inadequate. For example, in order for pupils with a intellectual impairment to learn, they need visual things. These types of teaching and learning resources could have been obtained with only a few funds through enabling special education teachers in making simplified teaching and learning resources, not necessarily readymade. In teaching variety of skills, an adequate amount of teaching and learning resources for pupils with autism and pupils with intellectual impairment are required for presenting ideas, event or contents of the lessons. These types of symbols include natural gestures, and signs, life-size or miniature objects, a graphic presentation such as photographs or colour pictures as well as some line drawing. (A female teacher, School B. 06/10/2014).*

In addition to that, one interviewee specialized in communication skills shared his expertise on the need for increasing teaching and learning resources specifically for enhancing language development among pupils with autism and pupils with intellectual impairment. He explained that:

> *Use of symbols is integral and essential to language development bearing in mind those pupils with autism possess difficulties with symbolic presentations. Usually, teachers, when facilitated, can produce objects or photograph, drawings (either coloured or white line drawings), iconic representations, alphabetic boards, words displays such as poster boards, wallets, flip chart, vests. It is important to know that … some of the materials available are being destructed by the pupils, but they are generally not enough and still demands are extremely high. Our school obtains resources through government disbursement, individual supporters, and contributions by parents. (A male teacher, School C. 04/09/2014).*

In the same way, he added that:

> *In my experience, and actually you might have observed yourself that situations of classroom environment are much deteriorating due to the fact that teachers fail to create a learning environment for their pupils. Proper organization of classroom benefits both the pupil and teacher. Teaching and learning materials such as baskets, exercise books, trays, plastic bags, for example, can be stored in stores or in any other proper places so that pupils with autism and pupils with intellectual impairment can utilize them easily. (A male teacher, School C. 04/09/2014).*

4.5.3 Academic Performance of Pupils with Autism and Pupils with Intellectual Impairment in Special and Inclusive Classrooms

With the third question the researcher aimed to gather information regarding teachers' evaluation of academic performance of the pupils with autism and pupils with intellectual impairment in special units and in inclusive classrooms. Respondents were required to explain the level of acquisition of learning content in day-to-day teaching. Responses varied extensively due to the fact that learners' capabilities differ as well. Assessments made by respondents were based on participation of learners in teaching and learning processes. Some commented that the pupils with autism and pupils with intellectual impairment as individuals who possess different capabilities in attending education. Other respondents assessed pupils with autism and pupils with intellectual impairment capabilities in comparison to regular learners in schools. For the matter of emphasis, two special education teachers argued as follows:

> *Pupils with autism and pupils with intellectual impairment differ extensively in terms of severity, this, therefore, make difficult for them to be admitted in primary education class one before the initial intervention. Those with more severe levels of disabilities may need to go to a special school or special class within an ordinary school. This restrains provision of special education due to the fact that educational opportunities are not equitably available to all places in the country. And above all, ability to screen pupils with disabilities is not easily done by regular teachers. So some of them are assessed wrongly and are being placed in improper classes. (A male special education teacher, School A. 06/09/2014).*

> *Eh, some of the pupils with autism perform relatively high in non-academic tasks and these are the one with the least severe impact of the disability. Most of the pupils with autism who are considered low-functioning can solve really complex problems if given material to process learning at their pace. There are those who accurately follow instructions but fail to express what they have comprehended. (A female teacher, School C. 03/09/2014).*

Other informants were concerned with the participation of pupils with autism and pupils with intellectual impairment in inclusion. Their views specifically described as follows:

> *Inclusive settings help them to socialize/collaborate with others. Pupils with autism and pupils with intellectual impairment benefit from the education system that is facilitated to benefit from special education in line with their interests, desires, competence, and abilities. There are pupils with autism and pupils with intellectual impairment who demonstrate sufficient cognitive development are usually taken to join other learners in ordinary classes and finally interact with and adjust accordingly to the society… in special units their classifications and as they change they are taken to ordinary classrooms. In our school, we have experienced some of the pupils with autism and pupils with intellectual impairment who fail to develop academically and cope with classroom proceedings. They actually require regular teachers who are capable of communicating with them in inclusive classes. (Experienced, female special education teacher, School E. 26/09/2014).*

> *Inclusion of pupils with autism and pupils with intellectual impairment in regular classes assists them to acquire social benefits more than those who stick in special units/classes. Only that they are challenged with the scarcity of teachers. Pupils with autism and pupils with intellectual impairment normally go through learning stages more slowly. Some of them are discouraged by negative attitude and behaviours of teachers/adults, society, and failure experienced in the past cause to arise anxiety, the expectation of failure and finally negative academic achievement. (A female teacher, School A. 08/09/2014).*

The majority of the interviewees argued that academic performance on pupils with autism and pupils with intellectual impairment is unquestionable only if they are facilitated.

4.5.4 Attainment of Primary Education Goals for Pupils with Autism and Pupils with Intellectual Impairment

In question five, the researcher wanted to establish the extent to which goals for the education of pupils with autism and pupils with intellectual impairment are fulfilled. Through an interview with informants, it was found that primary education goals for pupils with autism and pupils with intellectual impairment were not fulfilled as intended. Most of the comments based on suggestions for improving provision of primary education for pupils with autism and pupils with intellectual impairment. Two head of schools, on different occasions, had the following comments:

> *Presence of pupils with autism and pupils with intellectual impairment in schools and commitment of the parents for enabling pupils with autism and pupils with intellectual impairment access education has made educational setting/industry continue to grow and change with the passing of time. After these children of special needs being recognized and welcomed it is for teachers, social workers (including other professionals) and government officials to commit fully to this responsibility of provision of education without exception. (A male head teacher, School C. 03/09/2014).*

> *There is a need of increasing use of inclusion as an educational strategy. This goes hand-in-hand with the preparation of special education teachers, who will be able to encounter with educational needs of the pupils with autism and pupils with intellectual impairment in their career. For example, teaching pupils with autism and pupils with intellectual impairment to acquire knowledge of basic mathematic skills (such as money, measurement and time) have been difficult, but these are essential for independent living skills such as purchasing, banking, and budgeting. It is important therefore that teachers are trained on mastery with effective methods for teaching learners mathematical skills. (Male teacher, School D. 04/08/2014).*

Despite the fact that, several initiatives and commitment made by the government and other responsible parties, including parents, still the educational requirements for pupils with autism, and their capabilities are not fully addressed. Other informants at School B, viewed that out of useful input on ways of working with educational needs for autistic children. The following were their opinions:

> *In order to increase the number of teachers, the government should introduce pre-service and in-service preparation for teachers and paraprofessional and other personnel providing services for pupils with autism and pupils with intellectual impairment. This should also include short-term training (e.g., technical assistance system, resource centers, etc.) including people with special expertise in handling pupils with autism and pupils with intellectual impairment educational needs. On-going training for regular education teachers and special education teachers, workshops and training for severely affected autistic and mentally retarded children should be out in place. (Male teacher, School B. 06/10/2014).*

> *There is a need to introduce seminars, meetings where parents can be given an opportunity to voice their questions, concerns, and perspective about their children development and education programming. Conferences that include teachers, parents and other stakeholders will improve teachers with knowledge/understanding of the context of the pupil's family life. In most cases, familial stress and strain in the household environment can diminish a child capacity to learn and develop appropriately. (Female teacher, School B. 06/10/2014).*

> *Schools should be made accessible through the provision of proper and affordable means of transport. Both pupils with autism and pupils with intellectual impairment require affordable and convenient means of transport to reach/travel school and from school to home places are not planned and never part of school agenda. Such unplanned facilitation of enabling them to attend schools in public schools discourages pupils with autism and pupils with intellectual impairment to attend schools frequently. I think there is a great need of making the special units close to the community for learners to attend to schools easily. This will assist them in reducing the cost of attaining primary education, with the assumption that schools being close to home-based environment teaching and learning processes will allow pupils with autism and pupils with intellectual impairment to function more in a range of learning activities. (Female special education teacher, School B. 06/09/2014)*

In addition to issues of transport, it is equally important that meals given to pupils with autism and pupils with intellectual impairment should be reasonable of a balanced diet. With emphasis, one male informant at Itiji primary school had the following comment;

> *Pupils with autism and pupils with intellectual impairment should be looked as one of mechanism in motivating them to participate fully and become healthy". In the provision of education for pupils with autism and pupils with intellectual impairment facilitation and meeting their requirements sometimes becomes very demanding financially to the extent that only children from high-income families who are able to finance educational requirements participate in education frequently. I suggest that the government and donors enable in financing education for pupils with autism and pupils with intellectual impairment in Tanzania. (A female teacher, School D. 28/07/2014).*

4.5.5 Ways of Improving the Teaching and Learning Processes for Pupils with Autism and Pupils with Intellectual Impairment in Primary Schools

Under this section, the researcher wanted to obtain opinions from informants on what could be implemented to improve teaching and learning processes for pupils with

autism and pupils with intellectual impairment. Suggestions collected from teachers who were the informants are summarized in Table 4.14.

Table 4.14: Ways of Improving Teaching and Learning of the Pupils with Autism and Pupils with Intellectual Impairment

Question	s/n	Ways recommended by the informants
How to improve teaching and learning processes for pupils with autism and pupils with intellectual impairment in primary schools?	1.	Increasing the number of special education teachers in schools
	2.	Supply of sufficient teaching and learning resources for the pupils with autism and pupils with intellectual impairment
	3.	Fund and support from the government and donor should be provided timely
	4.	Increasing awareness and knowledge to parents on handling educational needs of the pupils with autism and pupils with intellectual impairment
	5.	Provision of fresher courses for teachers
	6.	Construction of hostels for pupils with autism and pupils with intellectual impairment
	7.	Making educational policies that will enable pupils with autism and pupils with intellectual impairment to live independent life after school cycle
	8.	Provision of incentives to teachers dealing with special need education
	9.	Increasing the number of special schools for learners with special needs in the country

The summarized opinions in Table 4.14are further elaborated in themes 4.5.5.1 to 4.5.5.5. These themes include themes which do not appear in earlier sections of this chapter so as to avoid repetition of data found from the informants.

4.5.5.1 Increasing special education teachers in schools

When asked to elaborate on the suggestion that there is a need to increase the number of special education teachers, they argued that for effective teaching and learning of pupils with autism and pupils with intellectual impairment, teacher-pupil ratio has to be reduced close to 1:1. The following statements describe:

> *I recommend that there should be a deliberate effort of employing more resource teachers and supporting staffs for handling the remedial workload and collaborate with the regular teachers to monitor their learning tasks in class as well as during co-curriculum activities. (A male special education teacher, School C. 02/09/2014).*

On the other hand, another informant said that:

> *From what I have been observing is that some regular teachers sees pupils with disabilities to be a disturbance to the class and as causing destructions with delays in presentations and completion of the lessons planned in a given period of time… (A female special education teacher. (A special education teacher, School D. 28/07/2014).*

Most of the informants suggested for increasing special education teachers basing to the fact that teachers given the teaching and caring for pupils with autism and pupils with intellectual impairment and other special education learners are few. So according to them, this call for the deliberate effort of training more special education teachers as well as supporting staff for pupils with autism and pupils with intellectual impairment and special needs learners.

