

**AN ANALYSIS OF THE LEGIBILITY OF HANDWRITING AMONG GRADE 5
LEARNERS IN THE SELECTED PRIMARY SCHOOLS OF MONGU DISTRICT,
ZAMBIA**

BY

KAPAMBA SISHWASHWA

(ID-2023007214)

A dissertation submitted to the University of Zambia in partial fulfillment of requirement for
Degree of Master of Education in Literacy, Language and Applied Linguistics

THE UNIVERSITY OF ZAMBIA

LUSAKA

2023

DECLARATION

I, Kapamba Sishwashwa, do declare that this research report is an original document of an outcome of my own efforts. Its contents have never been presented anywhere before in its full context. The views and opinions contained in this document neither reflect nor in any way represent those of the University Zambia, but my own individual effort. The figures and tables contained in this research document were generated by me. I further sincerely declare that this research has not been previously submitted for any academic award, and that all the work from other researchers has been acknowledged.

Signature:

Date:

COPYRIGHT

All rights are reserved. No part of this dissertation may be reproduced, stored in a retrieval system or transmitted, in any form or any means, mechanical, photocopying, recording or otherwise, without prior written permission of the publisher.

APPROVAL

This dissertation by Kapamba Sishwashwa is approved as a fulfillment of the requirements for the award of the degree of Master of Education in Literacy, Language and Applied Linguistic at the University of Zambia.

Examiner 1..... Signature.....Date:

Examiner 2.....Signature:Date:.....

Examiner 3..... Signature.....Date:

Chairperson Board of Examiners.....Signature.....Date.....

Supervisor.....Signature.....Date.....

DEDICATION

I dedicate this piece of work to my daughter Agnes, my parents, siblings, friends and my niece for their encouragement and moral support.

Special dedication goes to Mr Mubita, E. S. for his support throughout my research.

ACKNOWLEDGEMENT

My sincere thanks to God the Almighty, for guiding and enabling me to work on this research project and gain academic insight into this topic. I am also grateful to my supervisor Professor Mwanza Sani David my academic supervisor, for the support and professional guidance he accorded to me throughout the project. Without his invaluable assistance, patience and co-operation, this work would have not been completed.

Many thanks also go to TTE Project Director- Stephanie Zuilkowski, Ed.D. for financial support, all the lecturers and colleagues on the programme from the University of Zambia (UNZA) for their moral support and assistance.

I further send my gratitude to the PEO, DEBS, and head teachers who permitted me to conduct the study in their institutions. I will always be indebted to teachers and learners who participated in the study.

Thank you

TABLE OF CONTENTS

DECLARATION.....	i
COPYRIGHT	ii
APPROVAL	iii
DEDICATION.....	iv
ACKNOWLEDGEMENT.....	v
LIST OF TABLES.....	xi
LIST OF FIGURES.....	xii
LIST OF APPENDICES	xiii
LIST OF ABBREVIATIONS AND ACRONYMS	xiv
ABSTRACT.....	xv
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.0 Overview	1
1.2. Statement of the Problem	4
1.3. Purpose of the study	5
1.4. Objectives of the Study.	5
1.5. Research Questions.	5
1.6. Significance of the Study	5
1.7. Delimitation of the Study	6
1.8. Limitation of the Study	6

1.9. Definition of operational terms.....	6
CHAPTER TWO.....	8
REVIEW OF RELATED LITERATURE.....	8
2.0. Overview	8
2.1. Meaning of Legible Handwriting.	8
2.2. How handwriting is taught in primary schools	10
2.3. Legibility (Quality) of Primary school learners’ handwriting.....	13
2.4. Factors that influence the legibility of learners’ handwriting.....	19
2.5. Measures undertaken to improve learners’ handwriting in primary schools.	25
2.3. Theoretical Framework	32
CHAPTER THREE.....	35
RESEARCH METHODOLOGY.....	35
3.0 Overview	35
3.1 Research Design.....	35
3.2 Study population.....	35
3.3.1. Sampling Techniques	36
3.3.2 Sample Size	36
3.4 Methods of Data collection	37
3.4.1. Semi structured Interviews	37
3.4.2. Document analysis.	38
3.5 Research Instruments.	38

