CHALLENGES IN TEACHING LEARNERS WITH DYSGRAPHIA IN PUBLIC PRIMARY SCHOOLS IN MANYATTA DIVISION, EMBU COUNTY, KENYA

BY

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NOVEMBER, 2014
DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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DEDICATION

I dedicate this research thesis to the Almighty God for enabling me complete this work successfully. To my entire family, I owe them gratitude for their financial and moral support during the course of my study.
ACKNOWLEDGEMENT

I wish to acknowledge all the individuals who have contributed towards the successful completion of this work.

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ABBREVIATIONS AND ACRONYMS

ADHD - Attention Deficit Hyperactivity Disorder

DSM-IV - Diagnostic and Statistical Manual of Mental Disorders

EARC - Education Assessment and Resource Centre

EFA - Education For All

EHCA - Education for all Handicapped Children Act

FAPE - Free Appropriate Public Education

FPE - Free Primary Education

IDEA - Individuals with Disabilities Education Act

KISE - Kenya Institute of Special Education

LD - Learning Disabilities

MDDRC - Missouri Development Disability Resource Centre

MDG - Millennium Development Goals

MoE - Ministry of Education

MoEST - Ministry of Education Science and Technology

OWL - Oral Written Language

SNE - Special Needs Education

UNCRC - United Nations Convention on the Rights of the Child

UNCRPWD - United National Convention on the Rights of Persons with Disabilities

UNESCO - United Nations Educational and Cultural Organizations

UPE - Universal Primary Education
Abstract

The purpose of this study was to identify challenges in teaching learners with Dysgraphia in Public Primary Schools in Manyatta Division, Embu County. The objectives of the study were; To identify challenges in teaching learners with dysgraphia in Manyatta Division; To find out teacher competency in teaching learners with dysgraphia in Manyatta Division; To establish academic related challenges caused by dysgraphia; To identify the assessment procedures for learners with dysgraphia in Manyatta Division.

The study was based on Maturational theory. Literature was reviewed under the following subheadings; perspective of LD, characteristics of dysgraphia; instructional materials for learners with dysgraphia; effects of dysgraphia on academic performance of the learner and interventions for dysgraphia. The study adopted a descriptive survey design which was conducted in 4 primary schools from Manyatta Division. The target population included the class teachers, the headteachers, learners with dysgraphia from the sampled schools and EARC Co-ordinator. The sample size included 4 headteachers, 4 class teachers, 1 EARC Co-ordinator and 220 pupils. Data was collected using questionnaires for the class teachers, observation schedule to learners identified with characteristics of dysgraphia and interview guide for headteacher and EARC Coordinator. A pre-testing of the research instruments was done to establish reliability. Expert opinions of the supervisors from the Department of the Special Needs Education was obtained to determine the validity of the instruments. Data was analyzed using statistical package for social sciences (SPSS). The results show that 75 percent of teachers lack instructional materials that cater for LD. Only 25 percent of teachers can identify cases of LD and give special attention. Lack of standardized tools for assessment at the EARC center may have led to poor identification and placement of LD. The researcher concluded that learning of the learners with dysgraphia is inadequate and this has been contributed by; lack of enough teachers trained in LD to identify learners with dysgraphia and apply appropriate teaching strategies, inadequate instructional materials that cater for LD and lack of standardized tools for assessment at the EARC center. The study recommends that the Ministry of Education should oversee special education training to all education officers and teachers. The EARC centers to be equipped with standardized tools for quality assessment of LD cases and teachers to be provided with instructional materials that cater for LD. Parents to be educated on LD in order to understand their children and provide necessary support toward the education of these learners. The researcher recommends a similar study to be carried out at a wider scope for generalization of results that would benefit children in the entire republic.
CHAPTER ONE

1.0 Introduction
This chapter deals with background to the study, statement of the problem, purpose of the study, research questions, significance of the study, assumptions of the study. Limitations and delimitations, theoretical framework, conceptual framework and definition of terms.

1.1 Background to the Study
Missouri Developmental Disabilities Resource Centre (MDRC 2010), defines dysgraphia as a learning disability (LD) that affects a person’s ability to write. The term learning disability is the name for a group of disorders that affect a person’s ability to listen, read, write, speak or do mathematics. People from all races and income levels can be born with a learning disability. This does not mean they lack intelligence. Some people with LD are even smarter than some of those who do not have (MDDRC, 2010).

Marentette (2011), views dysgraphia as a deficiency in the ability to write, primarily in terms of handwriting but also in terms of coherence. It occurs regardless of the ability to read and is not due to intellectual impairment. Further, he explains that dysgraphia is a transcription disability, meaning that it is a writing disorder associated with impaired handwriting, orthography in the storing process of written words and processing the letters in those words and finger sequencing (the movement of muscles required to write). Dysgraphia often overlaps with the other learning disabilities such as speech impairment, attention deficit disorder or developmental co-ordination disorder.
Wright and Wright (2008), suggest that diagnosing dysgraphia and related LD is important since without diagnosis, children may not receive early intervention or specialized instructions in all the relevant skills that are interfering with their learning of written expression, considering that many schools do not have systematic, instructional programmes in handwriting and spelling. It is also important to determine if a child with dysgraphia may also have dyslexia and require special help with reading or oral and written language (OWL).

Studies by Kusuki, Schwellnus, Llyas and Chau (2011), in Toronto, Canada reveals that dysgraphia has a profound impact on children’s psychosocial development. Other studies have examined the nature and biomechanical underpinnings of handwriting difficulties in children with and without dysgraphia. While the majority of these studies have considered short handwriting activities involving a sentence or a paragraph, handwriting quality and speed are reported to vary with the length of the writing task. Further, it is suggested that the biomechanics of handwriting also evolve over extended writing reports and that these changes may be distinct between children with and without dysgraphia (Kusuki et al., 2011).

Different authors have revealed the implication of dysgraphia on written expression. Yet according to Bernstein (2008), proficiency in written expression skills can be viewed as the culmination of a child’s education. The need to have clear handwriting is of utmost importance in today’s society. Communicating ideas, writing and signing cheques, signing legal agreements and other daily activities need legible handwriting. One may
argue that technology can replace the need for handwriting; however computers cannot be relied on for everything since there are many homes and work places that do not have computers and there are many instances in daily life when a computer is not readily available (Ediger, 2002).

Kondrat (2009), commenting on writing skills argues that excellent writing is sure to earn respect while poor writing will be difficult to understand and will leave a bad impression about the individual. He further adds that, writing structures crystallizes one’s thoughts and improves the effectiveness of the person’s word usage in both oral and written expression.

Referring to a survey conducted among 64 American Companies, Kondrat (2009), revealed that half of them pay attention to writing when considering a person for employment or promotion. In addition, writing is extensively used in higher education and in the workplace. If students do not know how to express themselves in writing, they will not be able to communicate effectively with their teachers, professors, employers, peers or anybody else. This is because much of professional communication is done in writing, for example, proposals, memos, reports and application’s (Walsh, 2010).

Children with disabilities have a right to quality education and achieve their goal like their peers without disabilities. The Salamanca statement and framework for Action on Special Needs Education (UNESCO, 1994), the right of every child to an education was proclaimed in the universal declaration of Human Rights and was reaffirmed by the World Declaration on Education For All (EFA).
Under the framework for Action on Special Needs Education is the assertion that schools should accommodate all children regardless of their physical, intellectual, social, emotional, linguistic or other conditions. Children with dysgraphia fall in the category of children with special needs and require services that enable them to access quality education. The study, therefore, was evaluating teaching and learning strategies for learners with dysgraphia in Manyatta Division and to suggest interventions that can enable these learners to acquire competence in writing.

Table 1.1: Performance of class three in Manyatta Division

<table>
<thead>
<tr>
<th>Subject</th>
<th>1st Term</th>
<th>2nd Term</th>
<th>3rd Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>53.87</td>
<td>56.97</td>
<td>44.30</td>
</tr>
<tr>
<td>Kiswahili</td>
<td>62.32</td>
<td>59.30</td>
<td>52.02</td>
</tr>
<tr>
<td>Maths</td>
<td>55.37</td>
<td>5.91</td>
<td>51.91</td>
</tr>
<tr>
<td>Science</td>
<td>58.19</td>
<td>54.91</td>
<td>51.91</td>
</tr>
<tr>
<td>SS/CRE</td>
<td>51.31</td>
<td>56.89</td>
<td>55.29</td>
</tr>
</tbody>
</table>

Source: Statistics from DEO Office Manyatta (2013)

Table 1.1 above indicate that performance in English is a slightly lower than in other subjects.