4.5.5.2 Awareness and knowledge to parents on handling educational needs of the pupils with autism and pupils with intellectual impairment

During interviews, special education teachers showed concern that parents require knowledge and awareness on the nature of the pupils with autism and pupils with intellectual impairment children as well as the intervention of their needs. It was found that when teachers work together with parents enable them to increase their knowledge and skills about pupils with autism and pupils with intellectual impairment. With an emphasis, informants had the following comments:

> *In order to train pupils with autism and pupils with intellectual impairment more effectively, the teaching and learning processes have to be extended to the home environment. If parents and other people who take care of pupils with autism and pupils with intellectual impairment are provided with proper handling techniques of modelling and improving adaptation of the pupils with autism and pupils with intellectual impairment. Parents can learn and successfully apply proper caring methods and produce significant effect towards independent lives of the pupils with autism and pupils with intellectual impairment. Training should be provided to them before they begin and on-going supervision is an integral part of teaching and learning processes. (A female special education teacher, School A. 25/08/2014).*

> *For easier teaching and learning of pupils with autism and pupils with intellectual impairment, they require receiving early intervention and training such as training in community integration to learn how to use different community utilities and surroundings appropriately. These training will be useful in equipping pupils with autism with the ability to communicate and socialize and acquire problem-solving skills in real-life situations. (Head, Special education unit, School D. 31/07/2014).*

> *At different times, parents have been reporting some of their challenges as being, sleep deprivation due to their pupil's insomnia, struggling in finding medications for abnormal behaviours, continual household chaos by the child's hyperactivity and teaching toileting skills. All these can be sorted out helpfully when parents collaborate on a daily basis with teachers, psychologists and psychiatrists for professional consultations. (A female special education teacher, School E. 26/09/2014).*

4.5.5.3 Provision of fresher courses for teachers

With regard to the professional development of teachers, it was reported that courses and training will help them in increasing their knowledge and skills required for new insights of handling educational challenges in relation to teaching and learning of pupils with autism and pupils with intellectual impairment.

> *In inclusive classes, regular teachers have been challenged in accommodating children with different types of needs. In teaching pupils with autism and pupils with intellectual impairment, we have been facing this several challenges which require attaining appropriate teaching and learning methods which accommodate such diverse learning demands. We still cry out for specialist knowledge and the enhancement skills. (Head, Special Unit, School B. 02/09/2014).*

4.5.5.4 Provision of incentives to teachers

Teachers were asked to comment on the nature of the working environment and ways of improving them. They insisted that, despite low remuneration and poor working conditions that have been cried out for years by the teaching cadre, a special focus is required to teachers working pupils with autism and pupils with intellectual impairment. One experienced male teacher stressed that;

> *In order to improve teaching and learning process effectively, working conditions should also be improved. We actually not comfortable with the large numbers of pupils in inclusive classes where pupils with autism and pupils with intellectual impairment are also included, poor working conditions and very unattractive remunerations given are not considering the burden that special teacher bears in teaching special need learners. In handling these working hardship, government and employees need to introduce special allowances/motivations since learners are so varied and they require different lessons, different activities and all these means a lot of work. (A male special education teacher, School D. 04/08/2014).*

He further commented that:

> *What I suggest, is that there should be a recruitment of more teachers and supporting staff which will lessen the burden of teachers in teaching pupils with autism and pupils with intellectual impairment. On top of that, the addition of remuneration is fundamentally crucial for motivating the committed teachers to remain in their working stations and serving for the special needs learners. (A male special education teacher, School D. 04/08/2014).*

4.5.5.5 Educational policies and the needs of pupils with autism and pupils with intellectual impairment

Informants showed concern on educational policies and obligations by the government in the provision of primary education for pupils with autism and pupils with intellectual impairment. It was found that to the best their knowledge quality education delivery mostly depends on the commitment of Ministry of Education and Vocational Training. For instance, one of the informants argued that:

> *Most common challenge faced by special education teachers in teaching pupils with autism and pupils with intellectual impairment in Tanzania is that these special need pupils are included in classes with variations in age differences and levels of intellectual abilities. This practice actually hinders effective teaching of pupils with autism and pupils with intellectual impairment, where some of the pupils with autism and pupils with intellectual impairment their severity of disability are profound making it even more difficult for teachers to accommodate them with other pupils with autism and pupils with intellectual impairment in one class. In my opinion, classes for pupils with autism and pupils with intellectual impairment should consider the arrangement of learners into groups/according to the age of the learner and levels of ability/intelligence. (A female special education teacher, School E. 26/09/2014).*

Another informant pointed out the following:

> *The ministry of education and vocational training should provide regular school teachers with in-service training to equip them with appropriate teaching strategies and skills of handling pupils with autism and pupils with intellectual impairment. Some of these training can be organized and provided through Teachers' Resource Centres which are located in almost every district, and Teachers' Training Colleges scattered in almost every region in the country. (A male teacher, School A. 28/08/2014).*

Similarly, one teacher claimed that:

> *In order to improve the provision of special education to pupils with autism and pupils with intellectual impairment, it is important to increase attention to pupils with autism and pupils with intellectual impairment and their problem. It is surprising that funds being set aside by the government in financing education for pupils with autism and pupils with intellectual impairment and other pupils with disabilities, in general, are very minimal comparing to their needs. In actual fact, the per capita cost for pupils with disabilities is generally higher even five times than the per capita cost of regular learners in primary schools (A teacher, School C. 03.09.2014).*

Basing on knowledge and teaching experiences of the teachers, it was revealed that teaching and learning for pupils with autism and pupils with intellectual impairment is comprised of several issues and problems that require collective measures in addressing them. Despite the challenges in the provision of special needs education, access to primary education for the autistic and mentally retarded children is fundamentally beneficial and most of them show remarkable changes in their lives. However, special education teachers and supporting staff require more technical and financial support so as to effect promptly their obligations.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

The purpose of this study was to assess the academic performance of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms in selected primary schools in Tanzania on specific learning tasks. The study specifically investigated on the influence of different settings and teaching and learning conditions on the academic performance of pupils with autism and pupils with intellectual impairment. The purpose of the study was pursued through the following four research objectives:

i) To compare academic performance of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms.

ii) To assess the adequacy and appropriateness of teaching-learning resources for pupils with autism and pupils with intellectual impairment.

iii) To examine teaching-learning approaches for teaching pupils with autism and pupils with intellectual impairment.

iv) To find out teachers' views on current status of teaching and learning of pupils with autism and pupils with intellectual impairment.

5.2 Academic Performance of Pupils with Autism and Pupils with Intellectual Impairment in Special Units and those in Inclusive Classrooms

This objective sought to compare academic performance between pupils with autism and pupils with intellectual impairment in inclusive as well as special schools in

terms of number, communication, and vocational skills. The study found that pupils with autism and pupils with intellectual impairment in inclusive setting benefit from the learning environment on social and communication skills and reveal similar achievement in number and vocational skills. In harmony with the outcome of the study, earlier studies indicated that pupils with autism and pupils with intellectual impairment in the inclusive settings easily promoting instruction in life skills/vocational/work settings in the community (Cole & Meyer, 1991). They spent less time in their school buildings and more time in the community than those in special and segregated settings. Also of significance was the finding that the pupil in inclusive settings spent as much time in contact with special education teachers comparing to those in segregated settings.

On the other hand, comparison of the general academic outcome some studies show that their performances are similarly the same. Saint-Laurent et al. (1993) found no significant differences in academic outcomes for students with moderate developmental disabilities in inclusive, community-based, or traditionally segregated classrooms. These researchers concluded that integration proved to be advantageous for social and behavioural outcomes and that it provided academic, functional, and basic skills instruction that was equal to that provided in more segregated settings.

Three studies have investigated these numerical estimation skills in autism, both targeting the exact number system. The first one by Jarrold & Russell (1997) found that pupils with autism showed less benefit than comparison children in counting dot stimuli presented in canonical (dots on dice) than non-canonical (distributed randomly) form, and used a less efficient dot-by-dot counting strategy. The second

study by Gagnon et al. (2004) showed that, when asked to judge numerosities between 2 and 9 (e.g., “how many squares are on the screen?”), adolescents with autism seemed to show evidence of a smaller subitizing range than non-autistic adolescents, although the groups were not compared statistically. The third study by O’Hearn et al. (2013) focused on replication and extension. Although all three studies assess precise enumeration using different methods, none is suggestive of superiorities in the exact system in autism.

On evaluating academic performance in communication skills, Maurice (1996) comments on the assessment needs to evaluate pragmatic language skills (functional and social communication) as well as semantic language skills (the meaning of language including content and context). Because of the unique nature of autism, the assessment requires a team effort, involving family, teachers, and others who know the child well and it should include more than standardized testing. A complete picture of the child is needed to make treatment decisions and to provide a baseline by which progress can be measured. Maurice further asserts that a communication assessment for a child with autism can provide valuable information to help parents, teachers, and specialists to understand the child’s strengths and deficits, to set realistic goals, and to plan an effective program. According to Wetherby, Prizant & Schuler (1997) expanding the communication skills of pupils with autism is one of the greatest challenges for teachers and families. Most people are unaware of the complexity of normal communication because children develop these skills automatically, usually by the age of three or four.

Many pupils with autism spectrum disorder have not developed the skills they need for spontaneous communication, and must, therefore, be taught these. Helping pupils with autism spectrum disorder develop communication skills–so that they can express their wants and needs, interact socially, share information, express emotions, and protest or escape aversive situations, is a priority. Argyropoulou and Papoudi (2012) describe the characteristics of the dynamic social behaviour of a pupil with autism, their research found that with intensive interaction pupils with autism spectrum disorder initiate communication with a peer play partner. Also added that pre-school children, when involved in more interactions in scheduled activities, are the ones they usually prefer or when the material is predictable and familiar.

According to Hodgdon (1995) the use visual input to aid comprehension of oral speech. Visual aids may help obtain and maintain the pupil's attention. Accompanying spoken language with relevant objects, pictures, and other visual supports can help with comprehension. Experienced teachers of pupils with autism suggest the use of photographs support understanding of the content of oral language communication. Interestingly, many pupils with autism use reading to support oral comprehension rather than the expected reverse of using oral language to support reading, making reading instruction even more significant for these students.

Pupils with autism and pupils with intellectual impairment or multiple disabilities, who are nearly one-half year further from grade level in mathematics than students with learning disabilities, have WJIII (Tests of Cognitive Abilities) calculation test scores more than 7 points lower, controlling for other factors (Blackorby, Chorost, Garza & Guzman, 2004). Blackorby *et al*, (2004) also reported that while among the

measures of academic performance considered here, having ADD/ADHD, independent of other disabilities, relates only to lower grades.