3.5.2. Document Analysis checklist Guides on Grade five learners' note books	39
3.6 Data Collection Procedure.....	39
3.7 Methods of Data Analysis.	39
3.9. Ethical Considerations in Research.....	40
3.9 Summary	41
CHAPTER FOUR.....	42
PRESENTATIONS OF FINDINGS	42
4.0. Overview	42
4.1. RQ1. How legible is the handwriting of fifth grade learners?.....	42
4.1.1. Presentation on the quality of handwriting from Teachers' interviews.....	42
4.1.1.1. Teachers` perceived good quality of Handwriting by their learners	42
4.1.1.2. Teachers` perceived Poor quality of handwriting among grade five learners.....	43
4.1.2. Presentation of findings on the Quality of Handwriting from document Analysis	44
4.1.2.1. Learners' Quality of Handwriting: Document Analysis.....	44
4.1.2.1.1. Style of handwriting	44
4.1.2.2. Form.....	45
4.1.2.3. Ascending and descending letters	46
4.1.2.4. Shape and Size.	47
4.1.2.5. Slanting and directionality.....	47
4.1.2.6. Messiness.....	48
4.1.2.7. Upper and lower case letters.	49
4.1.2.8. Mirror and reversal handwriting	50

4.2. RQ2: What factors influence the legibility of handwriting among the fifth grade learners?	51
4.3. What measures should be undertaken in order to improve the learners’ poor handwriting among fifth graders in Primary schools?	58
4.3.1 Measures currently undertaken by class teachers to help learners with poor handwriting to improve.	58
4.3.2 Teachers’ suggestions on measures that could be undertaken to improve the quality of handwriting among the grade five learners in schools.....	59
4.4. Chapter summary.....	63
CHAPTER FIVE.....	64
DISCUSSION OF FINDINGS	64
5.0 Overview.....	64
5.1. Quality of Handwriting among the fifth graders.....	64
5.2. Factors influencing poor quality of handwriting among grade five learners.....	71
5.3. Measures that should be undertaken to improve the quality of handwriting among learners at fifth grade.....	81
5.4. Chapter summary.....	87
CHAPTER SIX.....	88
CONCLUSION AND RECOMMENDATION.....	88
6.0. Overview	88
6.1. Conclusion.....	88
6.2. Recommendations.....	89
6.2.1. Recommendations to MoE	89

6.2.2. Recommendations to Curriculum Development Center (CDC)	89
6.2.3. Recommendations to Education Standards Officer and Head teachers	89
6.3. Future Research	90
REFERENCES.....	91
APPENDICES	107

LIST OF TABLES

Table	page
Table 1: A summary of study sample size.....	35

LIST OF FIGURES

Figure	Page
Figure 1: Sample 1 of Pupil A from Orange school on style of handwriting.....	43
Figure 2: Sample 2 of Pupil B from Banana school on form.....	44
Figure 3: Sample 3 of Pupil 5 from Apple school on ascending and descending letters.....	45
Figure 4: Sample 4 of Pupil 3 from Mango school on Shape and Size.....	46
Figure 5: Sample 5 of Pupil 9 from watermelon school on slanting.....	46
Figure 6: Sample 6 of Pupil 1 from Mango primary school on spacing and messiness.....	47
Figure 7: Sample 7 of Pupil 4 from mango school on upper and lower case letters.....	48
Figure 8: Sample 8 of Pupil 6 from Watermelon School on mirror and reversal writing.....	49
Figure 9a: Sample 9a: Teacher A's handwriting as a model from Orange primary school...	53
Figure 9b: Sample 9b: Teacher's handwriting as a model from nut primary school.....	54