1.2 Statement of the Problem

Despite the efforts by the government, various NGOs and all parties that are concerned to provide Special Needs Education to learners. Some categories of disabilities including
dysgraphia have not been adequately addressed in Kenya. Study findings by Kinyua (2008) on LD reveals that learning disabilities including dysgraphia is a major challenge in Kenya. The government has been putting more emphasis on other categories of disabilities such as visual impairment, Physical disabilities, Hearing Impairment and intellectual disabilities but there are no guidelines from the Ministry of Education specifying clearly how children with dysgraphia ought to be handled in the regular classroom. Rasugu (2010) indicates that children with LD are labelled as hard to teach, lazy, slow learners and careless. This is regrettable because such children have been observed to have incredible talents that are generally undervalued or not well represented in the school curricula (Lerner, 2000). The Ministry of Education (MoE) need to recognize dysgraphia as a special need and hence be accorded the attention it deserves in order to provide necessary support for such learners.

Several studies have been conducted in Kenya on learning disabilities. However, the researcher did not find any study solely done on dysgraphia. Rasugu’s (2010) study on nature and prevalence of LD suggests for a study to explore the teaching-learning of learners with LD, it is on this ground the study on challenges in teaching learners with dysgraphia was conducted.

1.3 Objectives of the Study
The study was guided by the following objectives:

- To identify challenges in teaching learners with dysgraphia in Manyatta Division.
- To find out teacher competency in teaching learners with dysgraphia in Manyatta Division.
• To establish academic related challenges caused by dysgraphia.
• To identify the assessment procedures for learners with dysgraphia in Manyatta Division.

1.4 Research Questions
• What challenges do teachers encounter when teaching learners with dysgraphia?
• How competent are teachers in teaching learners with dysgraphia?
• What are academic related challenges caused by dysgraphia?
• What assessment strategies are applied to identify learners with dysgraphia?

1.5 Significance of the Study
The study will provide useful information on factors underlying acquisition of writing skill at primary school level. Findings from the study will benefit the Ministry of Education, the curriculum developers at Kenya Institute of Education (KIE) and teachers among others in setting up remedies in order to improve writing skills among all learners in primary schools.

Problem areas in the teaching of writing skills which would be revealed by the study could shed light in the right direction for the teachers handling learners with dysgraphia. The findings of the study would also be invaluable to Quality Assurance Officers at zonal, divisional and district levels in advising teachers under their jurisdiction ways to improve the teaching of writing skills. Education officers and Quality Assurance Officers can use the findings of this study to advise the Ministry of Education and subject panels at the KIE to consider launching any required materials for teaching writing skills.
1.6 Limitations and Delimitations

The study was carried out in Manyatta Division in Embu North District, Embu County. All public primary schools in the division were covered by the study but due to large population, a sample population was selected to participate in the study. Respondents were drawn from lower classes (class three only). Standard three class was chosen because according to Johnston and Rogers (2011), early identification of children with learning difficulties is important in order to identify children who may be in need of specialized services or intervention. Second, pupils in standard three were chosen because many pupils have already formed and internalized most basic reading and writing skills to achieve substantially in their academic work. This made it easier to identify those with writing difficulties. Also, they are preparing to move to upper primary which is a further incentive for achievement.

The study confined itself to teachers and pupils in public day primary schools. Respondents included standard three pupils from the sampled schools and their class teachers. Private schools were not included in the study since most of them are outcome oriented to attract more clients and children with (LD) are either eliminated at interview stage or drop out of these schools due to stiff academic competition which they cannot cope with. Boarding schools were not included in the study since they do not have lower classes. The pupils and teachers who participated in the study were those in session in the respective schools by the time of the study. Those absent were not included in the sample.
passes through the various stages of development at his or her own rate and often with a unique cognitive style. The maturational lag perspective assumes that these development stages will follow a predictable sequence unlike the typical student's smooth progression in learning abilities. Learners with learning disabilities have particular learning skills that have developed at normal rates however; other skills develop more slowly and mimic those of typical younger children. According to maturational lag theorists, the treatment is always to gear teaching to a child functioning level he/she is ready to learn. Lerner (1997), after some long-term studies of students with learning disabilities over several years concluded that those children were immature and poorly integrated and need more time to learn and grow up. She found that when given the needed extra time and some help to compensate for their slowness in neurological development, many did well academically. Often, they require one or two more years than other pupils to complete their schooling.

Other studies by Sliver and Hagin 1991, 1996, found evidence in maturational lag in young children. When these subjects were re-evaluated as young adults aged sixteen to twenty-four years, many no longer displayed difficulty in spatial orientation of symbols auditory discrimination or left right discrimination. Through the process of maturation, many of these problems had apparently disappeared. Other studies by Levine and Swartz 1995 as quoted by Lerner (1997), have shown that, without intervention, lags in maturation lead to academic failure. Levine and his colleagues emphasize the importance of recognizing development variations in children and providing instruction to ameliorate them (Lerner, 1997).
Major cause of school difficulty is immaturity and time for the maturation of various skills which are sometimes thought to be a learning problem may be merely a lag in a student’s maturation of certain processes. The educational environment may actually hinder rather than assist the child’s learning by making intellectual demands that require cognitive abilities the child has not yet developed. Development studies show that a child’s cognitive abilities are qualitatively different from those of an adult and the abilities develop sequentially. As children mature, their ways of thinking continually change. School must design learning experiences to enhance children’s natural development growth (Lerner, 1997).

The implication of this model to the study is that each individual has a present rate of growth for various human functions including cognitive abilities. Discrepancies among the various abilities indicate that the abilities are maturing at different rates with some abilities lagging in their development. Most children with learning disabilities experience developmental delay and/or may fail to reach the higher stages and therefore, do not accomplish relevant activities at the right time. It also implies that lack of adequate attention to the quality of education, lack of necessary instructional materials, standardized assessment tools and teacher training in special education, may lead these learners fail to obtain meaningful education. Proper interventions are necessary to enable them learn at their own pace (Smith, 2004).
1.9 Conceptual Framework

Fig. 1.1: Factors for effective learning for learners with dysgraphia

The above model encompasses the major variables and their possible pattern of influence on each other. For a learner with dysgraphia to learn, teacher factors and school factors must be affected. Teachers must use teaching strategies that favour these learners. Proper assessment must be done for the purpose of identification and application of intervention measures that can overcome the writing disability. Teacher factors will have an influence
on the school factors since the school will be required to provide special education services such as qualified personnel to assess children identified by teachers with special needs. The school is also required to provide instructional materials and equipment such as bright materials for reading and tables that are comfortable to learners with dysgraphia. The school will also provide any financial support needed by these learners in the course of their learning. All these factors, if available, will help learners with dysgraphia have competence in writing.
1.10 Operational Definition of Terms

Dyslexia - A learning disability associated with inability to read and oral pronunciation of letters and words.

Disability - A limitation of physical, sensory or intellectual functioning.

Dysgraphia - A learning disability describing major difficulties in mastering the sequence of movement necessary to write letters and numbers and spelling.

Exceptional children - Pupils whose ability to learn is hindered by a given handicap (e.g. learning disability).

Instructional materials - Refer to teaching learning aids used by teachers to facilitate learning.

Intellectual challenge - Pupils whose mental ability is behind that of their age mates (mental retardation).

Learning disabilities - A group of disorders that affect a person's ability to listen, read, write or mathematics.

Teaching and learning strategies - Methods used in the process of teaching and learning to enhance learning.

Writing disorder - Inability to write words with correct spellings, appropriate word choice and basic mechanisms such as letter formation, grammar and punctuation.

Writing skills - Refers to knowledge acquired to enable a person to write legibly.
CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction
In this section, related literature was reviewed under the following sub-headings; perspective of Learning disabilities, characteristics of dysgraphia, teacher assessment in the classroom, effective instructional materials for learners with dysgraphia, handwriting remediation, academic related challenges caused by dysgraphia and interventions strategies for learners with dysgraphia.