5.3 Adequacy and Appropriateness of Teaching and Learning Resources for Pupils with Autism and Pupils with Intellectual Impairment

The first research question of this study aimed to assess the adequacy and appropriateness of teaching and learning resources for pupils with autism and pupils with intellectual impairment in selected schools. In this section, discussion of the research question is to reflect two strands of the research question, that is the adequacy of the teaching and learning resources on one hand, and on the other hand the appropriateness of the teaching and learning resources for pupils with autism and pupils with intellectual impairment.

5.3.1 Adequacy and Appropriateness of Teaching and Learning Resources for Pupils with Autism and Pupils with Intellectual Impairment

This study found that teaching and learning resources in the surveyed schools were inadequate in almost all categories except that desks were sufficiently supplied. The teaching and learning resources of varied nature were meant to be assessed so as to carter learning conditions for pupils with autism and pupils with intellectual impairment. These findings were in accordance with previous studies which indicate that necessity of sufficient supply of teaching and learning resources together with individualized learner schedule which supports learning are essential for pupils with autism and pupils with intellectual impairment to acquire desired learning outcome (Breitenbach et al., 2012).

In other earlier studies, availability of visual aids comprise maps, labels, timelines, graphic organizers, visual boundaries, and a number of other examples (Hume at al., 2014). While these can certainly be categorized as a visual support, which is deemed evidence-based, there may not be enough evidence for each of these supports to independently be considered an evidence-based practice. Visual aids and symbols range in complexity from simple and concrete to abstract. The continuum moves from real object or situation to facsimile, colour photography, colour picture, black and white picture, line drawing, and finally to the graphic symbol and written language (Ministry of Education, British Columbia, 2000). Objects are the most simple, concrete form of aid. Graphic symbols, although far along the continuum in terms of complexity and abstraction, have been widely successful with pupils with autism.

According to Wills (2009), teaching approaches that capitalise on the visual learning strengths of many pupils with autistic spectrum disorder by employing visual schedules (using objects, pictures, symbols, words, etc, depending on the needs of the individual student), structured visual work systems where tasks are broken down and individually labelled, and clearly designated physical spaces for activities. The greatest support is to have consistency across environments that work together to make the student feel accepted, cherished, and productive (Hall & Isaacs, 2012). For students with disabilities, many studies describe instructional methods that extend the typical adaptations and help to promote progress in the core content areas for all students (including those without disabilities). These include graphic or advanced

organizers, self-regulation strategies, semantic maps, mnemonics, chunking, questioning, and visualizing strategies (Baker et al., 2002).

On the classroom environment that fit for pupils with autism and pupils with intellectual impairment, Mesibov et al., (2005) as cited in Spencer & Simpson, (2009) remarked that comfortable classroom furniture for pupil use creates a more relaxed environment for all students and helps create a sense of community and belonging. A variety of seating options can be placed in different areas of the classroom. Rocking chairs, seat cushions, floor mats, lounge chairs, couches, armchairs, and bean bag chairs can be used in a classroom library area, a quiet spot, or writing area (Spencer & Simpson, 2009). By planning the placement and organization of the materials and furniture, teachers help students with autism to define the basic organization of the classroom and decrease visual and auditory distractions, reduce anxiety and promote independence, as well as more effective and consistent work

With the availability of teaching and learning resources, pupils with autistic spectrum disorder are able to pay attention to processing and pacing issues which may be linked to cognitive and/or motor difficulties inherent to the pupils with autism. Give the individual time to respond. With these aids various types of cues given when movement disturbances are suspected in their mental schemas. Well structured and supportive environment including the social and physical milieu should encourage task performance. They also assist in teaching within natural environments that contain the cues and reinforcement which prompt and maintain learned behaviours whenever possible (Koegel et al., 1995).

5.3.2 Appropriateness of Teaching and Learning Resources for Pupils with Autism and Pupils with Intellectual Impairment

Pupils with autism and pupils with intellectual impairment are visual learners who function best when the auditory input is supplemented with visual or written information and external organizational support (Handleman & Harris, 2006 as cited in Spencer & Simpson, 2009). Taking the time to plan and prepare the environment of the classroom is a key component in preparing students with autism for school success (Hall & Isaacs, 2012). When creating an optimal learning environment for students, teachers first should consider the organization of the physical environment. The nature of the physical structure is essential in for setting up and organizing a learning environment for pupils with autism and pupils with intellectual impairment. Hume et al. (2014) comment that, visual supports play a significant role in organizing the environment and providing clarity for young children in early childhood settings, as they provide clues to young children about what activity will be occurring and what behavioural expectation is required in each activity space.

The findings of this study reveal that learning environment in the sampled schools wares not supportive enough with regard to nature and learning requirements of the pupils with autism and pupils with intellectual impairment. Therefore the teaching and learning resources were inappropriate for addressing needs of pupils with autism and pupils with intellectual impairment who is considered to possess unique characteristics. This was in line with suggestions presented by Howell & Pierson (2010) that although children with autism may look different from one another depending on their unique characteristics, there should be various strategies with meaningful ways for children that may be beneficial in the teaching and learning

processes for pupils with autism and pupils with intellectual impairment. In one of the materials-based systems known as Nina Lovaas' Reading and Writing programme emphasizes on the use of written pictures to communicate with pupils with autistic spectrum disorder. In addition, the programme teaches the pupils with autism spectrum disorder to read words by matching these with the pictures. It does this both receptively and expressively, and then eventually leads to having the child write (or type) as a means of communicating their thoughts (Lovaas & Lovaas, 1999 as cited in Tissot & Evans, 2003).

Contrary to sufficient supply of teaching and learning facilities, Hall and Isaacs (2012) cautiously comment on careful arrangement of the teaching and learning resources in the classroom that, too many posters, hanging objects, busy word-filled walls, bright colors, and cluttered furniture can be overwhelming and distracting for all learners and particularly for pupils with autism and pupils with intellectual impairment. Students tend to feel a sense of being out of control in an overcrowded and over stimulated space, making it impossible to learn and concentrate. In order to work and arrange the classroom in accordance with the need of pupils with autism (Spencer & Simpson, 2009) put across ideas of other facilities such as containers, letter trays shelves and desks. Hall and Isaacs (2012) suggest that containers can be labelled with a word and a picture to explain the contents. Letter trays can be placed in specific areas to indicate where to place completed homework and class work. Pupils can be taught how to store their own materials in a desk or locker. A map of the contents of the desk or locker can be created to help pupils with storing their materials in an orderly manner

One of the advantages of using visual aids (Ministry of Education, British Columbia, 2000) is that students can use them for as long as they need to process the information. Oral information may pose problems for students who have difficulty processing language, and who require extra time. In addition, it may be difficult for the student with autism to attend to relevant information and to block out background stimulation. Using visual supports enables the individual to focus on the message. Wetherby and Prizant (2000) argued on the necessity of the teaching and learning resources that cater to the needs of pupils with autism and pupils with intellectual impairment, that classrooms and school environments provide a wealth of opportunities for developing functional communication within social contexts. However, opportunity alone will not address the communication needs of the pupils with autistic spectrum disorder. The specific skills requiring instruction and strategies for developing the targeted skills must be identified.

5.4 Teaching-Learning Approaches for Pupils with Autism and Pupils with Intellectual Impairment

The teaching and learning approaches used for pupils with autism and pupils with intellectual impairment were commented as essential in the provision of primary education to most of the pupils with special needs. Some of the benefits may include modelling of behaviour, improvement of social work, socialization and social acceptance, eradication of stigma, improved functioning in the real world and fostering daily life and self-care skills. Pupils with special needs education face a lot of problems in most of the primary schools in Tanzania. There being at inclusive schools is not well recognised and their needs are not well known (Mmbaga, 2002).

Inclusion is generally a valid practice, as UNESCO (2009) envisage as a process of addressing and responding to the diversity of needs of all children, youth, and adults through increasing participation in learning, cultures and communities, and reducing and eliminating exclusion within and from education. It involves changes and modifications in content, approaches, structures and strategies, with a common vision that covers all children of the appropriate age and a conviction that it is the responsibility of the regular system to educate all children.

The current study reveals that most pupils with autism and pupils with intellectual impairment in inclusive education are being recognized as such and have been deliberately placed in a mainstream setting, either to promote an inclusive education agenda or because there are no special schools available. This finding concurs with the study by Reed and Osborne (2014) who observed that sometimes pupils with autism and pupils with intellectual impairment are in mainstream schools who have not been diagnosed and who have developed strategies to cope with the problems that this form of education presents for them. Failure than that, a remarkably high number of children in mainstream school may display signs of autism in diagnostic tests, but those children either do not require or do not receive any help.

Several studies have recorded positive outcomes on the inclusion of the pupils with autism and pupils with intellectual impairment in the learning processes. Hunt, et al. (1994) investigated the academic achievement of students with multiple, severe disabilities in the context of cooperative learning groups in inclusive classrooms. They demonstrated empirically that pupils with disabilities could acquire basic

communication and motor skills through interactions with peers without disabilities who provided them with cues, prompts, and consequences.

Hollowood, et al. (1994) investigated the degree to which the presence of students with severe disabilities in inclusive classrooms affected the time allocated for instruction, the actual time used for instruction, and students' engaged time. Classrooms with and without pupils with severe disabilities were compared on all three variables. The average time allocated and used for instruction was comparable for both types of classrooms.

There were no differences in the percentage of time typical pupils were engaged in instruction across the two classroom types. This was a significant finding, as it demonstrated that the presence of pupils with severe disabilities, even those with challenging behaviours, did not negatively impact the amount of engaged time for typical learners. Berg (2004) argues on another advantage of inclusion for a special education learner is the opportunity to make new friends and share new experiences. The student is exposed to a whole new sector of the student population that they are typically not exposed to in special education classroom. They are able to develop friendships with their same age peers, which leads to greater acceptance by their peers in and out school community. This also enables students with disabilities to develop friendships in their neighbourhood. However, students with disabilities sometimes leave the regular education classrooms with low-self esteem and a low self-concept. Some special education pupils have reported that life in the mainstreaming was characterized with by fear, frustration, ridicule and isolation

(Salend, 2001). They often felt depressed, overwhelmed and academically inadequate compared to their classmates without disabilities.

A large body of research has identified effective instructional options for inclusive classrooms, including the use of specific educational contexts (e.g. grouping strategies), techniques, curricula, and assessment methods (Hunt, et al., 1994; Katz & Merinda, 2002). Use of these strategies appears to facilitate the academic and social success of pupils both with and without disabilities. They also document the effectiveness of collaboration as a strategy for improving student outcomes in inclusive settings. Emphasise on successful teaming of teachers, related service providers, and parents in implementing support plans for pupils with severe disabilities and typical peers considered academically at-risk.