LIST OF APPENDICES

Appendix I: Approval letter for study.....	109
Appendix II: Participant Information sheet.....	113
Appendix III: Interview Guide with Grade 5 teachers.....	122
Appendix IV: Document analysis checklist guide.....	123
Appendix V: Teacher consent letter for interviews.....	125
Appendix VI: Teacher consent letter for Audio Recording	126

LIST OF ABBREVIATIONS AND ACRONYMS

CCC:	Creative, Collaborative and consultative
CDC:	Curriculum Development Centre
CLT:	Cognitive Load Theory
CoE:	College of Education
CPD:	Continuous Professional Development
DEBS:	District Education Board Secretary
DOBE:	Department of Basic Education
EFA:	Education for All
GRM:	Gradual Release Model
HWT:	Handwriting without Tears
I.E.P:	Individualized Education Programme
MoE:	Ministry of Education
MoESVTEE:	Ministry of Education, Science, Vocation Training and Early Education
NBTL:	New Breakthrough To Literacy
NCES:	National Centre for Education Statistics.
NIF:	National Infrastructure Framework
NLF:	National Literacy Framework
PEO:	Provincial Education Officer
PLP-	Primary Literacy Programme
PRP:	Primary Reading Programme
ROC:	Read On Course
SITE:	Step In to English
TESS:	Teacher Education and Specialized Services
TGMs:	Teacher Group Meetings
TTE:	Transforming Teacher Education
UNESCO:	United Nations Education Scientific Cooperation Organization
UNZA:	University of Zambia
VMI:	Visual Motor Integration
ZBEC:	Zambia Basic Education Course
ZATEC:	Zambia Teacher Education Course

ABSTRACT

Handwriting has been neglected in the Zambia's literacy education system. Despite its importance, it gained minimal consideration from educators, policy makers or researchers into mainstreaming educational processes (Sedita, 2022). Therefore, the study sought to analyze the legibility of handwriting among Grade five learners in selected public primary schools of Mongu district of Western province. The study utilized qualitative research methods, including interviews and document analysis, to examine the Grade five learners' handwriting legibility in depth. Thematic analysis was employed to organize and reduce data into meaningful themes through the coding process. The study focused on Grade five learners in six selected public primary schools. It involved interviewing eleven teachers (1 male and 10 females), and analyzing sixty learners' books to assess handwriting legibility.

The study revealed that fifth graders' handwriting was generally poor, with issues related to letter formation, alignment, case combination, spelling, spacing, and messiness, mirror and reversal letter writing. It also identified several factors influencing poor handwriting among fifth graders such as: school factors: overcrowded classrooms and insufficient desks, lack of teaching resources for handwriting, curriculum constraints with limited time for handwriting instruction, inadequate teacher training and orientation on handwriting and absence of proper assessment and remediation policies. Teacher factors: Insufficient teacher knowledge in teaching handwriting skills, teachers' own poor handwriting and negative attitudes toward teaching handwriting. Learner factors: Age and developmental levels, learning disabilities, limited background knowledge in handwriting, absenteeism and lack of interest and motivation in writing. While home-based factors included scarcity of literacy materials at home, insufficient support from family members and some family members' illiteracy.

Addressing these factors is crucial for improving handwriting quality in educational settings. Hence, the study recommended that, the MoE through policymakers, curriculum developers, educators should prioritize investing in the appropriate space design in terms of providing conducive learning environment for handwriting instruction, timetabling handwriting as a separate subject, introduction of handwriting assessment and remediation, and enhanced monitoring of handwriting instruction. In conclusion, conducting research across various districts to explore handwriting legibility can offer valuable insights for enhancing instruction and practice.

Key words: fifth graders, Legibility, literacy, Quality handwriting, writing .

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter presents the background of the study, statement of the problem, purpose of the study, research objectives and questions that guided the study. It continued to look at the significance of the study, delimitation of the study, limitation of the study, and definition of the operational terms according to the context in which they have been used in the study.