2.1 Perspective of Learning Disabilities (LD)
Dysgraphia is a learning disability which revolves more around writing skills. In the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), dysgraphia is characterized as an LD in the category of written expression when one’s writing skills are below those expected given a person’s age measured through intelligence and age appropriate education (Marentette, 2011).

The United Nations Convention on the Rights of Persons with Disabilities (UNCRPWD) 2006, affirms the right to education for all children in an inclusive setting (UNESCO, 2005). This means that children with LD must learn alongside with those without. The Individuals with Disabilities Education Act (IDEA), 1975 was the first national law in America to protect the rights of students with disabilities. IDEA delineates and codifies many specific rights and protections for those students in public schools. IDEA protects students who have a range of disabilities, including those with cognitive impairments, hearing impairments (including deafness, speech or language impairments), visual
impairments including blindness, serious emotional disturbance, orthopedic impairments, autism, traumatic brain injury, health impairments and learning disabilities. Under IDEA, each student with a disability is guaranteed Free Appropriate Public Education (FAPE). FAPE encompasses special education, related services and requirements of the individualized education plan of the student with a disability (Bowman & Jaeger, 2004).

In USA, Federal legislation has been the driving force behind changes in special education services. The original tenets of the Education for all Handicapped Children Act (EHCA) in 1975 were strengthened in IDEA, 2004 to ensure that students with disabilities are provided with opportunities for academic growth and long-term success. EHCA did not include specific provisions for transition services but all children with disabilities must have access to the same programmes and services that are available to children without disabilities. In 1994, the National Education Goals define that all students including those with disabilities must achieve at higher academic levels (McDonnell & Hardman, 2010).

After independence in 1947, India mandated its Universal Education for All policy making education free and compulsory for all children aged 6-14 years. In 1992, India enacted its first piece of legislation related to special education; the Rehabilitation Council of India Act was to mandate minimum standards of education for professionals working with disabled individuals (Patanjali, 2005).

The persons with disabilities Act (Equal Opportunities Protection of Rights and Full Participation), was initiated in 1995 and implemented in 1998. This comprehensive,
breakthrough legislation provides for education and economic rehabilitation. This legislation stipulates that the government and local authorities ensure that every child under the age of 18 years has a right to a free education. It further emphasizes the need for an environment and services that are conducive to learning (Patanjali, 2005).

In the process of realizing Education For All (EFA) and the Millennium Development Goals (MDGs) on Universal Primary Education (UPE) by 2015, the government of Kenya has signed several International Conventions and Sessional Papers in commitment for provision of education and protection of the rights of all citizens. Among them are the universal declaration of human rights (1948). The right of every child to access education, the United Nation’s Convention on the Rights of the Child (UNCRC) 1989, the 1990 African Charter on the rights and welfare of the child, Salamanca Statement (1994), the framework for action on special needs education (1999) and the Millennium Development Goals For All by 2015. The implementation of Free Primary Education (FPE) in Kenya in 2003, led to an influx and inclusion of different categories of special needs children (MoE, 2009).

To enable teachers to handle these children with special needs in education, Kenya Institute of Special Education (KISE) was established in 1986. KISE offers SNE training to professionals in Kenya and from other countries. The institution offers both diploma and short courses in Special Education. Diploma courses in Special Needs Education are offered through full-time and distance learning modalities. KISE also runs in-service residential courses for specific areas of SNE at both certificate and diploma levels. Other
institutions in Kenya offering SNE are Kenyatta University, Maseno University, Nazarene University and Kenya Methodist University among others (MoEST, 2003). Efforts have been put on the education of learners with special needs and this study will evaluate teaching strategies for learners with dysgraphia. Although the government is trying to improve the education of the LD, the study was trying to find out whether teachers are competent enough to handle learners with dysgraphia.

2.2 Characteristics of Dysgraphia
Sequencing problems/rational information processing. This results to problems like reversing letters or numbers, writing words, backwards, writing letters out of order, difficult with the mechanics of writing such as spelling and punctuation, inconsistent spaces between letters and words, inconsistent writing with lines and margins and very sloppy handwriting.

Students with an Attention Deficit Hyperactivity Disorder (ADHD), often experience significant difficulty with writing and particularly in handwriting. Their problem mainly include; illegible handwriting, unfinished or missing letters or words, very poor structure of words, improper way of holding pen or pencil, disability of putting thoughts and ideas in writing, showing disturbance during the writing task. ADHD students often process information at a very rapid rate and simply do not have fine motor co-ordination needed to keep up with their thoughts (Langely, 2012). Students with general auditory/language processing weakness because of their difficulty of learning and understanding language in general, obviously have difficulty with language expression and more so with written
language expression. Problems may include, unusual hand and finger grip on pencil, awkward body position when writing, saying words out loud to self while writing, extreme difficulty with the rules of writing like spelling, punctuations and sentence structure, a large gap between understanding of a subject and ability to explain it in written form, experiencing difficulty when going slowly and carefully (Torreno, 2012). Teachers should use these characteristics to identify learners with dysgraphia in their classrooms and assist them to overcome the challenges.

2.3 Assessment for Dysgraphia

Research by International Dyslexia Association (2012), in America, on diagnosing dysgraphia, indicate that dysgraphia is a specific learning disability that can be diagnosed and treated. Children with dysgraphia usually have other problems such as difficulty with written expression. It is, therefore, important that a thorough assessment of handwriting and related skill areas be carried out in order to plan specialized instruction in all deficient skills that may be interfering with a student’s learning of written language.

Olivia (2010) suggests that, diagnosing dysgraphia is rarely present in isolation so it is important to have a trained professional in the diagnosis of learning disabilities (LD) to test for it. The severity of dysgraphia varies and therefore, remediation should be tailored to a child’s specific learning deficits and/or co-existing conditions. One child may need intense occupational therapy while another may simply need explicit handwriting instruction.
Engelsman and Galen (2002) in Netherlands, in their study on dysgraphia in children, quoted Gerald P. Van Galen, 1997 on dysgraphia, whereby a longitudinal design was applied to differentiate normal variations of psychomotor development and lasting handwriting deficiency (Dysgraphia). Participants were sixteen primary school children who were tested with writing tasks that were recorded in a computer monitored XY table. These tasks represented different modules of the handwriting model of Van Galen 1997. Dependent variables were spatial errors, movement time, stroke curvature and the degree of neuro-motor noise in the movement velocity profiles. The latter variable was measured by means of power Spectral Density. Analysis of the movement velocity signal revealed that movements of poor writers were substantially noisier than those of proficient writers with a noise peak in the region of neuro-motor tremor. At the same time, the poor writers were less accurate; it was concluded that control of spatial accuracy rather than allograph retrieval or size control is the discriminating feature in dysgraphic children. Moreover poor writers do not catch up with their peers within the one year time span tested.

According to Fender and Majnemer (2007) in their article, Developmental Medicine and Child Neurology, failure to attain handwriting competency during school-age years often has far-reaching negative effect on both academic success and self-esteem. This complex occupational task has many underlying component skills that may interfere with handwriting performance. Fine motor control, bilateral and visual-motor integration, motor planning in-hand manipulation proration, visual perception, sustained attention and sensory awareness of the fingers are some of the component skills identified. Poor handwriting may be related to intrinsic factors which refer to the child's actual
handwriting capabilities or extrinsic factors which are related to environmental or biomechanical components or both. It is important that handwriting performance be evaluated using a valid reliable standardized tool combined with informal classroom observation and teacher consultation. Studies of handwriting remediation suggest that intervention is effective. There is evidence to indicate that handwriting difficulties do not resolve without intervention and affect between 10 and 30% of school-aged children. Despite the widespread use of computers, legible handwriting remains an important life skill that deserves greater attention from educators and health practitioners. Teachers after identifying learners with characteristics of dysgraphia in the classroom should refer them to the specialists for specialized assessment. The study sought to identify the assessment procedures used in identifying learners with dysgraphia.

2.4 Instructional Materials for Effective Teaching/Learning
These are materials that are used to aid the transference of information from one another. For example, a teacher may use instructional materials to aid the learning of subject matter for a class. These instructional materials could include; power point presentations (visual aids), books, articles, drawings among others, also known as learning/teaching aids (Njiiri, 2007).