Furthermore, UNESCO (2004) clearly put it as essential that, education must be viewed as a facilitator in everyone's human development and functionality, regardless of barriers of any kind, physical or otherwise. The disability must never be a disqualifier. Adequate resources must be matched with political will, and constitute pressure maintained to governments to live up to their obligation. In a similar argument, Tanzania Education Network [TEN/MET] (2007) advocated for Tanzania in which all people, especially pupils, enjoy access to participatory, meaningful, learning opportunities, in order to realize their fullest potential and to enhance social integration. Pupils with mental health and learning disorders including pupils with autism face frequent discipline and school failure, which can lead to problems later in life. Emotional and behavioral problems can lead to office discipline referrals,

school avoidance, suspension and being left back. Pupils with autism and pupils with intellectual impairment can also lead students to drop out of school entirely.

Pupils with autistic spectrum disorder often lack sufficient speech to communicate their social or academic needs or have impairment in play skills such as symbolic or socio-dramatic play including imaginative or pretend play (Lydon, et al., 2011). The skill to play the simplest game requiring interaction with a peer often fills the child with autism with fear and anxiety. Despite the challenges in forming friendships pupils with autism still, want to be part of a group of friends and the school playground is the place where this can happen.

5.5 Teachers' Views on Teaching and Learning for Pupils with Autism and Pupils with Intellectual Impairment in Primary Schools

This objective sought to explore views of teachers on the status problems facing teaching and learning for pupils with autism and pupils with intellectual impairment in primary schools. Teachers' views are categorized into two clusters, namely (i) views of teachers on availability of teaching and learning resources for the teaching and learning of pupils with autism and pupils with intellectual impairment and (ii) views of teachers on improving teaching and learning conditions and qualification of special education teachers. These are here under-discussed separately.

5.5.1 Teachers' Views on Availability of Teaching and Learning Resources for the Teaching and Learning of Pupils with Autism and Pupils with Intellectual Impairment

Pupils with autism and pupils with intellectual impairment often are able to process visuals such as pictures or objects well then they can process the spoken word or sign language symbols. The sign language symbol, like the spoken word, disappears once it is stated. Visuals have been found to assist students in making sense of their environment, predicting scheduled events, and anticipating changes throughout the day (Spencer & Simpson, 2009).

The essential use for visual aid in the teaching of pupils with autism is well described by Mesibov, *et al.* (2005) who stated three reasons to use visual schedules. First, visual schedules can help students with language. A visual support, along with auditory input, helps a student to comprehend what he is supposed to do next and/or the expectations for a task or portion of the day. Another reason to use a visual schedule is that it can help students with transitions. Transitions during the school day can be difficult for students with autism. Visual schedules provide a routine for the students. They can refer to the schedule during a transition, which can help to reduce inappropriate behaviours. The third reason for using visual schedules is that they may assist the student in developing independence. The student can read the schedule to know what to do next instead of relying on verbal prompts from the adults in the classroom. Pupils with autism have been described as being manipulative, inconsistent, distractible, lacking focus, and dependent on those around them.

Students with autism may not be motivated by common reinforcers that work with other students (Ministry of Education, British Columbia. 2000). They might prefer some time spent alone, time to talk to a preferred staff member, a trip to the cafeteria, an exercise routine (such as going for a walk), time to play with a desired object, music, playing in water, getting to perform a favourite routine, items that provide specific sensory stimulation, or sitting at the window

More importantly, Ghezzi, *et al.* (2014) basing on the psychological need of the Pupils with autism indicate the need of visual aid that, it deals exclusively with observable and verifiable variables and relationships between the behaviour of a child and his or her physical and social environment. Hypothetical variables and mental processes such as the "inability to represent mental states" are excluded precisely because they are unobservable and unverifiable, and because they are not useful in advancing the goals of predicting and controlling behaviour.

Parents of children with disabilities may be influenced by the substantial nature of their parenting role into accepting positions that meet the needs of the family but are not necessarily ultimately satisfying. For example, a worker may choose a contract or part-time work in order to meet family responsibilities (Watt & Wagner, 2012).

When reporting on perspectives of parents on participation of pupils with autism in Sunday school, Howell and Pierson (2010) point out that parents had many ideas of how inclusive programs might be developed and were sensitive to the effect of having a disabled sibling on their children at home and in a public place like a

church. Howell & Pierson added that the parents' foremost consideration was on positive feelings of pupils with autism toward the church is also very encouraging.

Breitenbach, *et al.* (2012) all involved staff need basic knowledge about autism and must be familiar with specific strategies that will be in use for a particular student in order to maintain some consistency. Training included an overview of the learning characteristics of individuals with autism and an introduction to behavioural teaching strategies. Errorless learning and incidental teaching methods were key training components. While this provided good basic information, more practice was needed in order for the staff to become skilled at implementing these methods in the classroom.

Najjingo (2009) studied on challenges of accessing all-inclusive education services by pupils with disabilities and observed that inclusive schools are faced with a lack of awareness and ignorance of disability friendly facilities (facilities like ramps, special toilet facilities, learning materials by the parents). While the teachers and key respondents by virtue of their education levels, roles and responsibilities being policy formulators and implementers have been exposed to the requirements of pupils with disabilities.

5.5.2 Teachers Views on Improving Teaching and Learning Conditions and Qualification of Special Education Teachers

The study found that most teachers during interviews commented on the deliberate effort of employing special education teachers and supporting staffs for handling teaching and learning tasks in class as well as during co-curriculum activities. Their

arguments are similar to findings by Mmari, *et al.* (2008) and Mboya, *et al.* (2008) who suggested for improving training of teachers teacher training colleges so that teachers acquire skills to cope with education for the learners with disabilities within inclusive education. It is equally essential that the Tanzanian government and responsible parties to focus on enabling capacity of addressing the needs or to develop technologies that are appropriate for pupils with disabilities including ICT facilities, other related basic technologies or aids pertinent to special needs education such as glasses, crutches, and braillers.

Training opportunities for preschool staff are also very limited. In recent years there has been a growth in courses relating to children with special needs but these do not address the specific needs of children with autistic spectrum disorders (McConkey & Bhlirgri, 2003). Hence the development of local training courses for preschool personnel should be a priority. The main requirement for this to happen is to have knowledgeable tutors with expertise in autism and also in early childhood education.

Teacher training and teacher effectiveness are essential in successful teaching and learning of the Pupils with autism and pupils with intellectual impairment, Koegel, Matos-Fredeen & Lang (2011) comment that, aides and instructional assistants that often spend the bulk of the day working with pupils with autism report that they feel underqualified and undertrained for their position.

In line with the argument that places the teacher as paramount in effective learning of pupils with autism research, findings by Davis (2013) stresses on the teacher's understanding, training and experience in developing relationships with pupils with

autism is key to working with these students. It is also important that the teacher knows and understands a variety of strategies that work specifically for that particular child. The teacher needs to understand how a pupil with autism truly learns and can work to build an accepting environment with other students and staff on site. Parents also play a role in the child's education. In addition to that Davis (2013) demarcate on the role of parents that the parent needs to be supportive of the teacher. Parent communication, parent training, and validating parent input all help build an education that is consistent and collaborative. Success for the student depends upon a parent who also understands the strategies that work for the organization, sensory regulation and social thinking and implements them at home.

Some other scholars focused on collaboration among special education teachers, regular teachers and other related service providers as a critical factor in implementing effective inclusive education (Soto, *et al.*, 2001). Opportunities to collaborate and consult with professional peers show evidence of increased instructional skills as well as decreased tendencies to make referrals to special education in the education system where they are scarce. In findings by Eni-Olorunda (2013) the regular teachers felt they do not have adequate experience in teaching these pupils. The researcher found that majority of the teachers (84.1%) disagreed that culture has nothing to do with the exclusion of pupils with intellectual impairment in the regular classroom. It is further not linked to differences in cultural beliefs.

Educational supports for teachers are critical. Hall and Isaacs (2012) found that a teacher who feels supported has more energy and enthusiasm in her classroom.

Support can come in the form of physical tools: visual charts, audiotapes, manipulatives, and other learning support. The one-on-one aide can also bring the child's voice to the class. Adapting the learning environment to accommodate special sensitivities is a form of support: lighting source, window distractions, doors and bells, quiet spaces. Similar to arguments by Hall and Isaac (2012), Aro, *et al.* (2011) came out with other more challenging conditions including lack of adequate teaching and learning resources is a problem that is faced by many African countries; lack of teachers in some schools, especially rural schools, affects the learning and teaching process in more general; number of students is quite high in most classes, with an average of about 50-60 pupils per class, depending on the location of the school. Thus, these challenges complicate further provision of special education for pupils with autism and pupils with intellectual impairment.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter concludes the study and presents its contribution to the existing body of knowledge about the performance of pupils with autism and pupils with intellectual impairment in Tanzania. The chapter constitutes four major sections: major findings of the study, implications of the findings, conclusions drawn basing on the key findings and recommendations for the policy and future research.

6.2 Summary of the Study

This study sought to assess the performance of pupils with autism and pupils with intellectual impairment in primary schools in Tanzania. The study was guided by the following specific objectives: to compare academic performance of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms, to assess the adequacy and appropriateness of teaching-learning resources for pupils with autism and pupils with intellectual impairment in primary schools, to examine teaching-learning approaches for pupils with autism and pupils with intellectual impairment in primary schools and to find out views of teachers on current status and problems that teachers face in teaching pupils with autism and pupils with intellectual impairment.

Literature was reviewed in Chapter Two. Theories and conceptualization of the autism and intellectual impairment, as well as practices in teaching and learning of pupils with autism and pupils with intellectual impairment, were critically analysed.

The study adopted the qualitative approach in assessing the performance of pupils with autism and pupils with intellectual impairment. The study involved 21 pupils with autism and 29 pupils with a intellectual impairment and 19 teachers.

6.3 Summary of the Major Findings

The following are summaries of the key findings of the study:

6.3.1 Academic Performance of Pupils with Autism and Pupils with Intellectual Impairment in Special and those in Inclusive Classrooms

As the first objective is concerned, the findings revealed that both pupils with autism and pupils with intellectual impairment performed lower level academic tasks. They varied much on more complex learning tasks. In general performance of pupils with a intellectual impairment was higher comparing to pupils with autism regardless of the education setting.

6.3.2 Adequacy and Appropriateness of Teaching and Learning Resources for Pupils with Autism and Pupils with Intellectual Impairment

It was noted that teaching and learning resources for pupils with autism and pupils with intellectual impairment in all the surveyed primary schools were inadequate and less appropriate for the educational needs pupils with autism and pupils with intellectual impairment. On the side of pupils with autism inadequacy is mostly attributed to the financial constraints that face schools due to limited budgeting for primary education in the country.

6.3.3 Teaching-Learning Approaches for Pupils with Autism and Pupils with Intellectual Impairment in Primary Schools

Findings reveal that special education teachers utilize varieties of teaching and learning approaches in facilitating learning for pupils with autism and pupils with intellectual impairment. All that is needed is to fulfill educational requirement for pupils with autism and pupils with intellectual impairment that they are unique category of learners who require effective use of approaches that would yield to required performances.

6.3.4 Teachers' Views on Teaching and Learning Pupils with Autism and Pupils with Intellectual Impairment in Primary Schools

The study explored several positive contributions on the status of education for pupils with autism and pupils with intellectual impairment in primary education. Interviews with heads of schools and special education teachers were focused the role of primary education to pupils with autism and pupils with intellectual impairment, adequacy of teaching and learning resources, teaching and learning strategies, attainment of the primary education and curriculum for pupils with autism and pupils with intellectual impairment and ways to improve teaching and learning process for pupils with autism and pupils with intellectual impairment. When giving suggestion on ways to improve teaching and learning for pupils with autism and pupils with intellectual impairment, all informants were concerned with increasing special education teachers. They showed a need for deployment of special education teachers for covering educational requirement of all pupils with disabilities in primary schools in Tanzania.

6.4 Conclusions

In the light of the findings from the study, the following conclusions were made: Firstly, though pupils with intellectual impairment performed highly comparing to pupils with autism, it was noted that both managed to perform tasks under low demanding academic tasks. There is a lot to be done to enable them to acquire competencies as outlined in the curriculum for pupils with autism and pupils with intellectual impairment

Secondly, it was obviously noted that learning between pupils with autism and pupils with intellectual impairment and pupils without disabilities were different in both academic and as well as general educational practices and management. Despite the difficulties in establishing appropriate parameters for them in comparing all academically selected tasks, but failure to acquire proper facilitation and teaching and learning approaches pupils with autism and pupils with intellectual impairment would hardly learn efficiently. This challenge remains critical in enabling provision of quality primary education for pupils with autism and pupils with intellectual impairment in Tanzania.

Thirdly, teaching and learning resources in the sampled primary schools were inadequate and at time inappropriate. This situation has a negative implication for the provision of quality special need education for pupils with autism and pupils with intellectual impairment. Hence, make it most difficult in the acquisition of competencies required for their lives after school cycle.

Fourthly, achievement in primary education for pupils with autism and pupils with intellectual impairment is one important aspect in the field of special need education in Tanzania. Views and experiences exposed by special education teachers for improving inclusive education were made in consideration that all concerns raised should be taken positively for the betterment of pupils with autism and pupils with intellectual impairment in Tanzania.

6.5 Contribution of the Study

Based on the research findings, the study presents three contributions. Firstly, the findings have revealed that performance of pupils with autism and pupils with intellectual impairment are not relatively high due to the fact that only lower level of academic tasks was selected for the comparison purposes. For pupils with autism and pupils with intellectual impairment to pursue well in primary schools ensuring of suitable learning environment is paramount. Therefore, serious efforts should be taken by stakeholders in education including the government through the Ministry of Education, Science and Technology, community, parents for pupils with autism and pupils with intellectual impairment and others to ensure that all inclusive primary schools are provided with sufficient resources for enabling them to acquire primary education and live independently after the school cycle.

Secondly, pupils with autism need curriculum contents that address their disability issues. The most common challenge faced by special education teachers in teaching pupils with autism in Tanzania is that no specific syllabi that prescribe content and teaching guidance that address educational needs of pupils with autism. Therefore, the institute responsible for curriculum development (Tanzania Institute of

Education) should review the curriculum for primary education. Hence, the curriculum content relevant for educational needs of pupils with disabilities would be attained.

Thirdly, findings revealed that the status of the provision of special education at primary education is influenced by several issues as shared by the heads of schools and teachers. The results suggest, among other things increasing of special education teachers in inclusive primary schools with regard to all types of disabilities, ensuring sufficient and appropriate teaching and learning resources for educational needs of pupils with disabilities, and provision of training and increase incentives for special education teachers. There has been a practice that regular teachers are assigned to teach pupils with autism and pupils with intellectual impairment. Some of teachers without SNE knowledge and skills perceive pupils with disabilities to be a disturbance to the class. They accuse pupils with autism and pupils with intellectual impairment that cause destructions of their lesson with delays in presentations and completion of the lessons planned in a given period of time. So without deliberate efforts of in-service training expected goals of inclusion could hardly be attained. Similarly, teacher education for special education at diploma and certificate levels uses a curriculum that is meant to prepare student teachers for teaching in special or inclusive classroom settings.

6.6 Recommendations

6.6.1 Recommendations for Action

Based on presented results, discussion and conclusions, several issues would need to be addressed to improve the performance of pupils with autism and pupils with

intellectual impairment in primary schools. The following recommendations are among the issues that can be addressed to enhance the performance of pupils with autism and pupils with intellectual impairment in primary schools in Tanzania:

i) There is a need to fully facilitate the teaching and learning processes for pupils with autism and pupils with intellectual impairment so that they acquire competencies that would enable them to live self-reliant and independent life after the primary education cycle. The study recommends on the need to deploy more special education teachers in inclusive primary schools who will be available to serve for all pupils with special education needs in Tanzania.

ii) Provision of in-service training for regular teachers and special education teachers should be given frequently so as to attend effectively to emerging issues and problems in special need education. This is essentially important to consider for the majority of rural Tanzania where schools and facilities for pupils with disabilities, in general, are extremely inadequate.

iii) The study has shown that pupils with autism and pupils with intellectual impairment benefit much in the inclusive setting of education. Hence, with the deliberate financing of special needs pupils inclusive primary schools in Tanzania would be able to accommodate all pupils with disabilities.

iv) Collective efforts should be made to ensure accessibility of primary education for pupils with autism and pupils with intellectual impairment. Pupils with autism by their nature are very sensitive to situations of the learning

environment. Thus, the government of Tanzania should improve the financing of special need education with regard to special requirements for pupils of different categories of disabilities.

6.6.2 Recommendations for Further Research

i) This study was limited to the performance of pupils with autism and pupils with intellectual impairment in Dar es Salaam and Mbeya regions. Another study could be done in order to establish differences in other regions and with the inclusion of pupils with other disabilities other than autism and intellectual impairment.

ii) A similar study can be carried out to include private and public schools on issues responsible for the accommodation of pupils with autism and pupils with intellectual impairment.

iii) Other studies should be conducted on teaching and learning approaches suitable for pupils with autism and pupils with intellectual impairment in Tanzanian learning environment. These types of studies will develop relevant teaching and learn approaches for varied learning situations regardless of other intervening factors of the schools in the country.

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APPENDICES

APPENDIX A

Observational Checklist for Teaching-Learning Resources

Numbers against each issue below describes the extent of availability of teaching-learning resources for pupils with autism and pupils with intellectual impairment in selected schools. 1 = Extremely inadequate; 2 = Inadequate; 3 = Adequate; and 4 = Extremely adequate:

1.1	**Availability of teaching-learning resources**				
i.	Availability of visual symbols and photos to clarify verbal instructions.	1	2	3	4
ii.	Proper visual organization of materials in a classroom.	1	2	3	4
iii.	Enough letter trays.	1	2	3	4
iv.	Every child has a desk.	1	2	3	4
v.	A map of the contents of the desk or locker.	1	2	3	4
vi.	Availability of newspapers and magazines.	1	2	3	4
vii	Containers labeled with a word and a picture to explain the contents.	1	2	3	4
viii	Presence of baskets or shelves used to store children materials.	1	2	3	4
ix.	Presence of supportive environment to encourage the child to work.	1	2	3	4
x.	Appropriate placement of visual symbols and	1	2	3	4

	photos.				
xi	The arrangement of the classroom furniture and other learning facilities.	1	2	3	4
xii	Right lighting in the classroom	1	2	3	4
xiii	Presence of a library area with seat cushions and floor mats	1	2	3	4
xiv	Specific T-L resources for number skills (such as cards for numbers, abacus, simple materials from the surrounding for arithmetic tasks, etc.)	1	2	3	4
xv	Specific T-L resources for vocational skills (including real thing on specified sub-topics, such as pieces of clothes, thread for needlework and others).	1	2	3	4
xvi	Specific T-L resources for communication skills (such as, video, tape recorder, cards with a variety of words in relation to sub-topics taught, charts, etc.	1	2	3	4

Appendix B

Semi-structured Interview Schedule for SNE Teachers

Dear respondent,

I am a Ph.D. candidate at the Open University of Tanzania. As part of the requirements for the award of this degree, I am undertaking a study on *"**Performance of Pupils with Autism and Pupils with Intellectual Impairment in Special and Inclusive Classrooms in Primary Schools in Tanzania**"* Kindly feel free to fill in this questionnaire as honestly as possible. All responses provided in this questionnaire will be used only for academic research purposes.

I thank you for your kind attention.

1.0 General information

Region _____

Name of District _____

Name of School _____

Sex: Male [ ] Female [ ]

Education level _____

2.0 Guiding Questions

i) In your opinion, how can you rate the appropriateness in organization of visual symbols and photos to clarify verbal instructions? (a) Excellent (b) Very good (c) Good (d) Poor

ii) What is the usefulness of map of the contents, letter trays and containers labeled in teaching and learning of pupils with autism and pupils with intellectual impairment? (a) Excellent (b) Very good (c) Good (d) Poor

iii) To what extent the presence of teaching and learning environment at your school encourage pupils to work independently? (a) Excellent (b) Very good (c) Good (d) Poor. Please, elaborate your response

iv) Are the spaces and working areas sufficient for pupils' learning?

v) Comment on the appropriateness of the T-L resources specified for number skills for pupils with autism and pupils with intellectual impairment.

vi) Comment on the appropriateness of the T-L resources specified for communication skills for pupils with autism and pupils with intellectual impairment.

vii) Comment on the appropriateness of the T-L resources specified for vocational skills for pupils with autism and pupils with intellectual impairment.

3.0 comment on how to improve the use of T-L resources that are essential for pupils with autism and pupils with intellectual impairment in primary schools.

Appendix C

Pupil's Assessment Tool (Pupil's Test)

2.1 Background Information

i. Region/district_____

ii. School/centre name_____

iii. Type of disability: Autism [ ]

Mental retardation [ ]

iv. Time: From _____ to _____

v. Observation venue (e.g. in classroom or outside) _____

vi. Child identity _____

vi. Gender: Male [ ] Female [ ]

vii. Age: _____

B1: Assessment of number skills capabilities at level TWO of the pupils with autism and pupils with intellectual impairment in special units and those in inclusive classrooms

2.2.1 Counting real things 1-30 – The researcher will display real things (*attached*) and each pupil with autism and intellectual impairment in the class will individually count them.