Instructional materials are an integral part of the learning situation. Their availability offers opportunities to the teacher to make teaching and learning more effective. The lack of them imposes restriction which may mean that pupils cannot be taught by the methods
that would otherwise be the most suitable. This has a bearing on performance (Mbu, 2000).

Instructional materials are many and greatly aid the teaching of the four language skills, which are listening, speaking, reading and writing. Brumfit and Robert as quoted by Mbu (2000) argue that the greater the range of resource available in any given situation, the greater the chances of satisfying the purposes and the needs of teachers and the learners and the fewer the constraints on the course of planning.

Ruthiri's (2009) study on the availability of teaching /learning resources comments that unavailability of teaching/learning resources contributes to the low academic performance in KCPE in Buuri Division, Imenti North District. Learning resources encourage the learners to talk and create free atmosphere where learners help each other and consequently improve their verbal communication.

Study by Njiiri (2007) on availability acquisition and use of teaching learning resources in primary schools in Kiambaa Division reveals that the use of a range of instructional material is highly recommended for the purpose of instructing and reinforcing learner's knowledge that was previously acquired. Njiiri further states that it is difficult to convert new ideas and unfamiliar information by words alone. For words to have meanings they must either be related to personal experience or known concrete objects; therefore, aids serve to open up channels for communication of information and create a variety of sensory impressions.
In addition to supporting learning more, generally learning materials can assist teachers in the course of teaching. Differentiation of instructions is the tailoring of lessons and instructions to the different learning styles and capacities within your classroom. Learning materials such as worksheet, group activity, instructions, games or homework assignments all allow the teacher to modify assignments to best activate each individual students’ learning style (Wright and Wright 2008).

2.4.1 Materials Necessary for Learners with Dysgraphia
Langley (2012) suggested some methods that can be used to assist learners with dysgraphia in letter formation such as forming letters out of clay, use their arms to “draw” letters in the air and also use their bodies to make the shapes of the letters. This helps to build students’ memory of the form that letters take. (These materials are mostly for young children/pupils who are below eight old).

Having a pencil grip on the pencil or pen can also help students with dysgraphia control the movement of their pencil or pen better and produce better formed letters. If the dysgraphia is severe, the students can be introduced to a keyboard on a computer to produce written work. Other materials include using different materials to make writing more comfortable to the student such as special paper with raised lines to help the child with dysgraphia stay within the lines. Use of mnemonic or other memory aid that might help the student remember the shape of a letter. Also, provide different types of writing implements and allow the student to choose the one she/he feels most comfortable to use (Perles, 2004).
Generally, it may be noted that instructional materials such as the ones discussed above are so beneficial in the learning of a learner with dysgraphia. Are the teachers under study using required instructional materials recommended for learners with dysgraphia? The study was therefore intended to find out the instructional materials used by teachers in teaching learners with dysgraphia.

2.5 Academic Related Challenges Caused by Dysgraphia
There are several academic related challenges caused by dysgraphia. According to Sessoms (2011), dysgraphia affects children emotionally and academically. Children with dysgraphia have difficulty expressing ideas and completing assignment. Therefore, they often become frustrated with their inability to perform well academically and are being mischaracterized as lazy or unintelligent. Also copying text from the board can take more time for a child with dysgraphia. The child’s inability to control and synchronize the functions needed for written language often results in poor grades children with dysgraphia can be overcome with anger and frustration leading to increasingly poor academic performance (Sessoms, 2011).

When students experience difficulty sequencing and organizing detailed information, they often have difficulty with the sequence of letter and words as they write. As a result, the student either needs to slow down in order to write correctly or experiences rather extreme difficulty with the mechanics of writing such as spelling and punctuation). By slowing down or getting stuck with details of writing they often lose the great thoughts that they are trying to write about (Scott, 2001).
Students with an attention deficit disorder (especially with hyperactivity) often experience significant difficulty with writing and particularly hand writing. This is because ADHD students also have difficulty in organizing and sequencing detailed information. In addition, ADHD students are often processing information at a very rapid rate and simply do not have the fine-motor coordination needed to keep up with their thoughts (Scott, 2001). This may affect their academic performance if the problem is not well addressed.

2.6 Interventions for Dysgraphia

Study by Torreno (2012), shows that the written work of a student with dysgraphia often does not reflect the individual’s other language skills or academic abilities. Therefore, remediation, accommodation and modifications are needed to help better express the student’s thoughts and knowledge in writing.

2.6.1 Handwriting Remediation

Teachers play very important role in the life of a child with dysgraphia. The understanding and support of a teacher can help children overcome their difficulties as they grow. Dominica (2011), gave suggestions which can help children with dysgraphia in the classroom to learn better and progress in the academic field as follows: Sitting facilities such as tables and chairs should be adapted to the optimum height of the learner. Classroom environment should be comfortable and pleasant with adequate lighting. Writing materials be adapted to suit the learner such as use of weighted pens, pencils grippers, colored pens and markers and bold line paper (for larger letters). Teachers should be patient and give allowances to these learners to complete their written
exercises. They should also find out which positions works best for the child in the classroom. Parents should be advised to talk to their child regularly and assist him/her in their homework. Teaching techniques should involve activities which develop eye-hand co-ordination and visual perceptual skills. Teachers should also use a multi-sensory approach in teaching which involves the use of all sensations including taste, smell, touch movement and vision. Children with dysgraphia need a lot of support when in school and teachers should understand when a child is having bad days and give the child option of the less stressful activities. Focus on the child's qualities and gifts and encourage other children to be supportive (Dominica 2011).

According to Langley (2012), student's handwriting can improve. Teachers should give them frequent opportunities to practice handwriting. Provide practice that is not stressful but those with combined use of multi-sensory techniques and modifications and give the student plenty of time to work on it. Practicing is not effective if the student feels rushed.

According to Torreno (2012), remediation provides instruction and assistance in improving handwriting. Children with dysgraphia need to strengthen hand muscles and improve motor control by playing with clay, keeping within lines on mazes, connecting dots or dashes to create complete letters and tracing letters with an index finger or a pencil eraser. To improve motor memory, have students practice forming letters and numbers in the air with big arm movements. Then, have them form letters and numbers with smaller hand or finger motions. Students should also experiment with pencil grips,
shorter pencils and other pencils and pens to find what feels best for them. Remediation should be ongoing since good handwriting takes time and practice.

2.6.2 Modification
Modification should be done in assignment to avoid much writing. Torreno (2012), gave suggestions on assignments modifications without changing the academic task as follows: Reduce copying of assignments and tests. Choose the questions that the students should answer in complete sentences and then allow the others to be answered in phrases or words. When students share copying definitions, let the students shorten them or give them the definitions and have them highlight or underline important words or phrases. Give shorter written assignments. Grade assignments on individual elements of the writing process. On one assignment, make spelling count, then make grammar count on the next. On long-term assignments, help the students plan by providing due dates and working with them as a deadline approaches. Give the students an alternative to a written assignment. Assign an oral report or visual project and specify what the students should include.

2.6.3 Accommodation
Accommodation offers alternatives to written assignments. These include; providing additional time for note-taking, copying and tests. Starting projects or assignments early. Provide the student with an outline so that they can fill in details under major headings instead of taking notes. Dictate some assignments or tests using a scribe. Allow abbreviations in some writing. Do not count spelling on rough drafts. Use a spell checker to print or write in cursive, whenever is most legible. Encourage young students to use
paper with raised lines. Allow old students to use different line width and allow students to use different colour papers, pens or pencils. Allow a student to use a graph paper for a moth to help with lining up columns or numbers. Also allow the student to use a word processor and speech recognition software, if necessary and appropriate (Torreno 2012).

Students should continue to work on improving their handwriting as it is an important skill and necessary in daily life. Strategies for dealing with dysgraphia, such as these modifications and accommodations, help facilitate learning and ease difficulties inside and outside the classrooms Torreno, (2012). The study will identify intervention strategies teachers are applying when teaching learners with dysgraphia in order to overcome their disabilities.