Pictures of real things for counting:

i. 5 butterflies
ii. 11 goats
iii. 13 shoes
iv. 19 houses and
v. 21 cats (*all attached*).

Test Score Sheet:

Circle the level of academic performance shown by the child.					
Counting numbers 1-30	1-10	1-15	1-20	1-30	None

2.2.2 Recognizing number 1-30 – The researcher will display cards with numbers and each pupil with autism and intellectual impairment will be asked to recognize numbers shown in the cards.

9	**10**	**3**	**14**	**5**
8	**7**	**15**	**1**	**2**
21	**24**	**28**	**23**	**26**
16	**17**	**20**	**19**	**18**
27	**22**	**30**	**25**	**29**
11	**12**	**13**	**4**	**6**

Test Score Sheet:

Circle the level of academic performance shown by the child.					
Recognition of numbers 1-30	1-10	1-15	1-20	1-30	None

2.2.3 **Writing numbers and mathematical operations** – the researcher will provide simple mathematical tasks ranging from 1 to 30.

2 + 2 = ___	**2** **- 2**	**2 x 3 = ___**	**2 ÷ 2 = ___**
3 **+3**	**4 – 4 = ___**	**4** **x 3**	**4 ÷ 2 = ___**
6 + 6 = ___	**13** **- 6**	**3 x 3 = ___**	**6 ÷ 2= ___**
12 + 7 = ___	**17** **- 4**	**2** **x 2**	**15 ÷ 5 = ___**
11 + 8 = ___	**9 – 2 = ___**	**4 x 4 = ___**	**24 ÷ 6= ___**
15 + 7 = ___	**5 – 11 = ___**	**5 x 5 = ___**	**16 ÷ 4= ___**
18 + 6 = ___	**22 – 5 = ___**	**10 x 3 = ___**	**15 ÷ 1= ___**
9 **+15**	**10** **- 5**	**3** **x 5**	**9 ÷ 3= ___**
17 + 9 = ___	**19 – 9 = ___**	**12 x 2= ___**	**6 ÷ 3= ___**
14 **+8**	**23** **- 11**	**8** **x 3**	**8 ÷ 1= ___**

Test Score Sheet:

Tick the level of academic performance shown by the child in the appropriate column.	Accurately	Inaccurately
A child scored all additional tasks		
A child scored all subtraction tasks		
A child scored all multiplication tasks		
A child scored all division tasks		
A child managed to work with horizontal mathematical sentences		
A child managed to work with vertical mathematical sentences		
A child recognized and used mathematical signs correctly		

B2: Assessment of communication skills capabilities at level TWO of the pupils with autism and pupils with intellectual impairment in special units and those in inclusive classrooms

2.3.1 Short expressions - In this type of assessment, the researcher will ask each child to express briefly on issues below:

i. What is your name?

ii. What is the name of your school?

iii. What is the name of your teacher?

iv. Give names of your two friends?

a) _____

b) _____

v. Who takes you to school?

Test Score Sheet:

	Tick the level of academic performance shown by the pupil.	Accurate	Inaccurate
i.	A child managed to mention his/her name		
ii.	A child managed to name his/her school		
iii.	A child at least give one name of a teacher		
iv.	A child at least give one name of a friend		
v.	A child managed to name a person who takes him/her to school		

2.3.2 Telling/Listening stories - In this type of assessment, the researcher will narrate a short story and will task each pupil as indicated below:

A story:

[Katika kijiji kimoja, paliishi mama mmoja ambaye alikuwa mjane. Muda mfupi tu kabla ya mumewe kufariki walijaliwa mtoto mmoja wa kike, aitwaye ASHA ambaye huyo mama alimlea kwa shida na taabu nyingi. Hata hivyo mama na mtoto wake walipendana sana. Asha alijitahidi kusoma na kufanya kazi kwa bidii sana. Alipokuwa kijana alikwenda kwa tajiri mmoja, aitwaye Mzee RICHADI kuomba kazi ili awaeze kumsaidia mama yake. Tajiri alikubali na kumuahidi kwamba angemlipa vizuri sana. Kila alipopata fedha aliweza kumtunza mama yake na maisha yao yalikuwa mazuri.]

i) Allow each pupil to try re-telling the story?

ii) Giving these questions for each pupil to respond:

a) Who is a widow? _____

b) What is the name of the child in the story? _____

c) What is the sex of that child? _____

d) Who worked hard? _____

e) Who was taking care of her mother? _____

f) What is the name of the rich person? _____

Test Score Sheet:

	Tick the level of academic performance shown by the pupil.	Somehow tried	Halfway	Excellent	Uncertain
i.	A child managed to repeat a story				
ii.	A child managed to name people in the story				
iii.	A child at least give one issue from a story				

2.3.3 Description of the family - In this type of assessment, the researcher will display a picture of ideal family ask each pupil to name family members.

i. Identify the following members (*name are optional*) of a family from the picture?
   a) Father _____
   b) Mother_____
   c) Brother_____
   d) Sister _____
   e) Others _____

ii. How many people are there at home?

Test Score Sheet:

	Tick the level of academic performance shown by the pupil.	Somehow tried	Halfway	Excellent	Uncertain
i.	A pupil managed to identify all family members correctly.				
ii.	A pupil managed to name at least two members of the family.				
iii.	A pupil at managed to give the number of family members.				

B3: Assessment of vocational skills capabilities at level TWO of the pupils with autism and pupils with intellectual impairment in special units and those in inclusive classrooms

2.4.1 Recognition pictures/figure – Each pupil will be asked to names of real thing (*attached*) as indicated below:

a) Tomato b) Capsicum

c) Lady finger d) Onion

e) Cheetah f) Tiger

g) Zebra h) Giraffe.

2.4.2 Building puzzle – Each pupil will be given sets of two images with missing pieces to complete them.

a) Tomato puzzle block

b) Zebra puzzle block.

Test Score Sheet for 2.4.1 and 2.4.2:

	Tick the level of academic performance shown by the pupil.	Somehow tried	Halfway	Excellent	Uncertain
i.	Recognition of vegetables related pictures				
ii.	Distinction of vegetables related pictures				
iii.	Completion of tomato puzzle block				
iv.	Completion of zebra puzzle block				

Appendix D

Interview Guide for Head of Schools and Special Needs Education Teachers

Dear respondent,

I am a Ph.D. candidate at the Open University of Tanzania. As part of the requirements for the award of this degree, I am undertaking a study on *"**Performance of pupils with autism and pupils with intellectual impairment in special and inclusive classrooms in Primary schools in Tanzania**"* Kindly fill free to participate as honestly as possible. All responses provided in this interview will be used only for academic research purposes.

I thank you for your kind attention.

General information

Region _____

Name of District _____

Name of School _____

Sex: Male [ ] Female [ ]

Education level _____

Views on Schooling of the Pupils with Autism and Pupils with Intellectual Impairment in Special and Inclusive Classrooms in Primary Schools in Tanzania

1. How far do you think, primary education enables pupils with autism and pupils with intellectual impairment to become independent persons in their lives?
2. In your opinion, how do you evaluate the adequacy of T-L resources for pupils with autism and pupils with intellectual impairment in special units and inclusive classrooms?

3. What are your opinion on academic performance of pupils with autism and pupils with intellectual impairment in special units and inclusive classrooms?
4. What comment can you give on teaching-learning strategies used in schools for educating pupils with autism and pupils with intellectual impairment in special units/inclusive classrooms and/or ordinary primary schools?
5. What do you think can be done so that goal of primary education curriculum for pupils with autism and pupils with intellectual impairment are fulfilled?
6. What are your comments on how to improve the T-L processes for pupils with autism and pupils with intellectual impairment in primary schools in special units and inclusive classrooms?
7. Are there any other issues related to education for pupils with disabilities that you wish to put in place for the betterment of these pupils?

Thank you very much for your time

Appendix E

Tools for Collection of Related Data in Selected Inclusive Primary Schools

Name of school/unit _____

District _____ Region _____

Statistics for upils with autism and pupils with intellectual impairment (2004-2013)

Year	Enrolment			Graduation			Finished the cycle in 7 Years		Finished the cycle in more than 7 yrs	
	Male	Female	Total	Male	Female	Total	Male	Female	Male	Female
2004										
2005										
2006										
2007										
2008										
2009										
2010										
2011										
2012										
2013										

Teachers' statistics and qualification

	Teacher's name	Level of education	College/ University	Specialty in Special Education	Experience in teaching

Appendix F

Dear respondents,

I am a Ph.D student at the Open University of Tanzania, as part of the requirements for the award of this degree, I am undertaking a study on *"**Performance of Pupils with autism and pupils with intellectual impairment in Special and Inclusive Classrooms in Primary Schools in Tanzania.**"* I kindly request you to take part in my study by providing the required information.

As you agree to take part in the research process, I would like to assure you the following: First, there are no wrong answers. All information provided will be treated fairly with great respect. Secondly, your identity and that of your school will be concealed so that nobody knows who gave the information. If you take part in interviews your record and some direct quotes may be made out of it. Third, all information you provide will be used accordingly to the purpose of this study and further publications only. Nobody else, except the researcher, will access your information. Fourth, it is important to understand that whenever you feel irritated, you can withdraw from participating, and you have freedom to answer or not to answer some questions. However, I encourage you to respond to all questions. Lastly, this consent form will be kept by the researcher himself and will remain out of reach of other people.

Kindly let me know if you have accepted to take part in my study by writing your full name and signing the consent agreement in the end of this form.

Thank you.

I _____, have read and understand the above explanation and the nature of the study as well as my role as a respondent.

I declare that my acceptance to participate in this study completely voluntary, and that, I shall decline from answering any question and/or withdraw from participating, if I feel irritated. I also understand that the identity of my institution and I will remain strictly confidential and all information will be used as per agreement, and that I will always remain anonymous whenever quoted. I accept to be recorded. Thus, to this end with my own consciousness, I agree to take part in this study.

_____ ____/____/2014

Signature Date

Appendix G

THE OPEN UNIVERSITY OF TANZANIA

DIRECTORATE OF RESEARCH, PUBLICATIONS AND POSTGRADUATE STUDIES

P.O. Box 23409
Dar es Salaam, Tanzania
http://www.openuniversity.ac.tz

Tel: 255-22-2666752/2668445 Ext.2101
Fax: 255-22-2668759
E-mail: drpc@out.ac.tz

Ref. No. HD/E/749/T.12 **Date: 3rd June, 2014**

Regional Administrative Secretary,
Dar es Salaam Region,
DAR ES SALAAM

RE: RESEARCH CLEARANCE

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. Act number 7 of 1992 has now been replaced by the Open University of Tanzania Charter which is in line with 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 the staffs 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 research clearance to both staffs and students of the university on behalf of the Government of Tanzania and the Tanzania Commission for Science and Technology.

The purpose of this letter is to introduce to you **Mr. Peter E. Mwamwaja** a PhD student in the Faculty of Education at the Open University of Tanzania **Registration No. HD/E/749/T.12.** By this letter **Mr. Peter E. Mwamwaja** has been granted clearance to conduct research in the country. The title of his research is **"*The Performance of Autistic and Mentally Retarded Children in Special Inclusive Schools in Tanzania on Selected Academic Tasks.*"** The research will be conducted in Dar es Salaam Region.

The period which this permission has been granted is from July, 2014 to September, 2014..

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,
THE OPEN UNIVERSITY OF TANZANIA

Prof. S. Mbogo
For: VICE CHANCELLOR
THE OPEN UNIVERSITY OF TANZANIA

Appendix H

The United Republic of Tanzania
PRIME MINISTER'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

DAR ES SALAAM REGION

Phone Number: 2860081/2863716
In reply please quote:

Reg. No. FA.282/293/01

REGIONAL COMMISSIONER'S OFFICE,
P.O. Box. 5429,
DAR ES SALAAM

Date: 31/7/2014

District Administrative Secretary,
KINONDONI ✓

RE: RESEARCH PERMIT

~~Pro/Dr~~./Mr./~~Mrs./Ms/Miss~~: PETER MUDAMWAKA is a student/~~researcher~~ from OPEN UNIVERSITY OF TANZANIA has been permitted to undertake a field work research on Performance of Autistic Children and Differently Abled in Tanzania in Selected Tasks
from AUGUST 2014 to DECEMBER 2014

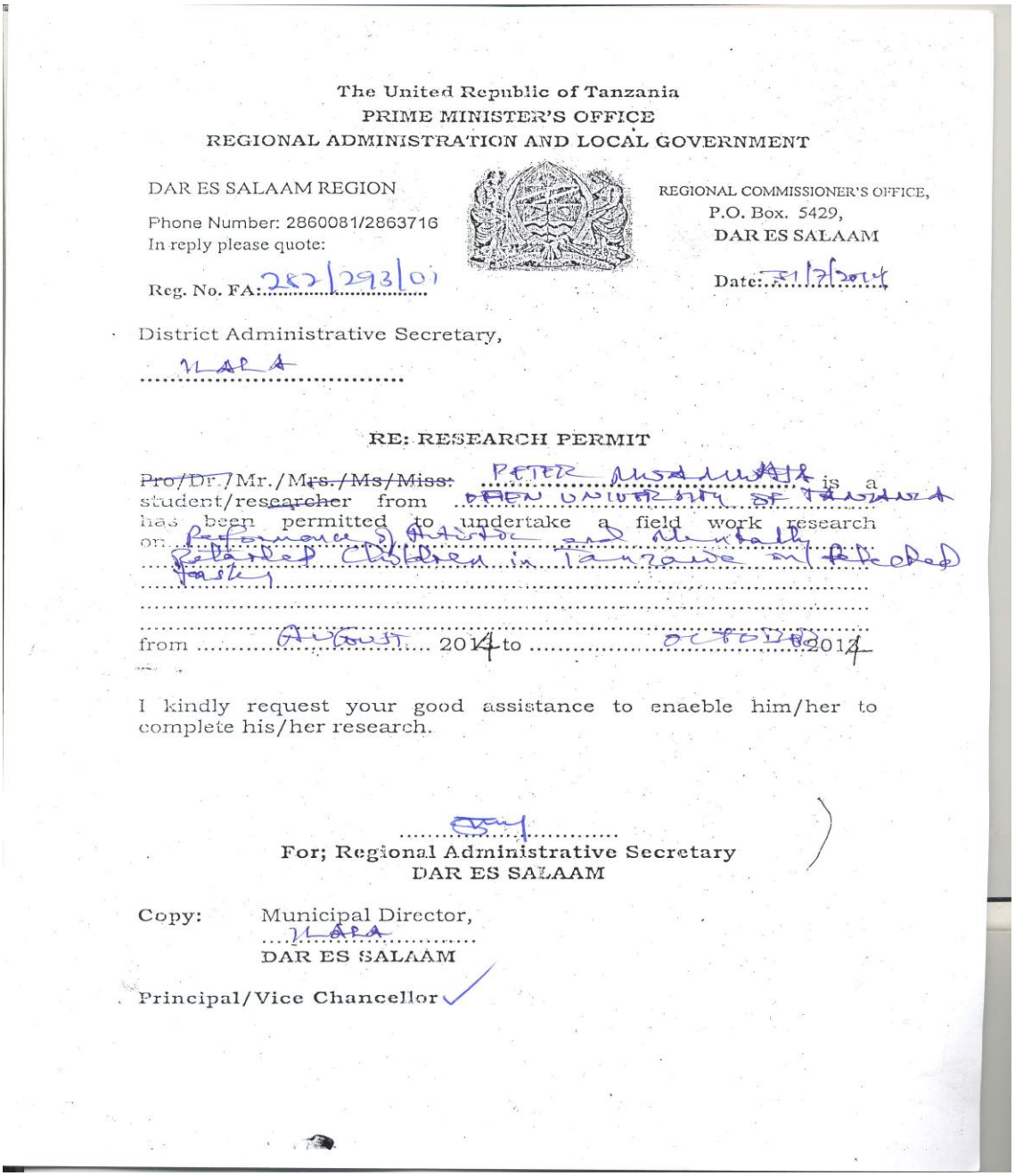
I kindly request your good assistance to enaeble him/her to complete his/her research.

For; Regional Administrative Secretary
DAR ES SALAAM

Copy: Municipal Director,
KINONDONI
DAR ES SALAAM

Principal/Vice Chancellor

Appendix I



The United Republic of Tanzania
PRIME MINISTER'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

DAR ES SALAAM REGION

Phone Number: 2860081/2863716
In reply please quote:

Reg. No. FA: 282/293/01

REGIONAL COMMISSIONER'S OFFICE,
P.O. Box. 5429,
DAR ES SALAAM

Date: 31/7/2014

District Administrative Secretary,
ILALA

RE: RESEARCH PERMIT

~~Pro/Dr./~~Mr./~~Mrs./Ms/Miss:~~ PETER MUSA MUSAJI is a student/~~researcher~~ from OPEN UNIVERSITY OF TANZANIA has been permitted to undertake a field work research on Performance Analysis and Mental Health Related Challenges in Tanzania Mainland Public

from AUGUST 2014 to OCTOBER 2014

I kindly request your good assistance to enaeble him/her to complete his/her research.

For; Regional Administrative Secretary
DAR ES SALAAM

Copy: Municipal Director,
ILALA
DAR ES SALAAM

Principal/Vice Chancellor

Appendix J

The United Republic of Tanzania

Prime Ministers' Office

REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

ILALA DISTRICT
Phone Address:

Phone No: 2203185/2203182

In reply quote: **Ref. No:** AB.60/87/01/

DIR PETER
ILALA MUNICIPAL

DISTRICT COMMISSIONER'S OFFICE
ILALA DISTRICT
P. O. Box 15486,
DAR ES SALAAM

Date: 21/08...2014....

RE: RESEARCH PERMIT

Prof./~~Dr.~~/Mr./~~Mrs./MS./Miss:~~ PETER E. MSAMWAJA
from The OPEN UNIVERSITY OF TANZANIA, she/~~he~~ has been permitted to undertake a field work research on "Performance of Autistic and mentally Retarded Children in Primary Schools"

The case study at Ilala District from August 2014 *to* October 2014

Therefore, you are asked to give the said researchers necessary assistance and Cooperation.

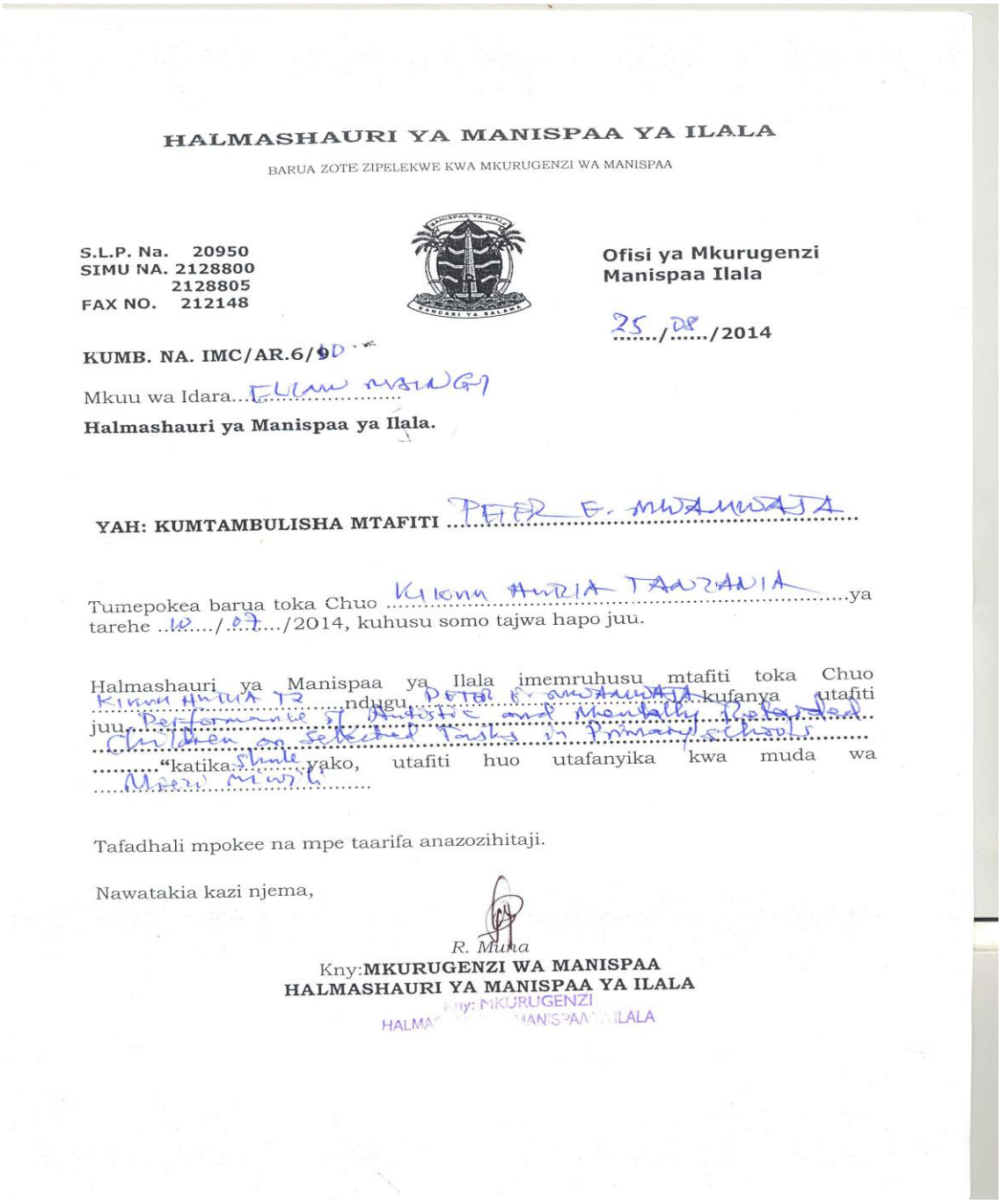
District Administrative Secretary
ILALA

KATIBU TAWALA (W) ILALA

Copy: D.E. MSAMWAJA

Principal/Vice Chancellor,
OUT-TZ

Appendix K



HALMASHAURI YA MANISPAA YA ILALA

BARUA ZOTE ZIPELEKWE KWA MKURUGENZI WA MANISPAA

S.L.P. Na. 20950
SIMU NA. 2128800
2128805
FAX NO. 212148

Ofisi ya Mkurugenzi
Manispaa Ilala

25/08/2014

KUMB. NA. IMC/AR.6/90

Mkuu wa Idara...ELIAW MSUNGI.....
Halmashauri ya Manispaa ya Ilala.