2.7 Summary of the Literature Review
The literature reviewed revealed certain gaps. For example there should be a clear policy and guideline on teaching and learning of learners with dysgraphia. Lack of policies can affect the provision of education for learners with dysgraphia. The literature also revealed that teachers need to be provided with proper instructional materials and equipments in order to be able to handle learners with dysgraphia. Lack of proper assessment procedures will lead to poor intervention strategies and placement. This may affect the academic performance of a learner with dysgraphia. The literature also revealed some related academic challenges caused by dysgraphia which if addressed would improve the quality of educational outcome for learners with dysgraphia.
CHAPTER THREE

METHODOLOGY

3.0 Introduction
This chapter gives a description of procedures that were used in carrying out the study. It focused on research design, location of the study, target population and sampling techniques, research instruments, piloting procedures, data collection and data analysis techniques.

3.1 Research Design
The research design for this study was descriptive survey. The design was used in preliminary and exploratory studies. It allowed the researcher to gather information summarise, present and interpret data for the purpose of clarification (Orodho, 2003). It was used to evaluate teaching and learning strategies for effective learning. Information was gathered using questionnaires and interview guides. The research design entailed drawing preliminary information through a pilot study, followed by a systematic field survey. According to Mugenda and Mugenda (2003), a survey entails an extensive research on the nature of the existing conditions. The field survey was meant to help the researcher to come up with primary data, which was summarized and analysed.

3.1.1 Variables
The main variables in this study were; independent variables and dependent variables. Independent variables included factors such as teaching strategies, assessment procedures, instructional materials, intervention strategies and teacher competency. The
dependent variable of the study was competency in writing and improved academic performance.

3.2 Location of the Study
The study was carried out in selected public primary schools in Manyatta Division in Embu County, Eastern Province. The Division is situated North of Embu town and is near Mt. Kenya Forest. The division has only one educational administrative zone named Kathangariri/Kairuri Zone. It has 34 public primary day schools and two primary boarding schools. The division was selected mainly because first, there is no evidence that any study on dysgraphia had been conducted in the area. Second, being in the rural area, the use of technology such as computers and typewriters in schools is not very common. Many offices and schools mainly rely on handwriting for communicating written information.

3.3 Target Population
Manyatta Division has 34 day public primary schools with a population of 14,968 pupils. From this population, the standard three pupils were 2202 (boys - 1113, Girls - 1089). All the teachers in the division were 428. A total population of 2630 people was targeted in this study. (Statistics as from the DEO’s office, Embu North District, 2012).

3.4 Sampling Techniques and Sample Size
To obtain a sample of respondents from the target population, the researcher used random sampling technique. According to Orodho (2005), random sampling is used because it enables every one of the participants to have an equal and independent chance of being
selected as a member of the sample. The sample was obtained from the regular schools because learners with dysgraphia are assumed to learn especially in the inclusive set up.

3.4.1 Sampling Techniques
Four primary schools were randomly selected. To get sample population for pupils, a 10% of 2202 standard 3 pupils was obtained. This gave 220 pupils. To avoid gender bias, stratified random sampling was done. This involved dividing all the standard 3 pupils from each of the sampled schools into two groups of boys and girls. Random sampling was then used to select girls and boys who were respondents. This was done by writing the word ‘yes’ or ‘no’ in pieces of paper and folding them. All pupils who picked ‘Yes’ became respondents for the study. The head teachers of the sampled schools were respondents and the standard three class teachers were randomly selected from the sampled schools. Ten per cent of the target population was used to select the sample because according to Mugenda and Mugenda (2003), it is advisable to select samples of 10% and above.

The researcher provided a self-made checklist based on characteristics of dysgraphia to the class teachers who used it to identify pupils with dysgraphia in their class. Class teachers were involved in the exercise because they have been teaching the pupils since class one and moved with them grade by grade hence they had a better understanding of the pupils. Also in lower primary, teachers stayed with the same pupils throughout the day and taught them all subjects and therefore, they are able to understand their pupils better. The researcher used past records for the previous four terms to verify that the
pupils had characteristics of dysgraphia. The EARC Coordinator was involved in the study since they are in charge of assessment and placement of learners with special education needs in the district.

### 3.4.2 Sample Size

Ten percent of 34 schools was randomly selected to obtain a sample size of 4 primary schools. Each sampled school gave one head teacher, one standard three class teachers. Sample size for pupils was 10% of 2202 of standard three pupils in 4 primary schools which was 220. This was the sample population for learners used in the study. The EARC Coordinator also participated in the study. Total sample size was 229 respondents.

<table>
<thead>
<tr>
<th>Target</th>
<th>Total Population</th>
<th>Sample Population</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head teachers</td>
<td>34</td>
<td>4</td>
<td>12.0</td>
</tr>
<tr>
<td>Class teachers</td>
<td>34</td>
<td>4</td>
<td>15.0</td>
</tr>
<tr>
<td>Pupils</td>
<td>2202</td>
<td>220</td>
<td>10.0</td>
</tr>
<tr>
<td>EARC coordinator</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2271</strong></td>
<td><strong>229</strong></td>
<td><strong>10.0</strong></td>
</tr>
</tbody>
</table>

### 3.5 Research Instruments

Data was collected using the following instruments:

- Questionnaires
- Interview schedules
- Observation schedule
3.5.1 Questionnaires
Questionnaires were administered to standard three class teachers from the sampled schools. The questionnaire was divided into three sections A, B and C. Section A was enquiring information on teachers' biodata, section B obtained information on dysgraphia and section C was to seek information on how teachers assisted learners with dysgraphia in the classrooms. It was used to collect quantitative data.

3.5.2 Interview Schedules
Interview schedules were administered to head teachers from the sampled schools; it was seeking information on assistance given to teachers to enable them teach learners with dysgraphia in their classrooms. Another interview guide for the EARC Coordinator in order to identify the assessment strategies for LD and if there are learners with dysgraphia identified so far in Manyatta Division.

3.5.3 Observation Schedule for Teachers
This tool will be used by the researcher to observe the pupils who will be identified with characteristics of dysgraphia. With the help of the class teachers of these learners, the researcher identified the areas in which each pupil was experiencing difficulty and recorded information for intervention. The researcher also observed teachers in the classrooms to identify teaching methods they were applying to teach learners with dysgraphia, instructional materials and any assistance given to these learners.

3.6 Piloting
Before collecting data for this study, the researcher carried out a pilot study. One school in Manyatta Division was randomly selected for piloting the instruments and was
excluded from the main study. This was done in order to detect any weaknesses in the tools and allow for necessary corrective measures. Teachers from lower classes were selected to fill in the questionnaires. Piloting was used to check the validity and determine the reliability of the instruments.

3.6.1 Validity
Kombo and Tromp (2009), define validity as a measure of how well a test measures what it is supposed to measure. The research instruments were validated through application of content validity procedures. This was done to ensure that all possible items in measuring the concept under study were included. To establish the validity of the instruments, the researcher obtained expert opinions of the supervisors and lecturers in the Department of Special Needs Education who were well-versed in the area being studied. The researcher synchronized the supervisor’s discussions and incorporated the relevant comments and suggestions while developing and revising the research instruments to establish their content validity before data collection.

3.6.2 Reliability
Reliability enhances dependability, accuracy and adequacy of the instruments through piloting. Kombo and Tromp (2009), assert that reliability is a measure of how consistent the results from a test are. To establish reliability of the instruments, the test-retest method was used at an interval of one week between the first test and the second test using the same respondents.
The scores of both tests were correlated and reliability established using the Spearman order correlation co-efficient formula as 0.8. According to Mugenda and Mugenda (2003), a correlation co-efficient greater or equal to 0.75 shows a high reliability of the instrument. After correlating the reliability co-efficient was found to be 0.76 which showed the instruments were reliable. This made the researcher to go ahead with data collection.

3.7 Data Collection Technique
Dates for data collection were arranged by the researcher and the school head teachers. Questionnaires were administered to standard three class teachers by the researcher. An interview was conducted by the researcher to the head teachers and EARC Coordinator using an interview schedule. The researcher used observation checklist to learners with dysgraphia and the exercise was done with the assistance of the class teacher. All research instruments were coded which made it easier for the researcher to account all the instruments used to avoid data loss. After administration, the researcher gave a duration of about 20 minutes to the respondents to answer questions. The instruments were then collected and analyzed.

3.8 Data Analysis
Data collected was coded and entered into the computer for analysis using Statistical Package for Social Sciences (SPSS). Descriptive statistics was presented in frequencies, percentages, pie charts and bar graphs to report the quantitative data. Qualitative data was analyzed by arranging information into themes and discussed in narrative form and conclusion drawn.
3.9 Ethical and Logistical Consideration
A research permit was obtained from the National Council for Science and Technology. Permission and introductory letters to heads of selected schools was obtained from the district education office in Embu North District. A preliminary visit to the selected schools was made to book appointments for the intended research and arranged for dates to administer the research instruments. The researcher introduced herself to the respondents and informed them the purpose of the study and its importance in education. The respondents were assured of confidentiality and anonymity in the information they were to provide.
CHAPTER FOUR
DATA ANALYSIS AND PRESENTATIONS

4.0 Introduction
This chapter focuses on presentation and discussions of the findings based on the objectives of the study on teaching and learning strategies for learners with dysgraphia in public primary schools. The discussions are mainly based on the findings from the data collected through structured questionnaire for teachers, interview guides for head teachers and EARC coordinators and observation schedules used by the researcher. The findings were supplemented further by the information from the checklists used by the teachers in the identification of learners with writing difficulties. This enabled the researcher to draw reasonable conclusions and recommendations. The study was guided by the following objectives:

- Identify challenges in teaching learners with dysgraphia
- To find out teacher competency in teaching learners with dysgraphia
- Establish academic related challenges caused by dysgraphia
- Identify the assessment procedures for learners with dysgraphia.
Objective 1: Identify challenges in teaching learners with dysgraphia

Table 4.1: Head teachers’ feedback on dysgraphia in their school

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>%</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. special needs teachers</td>
<td>1</td>
<td>25</td>
<td>3</td>
<td>75</td>
</tr>
<tr>
<td>Involvement of special needs teachers</td>
<td>1</td>
<td>25</td>
<td>3</td>
<td>75</td>
</tr>
<tr>
<td>Presence of learners with dysgraphia</td>
<td>4</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Heads concern with for learners with dysgraphia</td>
<td>3</td>
<td>75</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>Do teachers give feedback on dysgraphia development</td>
<td>2</td>
<td>50</td>
<td>2</td>
<td>50</td>
</tr>
</tbody>
</table>

The results from the table 4.1 above shows that all the head teachers interviewed agreed the presence of learners with dysgraphia in their schools. The results also indicated that most schools do not have teachers with knowledge on special education and only 25 percent of teachers have that knowledge. Half of the teachers did not give any feedback on hand writing development. It was clear that although there were some teachers trained in special education, three quarters were not involved in the identifying learners with LD in the schools. The interview guide for head teachers reviewed that most of them only advised teachers to do remedial work with learners with dysgraphia. Most teachers report cases of these learners not completing written work. Majority of teachers did not have knowledge in teaching learners with dysgraphia although the government has started institutions that offer training in SNE (Mo EST, 2003).
Table 4.2: Researchers observation on teachers

<table>
<thead>
<tr>
<th></th>
<th>Adequate</th>
<th>%</th>
<th>Not adequate</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional materials</td>
<td>1</td>
<td>25</td>
<td>3</td>
<td>75</td>
</tr>
<tr>
<td>Active Involvement of learners</td>
<td>1</td>
<td>25</td>
<td>3</td>
<td>75</td>
</tr>
<tr>
<td>Special service to learners</td>
<td>1</td>
<td>25</td>
<td>3</td>
<td>75</td>
</tr>
<tr>
<td>Different teaching methods</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.2, shows that most schools visited had inadequate instructional materials to teach learners with writing difficulties. The results indicated that learners with dysgraphia were not well involved during the learning process and majority of them were not given any special service regardless the difficulties they encounter. Further, teachers did not differentiate their teaching methods to cater for these learners. The researcher observed that teachers faced challenges when teaching learners with dysgraphia and the main challenge was slow writing which resulted in learners not completing written work. It was also observed that learners with dysgraphia did not complete written exercises. Torreno (2012), suggested accommodations and modifications for learners with dysgraphia.
Objective 2: Teacher competency in teaching learners with dysgraphia

Table 4.3: Level of training of teachers

<table>
<thead>
<tr>
<th>Professional qualification</th>
<th>PI</th>
<th>ATS</th>
<th>Diploma</th>
<th>Degree</th>
<th>Special needs education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training level</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>%</td>
<td>25</td>
<td>50</td>
<td>25</td>
<td>0</td>
<td>50</td>
</tr>
</tbody>
</table>

From the table 4.3 it is clear that half of the teachers observed had a course in special needs education. A quarter held a PI certificate, another 25 percent had diploma certificate and the rest, 50 percent were promoted on merit.

Table 4.4: Teaching experience of teachers in years

<table>
<thead>
<tr>
<th>Years group</th>
<th>1-5</th>
<th>6-10</th>
<th>11-15</th>
<th>16-20</th>
<th>Above 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of teachers</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>%</td>
<td>25</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>50</td>
</tr>
</tbody>
</table>

The above table 4.4 on teaching experience, half of teachers had been in service for over 21 years. The rest 50 percent of teachers were 10 years and below.
Table 4.5: Teacher’s attitude

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not sure</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>%</td>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>Identification training</td>
<td>1</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Needs for special needs training</td>
<td>3</td>
<td>75</td>
<td>1</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Learners special attention</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>50</td>
<td>0</td>
</tr>
<tr>
<td>Dysgraphia are low achievers</td>
<td>1</td>
<td>25</td>
<td>1</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Provision of sufficient instruction material and resources</td>
<td>1</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Proper use of instructional materials</td>
<td>1</td>
<td>25</td>
<td>3</td>
<td>75</td>
<td>0</td>
</tr>
<tr>
<td>Support to teachers</td>
<td>2</td>
<td>50</td>
<td>2</td>
<td>50</td>
<td>0</td>
</tr>
</tbody>
</table>

From the table 4.5 above it can be observed that 50 percent of teachers disagreed that teachers were trained on identifying learners with dysgraphia. 75 percent strongly agreed that teachers required training on Special Needs Education to enable them identify learners with LD and give them support. 50 percent agreed that learners with dysgraphia were given special attention during the learning process but another 50 percent disagreed. The results further indicated that 50 percent of teachers disagreed that learners with dysgraphia were low achievers.
From the table also, 50 percent disagreed that there were sufficient instructional materials and resources to teach writing skills. 75 percent agreed that proper use of instructional materials can enhance writing. All the teachers agreed that they needed support on how to teach learners with dysgraphia in the class. According to responses from the teachers’ questionnaire most teachers assisted learners with dysgraphia by giving more practice in writing. Most teachers described these learners as average performers in academic.

Objective 3: Academic related challenges caused by dysgraphia

Figure 4.1: Different difficulties for boys and girls

From figure 4.1 on different difficulties for boys and girls, the results indicated that boys had the highest percentage of poor written work, eligible handwriting and poor pencil control. Both boys and girls had equal number in inconsistence in letter formation and in
messy written work. Girls with difficulties in inaccurate copying written work were more than boys.

**Figure 4.2: Poor written work**

The above figure 4.2, the results showed that most learners with poor written work were boys with 73 percent. Slightly more than a quarter of girls had poor handwriting.
According to figure 4.3, indicated that nearly three quarters of the boys had eligible handwriting but only slightly above a quarter of the girls had eligible handwriting.

Results from the above figure 4.4 showed that an equal number of boys and girls had inconsistency in letter formation.
Figure 4.5: Messy written work

Figure 4.5 above, showed that an equal number of boys and girls had messy written work.

Figure 4.6: Inaccuracy in coping

According to the above figure 4.6, slightly more girls than boys had difficulties in coping with written work.
Figure 4.7: Poor pencil control

More boys had poor pencil control as illustrated in figure 4.7 than girls.

Figure 4.8: Pupil % with different difficulties

As tabulated in figure 4.8 above, among all the learners found with writing difficulties, most of the pupils had difficulties in poor legibility. This was followed by those found
with inability to copy accurately any written work and those with poor written work contributed slightly more than half. A few pupils were found with messy written work characterized with many crossing of words, reversals of letters and words. Pupils with poor pencil control were slightly more than inconsistency in letter formation.