YAH: KUMTAMBULISHA MTAFITI ...PETER E. MWAMWAJA.....

Tumepokea barua toka Chuo ...KIKUU HURIA TANZANIA.....ya tarehe ..12..../..07..../2014, kuhusu somo tajwa hapo juu.

Halmashauri ya Manispaa ya Ilala imemruhusu mtafiti toka Chuo KIKUU HURIA TZ ndugu PETER E. MWAMWAJA kufanya utafiti juu..Performance of Autistic and Mentally Retarded Children on selected Tasks in Primary schools ..."katika shule yako, utafiti huo utafanyika kwa muda wa Mezi mitatu.

Tafadhali mpokee na mpe taarifa anazozihitaji.

Nawatakia kazi njema,

R. Muna
Kny:**MKURUGENZI WA MANISPAA**
HALMASHAURI YA MANISPAA YA ILALA

Kny: MKURUGENZI
HALMASHAURI YA MANISPAA YA ILALA

Appendix L

HALMASHAURI YA MANISPAA YA ILALA

BARUA ZOTE ZIPELEKWE KWA MKURUGENZI WA MANISPAA

S.L.P. Na. 20950
SIMU NA. 2128800
2128805
FAX NO. 2121486

OFISI YA MKURUGENZI,
MANISPAA YA ILALA.

Kumb.Na. IMC/EL/R.4/VOL.IV/13

29/08/2014

Mwl. Mkuu,
S/Msingi Uhuru Mchanganyiko / Msimbazi Msoto
Manispaa ya Ilala

YAH: KIBALI CHA KUFANYA UTAFITI KWA MWANAFUNZI WA CHUO KIKUU HURIA NDUNGU PETER E. MWAMWAJA.

Rejea somo hapo juu.
Kibali kimetolewa kwa mwanafunzi mtajwa hapo juu kufanya utafiti juu ya "Maendeleo ya Kitaaluma kwa watoto wenye ulemavu Mchanganyiko"
Kibali hicho kimetolewa kuanzia tarehe ya leo kwa muda wa miezi miwili.

Tafadhali mpokee na mpe taarifa anazohitaji

Nakutakia kazi njema.

A . Mchia
Kny: MKURUGENZI WA MANISPAA ILALA
HALMASHAURI YA MANISPAA YA ILALA
Kny. MKURUGENZI
MANISPAA YA ILALA

Nakala: Mkurugenzi wa Manispaa ya Ilala (Aione katika jalada)

Appendix M

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

KINONDONI DISTRICT

Telephone No. 2170169 / 2170183

To reply please quote:

Ref. No. AB.320/378/01 'B'/

THE DISTRICT COMMISSIONER'S OFFICE,
P.O BOX 9583,
KINONDONI ,
DAR ES SALAAM,
TANZANIA.

21th August, 2014

Head Teachers
Kinondoni Municipal Council

Peter E. Mwamwaja is a student from Open University of Tanzania. He has been permitted to undertake field work research on **The Performance of Autistic and Mentally Retarded Children in Special Inclusive Schools in Tanzania Celected Academic Tasks.**

I kindly request your good assistance to enable him to complete his research.

Celestine Onditi
District Administrative Secretary
DAR ES SALAAM

Copy: Municipal Director,
DAR ES SALAAM

Appendix N

THE OPEN UNIVERSITY OF TANZANIA

DIRECTORATE OF RESEARCH, PUBLICATIONS AND POSTGRADUATE STUDIES

P.O. Box 23409
Dar es Salaam, Tanzania
http://www.openuniversity.ac.tz

Tel: 255-22-2666752/2668445 Ext.2101
Fax: 255-22-2668759
E-mail: drpc@out.ac.tz

Ref. No. HD/E/749/T.12 **Date: 3rd June, 2014**

Regional Administrative Secretary,
Mbeya Region,
MBEYA

RE: RESEARCH CLEARANCE

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. Act number 7 of 1992 has now been replaced by the Open University of Tanzania Charter which is in line with 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 the staffs 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 research clearance to both staffs and students of the university on behalf of the Government of Tanzania and the Tanzania Commission for Science and Technology.

The purpose of this letter is to introduce to you **Mr. Peter E. Mwamwaja** a PhD student in the Faculty of Education at the Open University of Tanzania **Registration No. HD/E/749/T.12.** By this letter **Mr. Peter E. Mwamwaja** has been granted clearance to conduct research in the country. The title of his research is **"*The Performance of Autistic and Mentally Retarded Children in Special Inclusive Schools in Tanzania on Selected Academic Tasks*."** The research will be conducted in Mbeya Region.

The period which this permission has been granted is from July, 2014 to September, 2014..

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,
THE OPEN UNIVERSITY OF TANZANIA

Prof. S. Mbogo
For: VICE CHANCELLOR
THE OPEN UNIVERSITY OF TANZANIA

Appendix O

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

MBEYA REGION
TELEGRAM: "REGCOM"
Telephone No: 025-2504045
Fax No.025-2504243
Email: ***ktm-mby@atman.co.tz***

In reply please quote:

REGIONAL COMMISSIONER'S OFFICE,
P.O. Box 754,
MBEYA.

Ref. No. DA.191/228/01/248

1st June, 2014

District Administrative Secretary,
P.O. Box 255,
MBEYA.

REF. RESEARCH PERMIT

Please refer to the above captioned subject.

May I introduce to you **Mr. Peter E. Mwamwaja,** from The Open University of Tanzania.

At the moment he is conducting research on **"The Performance of Autistic and Mentally Retarded Children in Special Inclusive School in Tanzania on Selected Academic Tasks"**. A case study of **Mbeya District in Primary School** from **July** up to **September**, 2014.

Please assist him accordingly.

M.J. Sepocho
For: REGIONAL ADMINISTRATIVE SECRETARY
MBEYA

Copy: Mr. Peter E. Mwamwaja,

" The Open University of Tanzania,
P.O. Box 23409,
DAR ES SALAAM.

Appendix P

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

MBEYA REGION
TELEGRAM: "ADMIN".
Telephone No: 502309.
Fax No. 025-2502567.
In reply please quote:

DISTRICT COMMISSIONER'S OFFICE
P.O. Box 255,
MBEYA.

Ref. No. AB.120/369/01/133

4th July, 2014

District Executive Director,
P.O. Box 599,
MBEYA.

RE: RESEARCH PERMIT

The heading above refers.

May I introduce to you **Mr. Peter E. Mwamwaja** from the Open University of Tanzania.

At the moment he is conducting research on "**The Performance of Autistic and Mentally Retarded Children in Special Inclusive School in Tanzania on Selected Academic Tasks**". A case study of Mbeya District in Primary School from July up to September, 2014.

Please assist him accordingly.

Geoffrey G. Ananniah
For: **DISTRICT ADMINISTRATIVE SECRETARY**
MBEYA

Copy: Mr. Peter E. Mwamwaja.

" The Open University of Tanzania,
P.O. Box 23409,
DAR ES SALAAM.

Appendix Q

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

MBEYA REGION
TELEGRAM: "ADMIN".
Telephone No: 502309.
Fax No. 025-2502567.
In reply please quote:

DISTRICT COMMISSIONER'S OFFICE
P.O. Box 255,
MBEYA.

Ref. No. AB.120/369/01/133

4th July, 2014

City Director,
P.O. Box 149,
MBEYA.

RE: RESEARCH PERMIT

The heading above refers.

May I introduce to you **Mr. Peter E. Mwamwaja** from the Open University of Tanzania.

At the moment he is conducting research on "**The Performance of Autistic and Mentally Retarded Children in Special Inclusive School in Tanzania on Selected Academic Tasks**". A case study of Mbeya City Council Primary School from July up to September, 2014.

Please assist him accordingly.

Geoffrey G. Ananniah
For: **DISTRICT ADMINISTRATIVE SECRETARY**
MBEYA

Copy: Mr. Peter E. Mwamwaja.

" The Open University of Tanzania,
P.O. Box 23409,
DAR ES SALAAM.

Appendix R

JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA WAZIRI MKUU
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

HALMASHAURI YA JIJI MBEYA

Barua zote ziandikwe kwa:

Simu: +255 25 2502372 (Simu Maalum)
+255 25 2502563 (Idara Zote)
Nukushi: +255 25 2502488
Tovuti: http://www.
Unapojibu Tafadhali Taja:

MKURUGENZI WA JIJI
S.L.P. 149,
MBEYA
e-mail: jijimbeya2010@yahoo.com

Kumb . Na.: MCC/E/U.21/15/190 **Tarehe:** 11/07/2014

Walimu Wakuu Wote,
Shule za Msingi,
Halmashauri ya Jiji la Mbeya.

YAH: KUMTAMBULISHA NDUGU PETER E. MWAMWAJA

Tafadhali somo tajwa hapo juu lahusika.

Namtambulisha kwenu Mwalimu **Peter E. Mwamwaja** ambaye ni mwanachuo kutoka chuo kikuu **HURIA CHA TANZANIA**, Tawi la Mbeya.

Naomba apewe ushirikiano katika utafiti wake ambao amechagua kufanyia katika shule za Msingi Jijini Mbeya. Utafiti wake unaohuhusu **" The performance of Autistic and Mentally Retarded Children in Special Inclusive School in Tanzania on Selected Academic Tasks"**

Utafiti huu ataufanya kuanzia mwezi July hadi Septemba, 2014.

Naomba apewe ushirikiano na kila msaada unaohitajika katika kufanikisha utafiti wake.

Kastor J. Ngonyani
Kny: Mkurugenzi wa Jiji
Mbeya.

R.M.S. MKURUGENZI WA JIJI MBEYA

Nakala:

- Mkurugenzi wa Jiji,
  Mbeya (Aione kwenye jalada)

- The Open University of Tanzania
  P. O. BOX 23409
  Dae – es – Salaam.