**Table 4.6: Pupil % with difficulties per sex in relation to sample population**

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th></th>
<th></th>
<th>Girls</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>%</td>
<td>F</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Poor written work</td>
<td>11</td>
<td>25</td>
<td>4</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Eligible hand writing</td>
<td>15</td>
<td>34</td>
<td>6</td>
<td>22.2</td>
<td></td>
</tr>
<tr>
<td>Inconsistency in letter formation</td>
<td>3</td>
<td>6.8</td>
<td>3</td>
<td>11.1</td>
<td></td>
</tr>
<tr>
<td>Messy written work</td>
<td>2</td>
<td>4.5</td>
<td>2</td>
<td>7.4</td>
<td></td>
</tr>
<tr>
<td>Inaccuracy in coping</td>
<td>8</td>
<td>18.1</td>
<td>9</td>
<td>33.3</td>
<td></td>
</tr>
<tr>
<td>Poor pencil control</td>
<td>5</td>
<td>11.4</td>
<td>3</td>
<td>11.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>100</td>
<td>27</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

The above table 4.6, indicate the number of pupils with different difficulties drawn from the sample population. The results showed that the type of writing difficulty found with majority learners was eligible hand writing. Most boys had eligible handwriting. This was followed by inaccuracy in coping written work in both boys and girls, followed by poor written work, poor pencil control, inconsistence in letter formation and lastly messy written work. Results from the table showed that boys were more prone to writing difficulties than girls.
Table 4.7: Pupil % with difficulties based on boys

<table>
<thead>
<tr>
<th>Difficulties</th>
<th>Boys (111)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
</tr>
<tr>
<td>Poor written work</td>
<td>11</td>
</tr>
<tr>
<td>Eligible hand writing</td>
<td>15</td>
</tr>
<tr>
<td>Inconsistence in letter formation</td>
<td>3</td>
</tr>
<tr>
<td>Messy written work</td>
<td>2</td>
</tr>
<tr>
<td>Inaccuracy in coping</td>
<td>8</td>
</tr>
<tr>
<td>Poor pencil control</td>
<td>5</td>
</tr>
</tbody>
</table>

From table 4.7 above most of the boys with dysgraphia had eligible hand writing, followed by poor written work, difficulties with copying accurately written work and lastly poor pencil control. Boys had fewer inconsistencies in letter formation and messy written work.

Table 4.8: Pupil % with difficulties based on girls

<table>
<thead>
<tr>
<th>Difficulties</th>
<th>Girls (109)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
</tr>
<tr>
<td>Poor written work</td>
<td>4</td>
</tr>
<tr>
<td>Eligible hand writing</td>
<td>6</td>
</tr>
<tr>
<td>Inconsistence in letter formation</td>
<td>3</td>
</tr>
<tr>
<td>Messy written work</td>
<td>2</td>
</tr>
<tr>
<td>Inaccuracy in coping</td>
<td>9</td>
</tr>
<tr>
<td>Poor pencil control</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 4.8 above indicated that only a few girls had difficulties in copying accurately written work, followed by eligible hand writing, poor written work, poor pencil control and inconsistence in letter formation. The least common difficult among girls was messy written work.

**Objective 4: Assessment procedures for learners with dysgraphia**

**Responses from the EARC coordinator interview guide**

According to the EARC coordinator on assessment tools it was found that there are no standardized tools for assessing learners with LD but teachers at the assessment center used teacher-made tests to identify the area of difficult. The most common learning disability they established after assessment was in the area of reading which in turn affect writing. The EARC advised teachers to prepare Individualized Education Program (IEP) to learners identified with LD. Teachers were also advised to do remedial teaching to these learners to enable them catch up with the others in the class. There were challenges in the course of assessment which included denial from parents who do not accept that their child was an LD. Another challenge was resistance from teachers who were not willing to do extra work like remedial teaching and preparing IEP. There was also the challenge of lack of standardized tools for assessing LD. To cope with these challenges the EARC coordinator and teachers at the assessment center gave advice to teachers and parents how to assist these learners.
CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction
The chapter focused on summary of the findings, conclusions drawn and recommendations for the enhancement of effective learning of learners with dysgraphia. The chapter gave suggestions for further research.

5.1 Summary of the findings
The public primary schools in Manyatta Division Embu County had not been effective in offering quality education to learners with dysgraphia. This was due to inadequate instructional materials that cater for these learners, teachers’ lack of training/knowledge on identifying these learners and learning methods suitable for dysgraphic children. Teachers lacked support from education office in the assistance of learners with dysgraphia. This led use of methods which did not incorporate fully learners with dysgraphia in the learning process which affected them academically. Teachers assisted these learners by giving them more practice in writing and allowing extra time to complete written exercises. Majority of teachers advocated these learners to be enrolled in special schools. Lack of standardized tools by EARC coordinator lead to inadequate assessment results which in turn resulted to wrong identification and placement of the learner.
5.1.1 Challenges in Teaching and Learning Strategies
The researcher found out that majority of teachers did not have any knowledge in special education and do not understand suitable methods for teaching learners with LD. Only half of the teachers had knowledge in special education. Instructional materials were inadequate and most teachers did not have adequate instructional materials that could assist learners with writing difficulties. Langley (2012) suggested suitable materials for learners with dysgraphia but none of these materials were used by teachers despite the fact that there are learners in their classroom who required them.

5.1.2 Teacher Competence
The findings of the research indicated that half of the teachers had knowledge in special needs education but some had only attended workshops or seminars. A quarter of teachers could identify cases of dysgraphia and give special attention to these learners. Majority of teachers were not competent enough to teach learners with dysgraphia in their classroom. Dominica (2011) suggested classroom modifications are needed to help learners with dysgraphia learn better, but from the observation done by the researcher, there were no modifications done in the classrooms.

5.1.3 Academic Related Challenges
Results from the researcher’s observation schedule and teachers’ questionnaire indicated that learners with dysgraphia were slow in writing and they rarely completed written exercises. Sessoms (2011) stated that dysgraphia affects children emotionally and academically. Responses from teachers described these learners average in academic, but none was identified as above average.
5.1.4 Assessment Procedures
Results from the EARC coordinator interview guide indicated that three quarters of teachers could not identify learners with dysgraphia. The EARC coordinator did not have standardized tools for assessing dysgraphia. Teachers at the assessment center use teacher-made tests to identify areas of difficult which might have led to inadequate results. Olivia (2010) suggested that dysgraphia is rarely present in isolation therefore it requires a trained professional in the diagnosis of dysgraphia to test for it.

5.2 Conclusions of the Study
The study found out that, teaching and learning strategies for learners with dysgraphia in Manyatta Division were inadequate. This may have been contributed by; lack of teacher training for the identification of dygraphia and knowledge how to handle them in the class, inadequate teaching/learning instructional materials and resources to carter learners with dysgraphia, inadequate support of teachers by the head teachers and other education officers in assisting learners with dysgraphia, lack of standardized tools for assessment in the EARC center. The researcher concluded that these factors hindered effective learning for learners with dysgraphia and they need to be addressed by necessary authorities for effective learning to take place.

5.3 Recommendations
Based on the findings of the study, the researcher concluded that, effective learning for learners with dysgraphia could be enhanced if the problems identified can be addressed by relevant authorities. The researcher made the following recommendations:
5.3.1 Ministry of Education and KIE

1. The Ministry of Education and subject panels at the KIE should develop instructional materials that could benefit learners with dysgraphia.

2. The Ministry of Education should train education officers on dysgraphia to offer necessary support in the education of learners with dysgraphia.

3. The Ministry of Education should ensure provision of standardized tools at the EARC centers for quality assessment of dysgraphia.

4. The Ministry of education should in-service teachers on the current trends of the education of learners with dysgraphia.

5.4 Suggestions for Further Research

The researcher makes the following suggestions for further research;

1. Competitive studies need to be done in different areas of learning disabilities to establish if they influence each other.

2. A similar study as done by research can be replicated for a whole county to enhance generalization of the findings.
REFERENCES


Kondrat All (2009). Importance of good writing and reading skills.


APPENDICES

APPENDIX I: QUESTIONNAIRE FOR TEACHERS

Please put a tick (✓) for the correct response and provide any other information where required

Section A

1. The highest level of education attained

   KCSE/O-level ( )
   A Level ( )
   Diploma ( )
   Degree ( )

2. What is your professional qualification?

   P1 ( )
   ATS ( )
   Diploma ( )
   Degree ( )

3. Which of the following special education needs courses or training have you undertaken?

   Workshop ( )
   Certificate course ( )
   Diploma course ( )
   None ( )
4. What is your teaching experience?

1-5 ( )
6-10 ( )
11-15 ( )
16-20 ( )
21 and above ( )

Section B: Signs of Dysgraphia

A learner with dysgraphia may express or show some of these signs or all of them. Effects of this condition includes poor handwriting, inappropriate size of letters in some paragraphs, improper spacing between the letters and words, inability to write in a single straight horizontal line, mixture of lower case and upper case letters, tiring very easily while writing, exhibit strange wrist, body or paper position, difficulties with syntax, structure or grammar, saying word out loud while writing. Generally dislike writing exercise.

5. From the characteristics give above

a) Between boys and girls who have more of these difficulties? Kindly indicate the number identified in your class by gender.

Boys .............................. Girls............................
(b) What is your class enrolment?
   Boys ......................
   Girls ......................
   Total ......................

6. Kindly state how you have been assisting such pupils as a class or subject teacher
   (a) ......................
   (b) ......................
   (c) ......................

7. For how long have you noticed or taught these learners whom you have identified? ......................

8. How can you describe the academic performance of these learners with dysgraphia? ......................

9. Do you think parents of these pupils are aware of their children's disability?
   Yes ......................  No ......................

10. Do you think most teachers are comfortable in handling learners with dysgraphia in regular classes?
    Yes [ ]  No [ ]

11. What would you suggest should be done to make teachers more competent in handling learners with dysgraphia? ......................
### Section C

Please indicate your level of agreement in the following statement as regards the teaching of learners with writing difficulties. Statements will vary from:

1= strongly agree, 2= Agree, 3= not sure, 4= Disagree, 5= Strongly disagree.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12. All teachers are trained on how to identify learners with dysgraphia in class</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Teachers are requiring training on special needs education to enable them identify and assist learners with dysgraphia acquire writing skills.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Learners with dysgraphia are usually given special attention and services during the learning process.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Learners with dysgraphia have low academic performance compared to those without dysgraphia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. There are sufficient instruction materials and resources in the school for teaching writing skills.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Proper use of instructional materials in teaching writing skills can enhance learners with dysgraphia has competence in writing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Schools should provide necessary support to teachers handling learners with dysgraphia in the class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

19. What challenges do you experience when teaching learners with dysgraphia?

State
APPENDIX II: INTERVIEW GUIDE FOR HEADTEACHERS

Part A

Name of the school

Date of interview

Part B

1. Do you have special education trained teachers in this school?

   Yes ( )
   No ( )

   (If yes state the number)

2. How do you involve these teachers in identifying learners with SNE in the school?

3. Are you aware of having learners with dysgraphia in your school?

   Explain

   b) How does your office support such learners to overcome the barrier?

   Explain

4. What are the common problems reported in your office, do teachers encounter when teaching learners with writing difficulties?

5. a) Do the teachers give their class experiences on pupils writing skill development?
b) How does your office support teachers to ensure effectiveness in teaching writing skills? Explain.

6. What do you suppose is the greatest challenge faced by teachers who teach learners with dysgraphia?
APPENDIX III: INTERVIEW GUIDE FOR THE EARC COORDINATOR

This interview is part of an educational study that is being conducted by the researcher in the division. The information will be treated as confidential during and even after the study. The researcher is therefore requesting for your cooperation and assistance. The information you give will be very important for this study.

1. How do you assess learners with LD. Explain the assessment tools which you use?

2. Which area of learning disabilities is most common?
   - Writing
   - Reading
   - Mathematics

3. After assessing learners with LD, how do you advice teachers on handling these learners?

4. Which challenges do you encounter in the course of assessing learners with LD?

5. How do you cope with the challenges encountered in above? (if any)
APPENDIX IV: CHECKLIST TO IDENTIFY PUPILS WITH WRITING DIFFICULTIES

The checklist is designed for use by the class teacher to assist him/her identify pupils with writing difficulties and it consists of characteristics associated with dysgraphia. You are requested to provide honest information to aid this study. However, the information provided will be treated as confidential. Please insert the figures in the spaces provided.

<table>
<thead>
<tr>
<th>Area of deficit</th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor standards of written work in comparison with oral ability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handwriting characterized by low copying, inconsistencies in letter formation and poor legibility.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inconsistencies in letter formation (mixture of upper and lower cases), unfinished words or letters e.g. raBBit, faTHer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Messy work with many crossing out and words tried several times, many reversals and badly formed letters e.g. saw/ was</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inability to copy accurately, particularly from the blackboard. Persistent confusion with letters which look alike e.g. b/d, p/g, p/q, n/u, w/m, s/z</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usual grip on pencil, unusual body or wrist position or paper position. Generally dislikes writing exercise</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thank you, for providing this information...
APPENDIX V: OBSERVATION SCHEDULE

This observation schedule will be used by the researcher to get the following information from the classroom:

1. Instructional materials used by the teacher to teach English
   a. Adequate (b) Not adequate

2. Are the learners with writing difficulties well involved in the learning process?
   a. Yes (b) No

3. Does the teacher give special services to learners with writing difficulties?
   a. Yes (b) No

4. Does the teaching methods used by the teacher cater for pupils with writing difficulties?
   a. Yes (b) No

5. (i). Are there challenges faced by the teacher when teaching learners with dysgraphia?
   (a).Yes (b) No
   (ii) Identify the challenges

General comments about pupils written work
TO
ALL HEADTEACHERS
PUBLIC PRIMARY SCHOOLS
EMBU NORTH

RESEARCH AUTHORIZATION

The bearer of this letter Namely ESTHER NJOKI NYAGA is a student from KENYATTA UNIVERSITY.

She has been authorized by this office to carry out research on EVALUATION OF TEACHING AND LEARNING STRATEGIES FOR LEARNERS WITH DYSGRAPHIA IN PUBLIC SCHOOLS IN EMBU NORTH public primary schools until 31st July 2013.

Please can you accord her maximum co-operation.

Thank you

Silas Ngeremwa
For District Education Officer
Embu North
APPENDIX VII: RESEARCH AUTHORIZATION LETTER

REPUBLIC OF KENYA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471, 221349, 254-020-2673550
Mobile: 0713 788 787, 0735 404 245
Fax: 254-020-2213215
When replying please quote secretary@ncst.go.ke

Our Ref: NCST/RCD/14/013/564

Esther Njoki Nyaga
Kenyatta University
P.O Box 43844-00100
Nairobi

RE: RESEARCH AUTHORIZATION

Following your application dated 24th April, 2013 for authority to carry out research on “Evaluation of Teaching and Learning Strategies for Learners with Dysgraphia in Public Primary Schools in Manyatta Division, Embu County, Kenya” I am pleased to inform you that you have been authorized to undertake research in Embu North District for a period ending 31st July, 2013.

You are advised to report to the District Commissioner and District Education Officer, Embu North District before embarking on the research project.

On completion of the research, you are expected to submit two hard copies and one soft copy in pdf of the research report/thesis to our office.

DR. M. K. RUGUTT, PhD, HSC.
DEPUTY COUNCIL SECRETARY

Copy to:
The District Commissioner
The District Education Officer
Embu North District

"The National Council for Science and Technology is Committed to the Promotion of Science and Technology for National Development".
APPENDIX VIII: RESEARCH PERMIT

THIS IS TO CERTIFY THAT:

Prof./Dr./Mr./Mrs./Miss/institution

Esther Njoki Nyaga

of (Address) Kenyatta University

P.O. Box 43844-00100, Nairobi

has been permitted to conduct research in

Location

Embu North

District

Eastern

Province

on the topic: Evaluation of Teaching and Learning Strategies for Learners with Dysgraphia in Public Primary Schools in Manyatta Division, Embu County, Kenya.


ถึงที่ทำการของคุณ

 Applicant's Signature

Secretary

National Council for Science & Technology

CONDITIONS

1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do this may lead to the cancellation of your permit.

2. Government Officers will not be interviewed without prior appointment.

3. No questionnaire will be used unless it has been approved.

4. Excavation, firing and collection of biological specimens are subject to further permission from the relevant Government Ministries.

5. You are required to submit at least two (2)/four (4) bound copies of your final report for Kenyans and non-Kenyans respectively.

6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.

CONTRADICIONS—see back page

Republic of Kenya

RESEARCH CLEARANCE

PERMIT

CPKK60555045m10/2011