1.1 Background to the Study

From time immemorial, writing was one of the four language skills which is used for communication. As such writing has to be developed through handwriting which is a basic component of language acquisition masterly. Therefore, handwriting is an integral part of a beginner's language learning in the three Rs of reading, writing and numeracy (aRithmetic).

In the Zambian education system, handwriting is fully taught in lower primary grades which is a presentation stage for all the necessary skills that help learners succeed in their education, (MoE, 1972; MoE, 1996; MoE, 2000 and MoE 2013). This indicates that by upper primary, learners should have acquired all the foundation skills (inclusive of handwriting). Thus, this study was carried out to analyze the quality of handwriting among grade five learners in 6 selected primary schools in Mongu district of western province. Before delving into further analysis of handwriting, it is essential to comprehend the significance and implications of handwriting itself.

Flayers (2020) stated that, handwriting is an ability to write using a hand with a writing tool such as a pencil or pen. While Kgomo, (2013:1) also defines handwriting as:

an art form, a functional tool and a taught skill that involves coding of mental

ideas into visual shapes and has rules that differ from culture to culture. It

is also a skill that is dependent on the relationship between the eye and hand.

The above definition indicates that handwriting is a prerequisite and an essential skill that need to be acquired by being taught, through learning and practice in order to provide learners with legible, practical and accurate handwriting skill. This means that handwriting is

considered to be a task that is acquired through the coordination of cognitive, motor and neuromotor ability (Fellasufal & Mustadi, 2019). Sheffield (1996) further indicated that handwriting involves kinesthetic learning, which uses one of the earliest and strongest memory systems. This implies that handwriting is a skill that introduces learners to writing so that they secure letters and word forms in long term memory, (Graham et. al., 2000). It is for this reason that handwriting is considered to be a prerequisite and an essential skill that need to be acquired by being taught, through learning and practice in order to provide students with legible, practical and accurate handwriting skill. Thus, quality handwriting is a skill characterized by legibility, speed, neatness and efficiency.

In order to achieve quality handwriting among primary school learners, Ministry of Education (MoE, 1972) adopted a Marion Richardson style of handwriting. Maroin Richardson style of handwriting uses a gradual transition approach of three (3) styles of handwriting; manuscript, tailed and cursive. The gradual transition approach to teaching handwriting assists in achieving (legibility, speed, neatness and efficiency) good quality handwriting. Thus, Zambian primary schools have been teaching handwriting starting with manuscript in the early years of schooling (from pre to grade 2). Manuscript handwriting allows learners to writing letters independently in a word while constantly lift a writing tool. Manuscript handwriting leads to legible handwriting among the older learners as asserted by (Arnold, 1933). The second form is tailed handwriting which starts from grade two term three through grade 3 term two. Tails are introduced to some letters such as *a, d, h, n, u, i, l* and *m* in order to prepare learners for joined (cursive) handwriting. The last form is cursive handwriting used from grade 4 onwards where successive letters are joined. Arnold, and later Enstrom (1969) advised that once writers develop proficiency with the manuscript handwriting, schools should transition handwriting instruction to focus upon cursive handwriting in order to enable writers to develop legibility, with appropriate speed, neatness and efficiency on handwriting tasks. These three styles of handwriting enable learners to move gradually in writing legibly, (MoE, 1972). Aligning with Moe, 1972, New Zealand Ministry of Education 2007, stated that the purpose of teaching Handwriting is to assist each learner to write legibly, fluently, without strain, and with sufficient speed for all practical purposes.

Consequently, Zambia Teachers Education Course (ZATEC) 2000 and MoE (2000) saw the birth of integration of related subjects into study/learning areas. Handwriting was imbedded into literacy and language learning area at lower primary. Due to this integration, handwriting

was catered for under the writing skill of literacy in Zambia New Breakthrough to Literacy (NBTL) the approach under Primary Reading Programme (PRP). It was noticed that handwriting legibility was low among the newly graduated/deployed teachers from the Basic School College of Education. The poor handwriting legibility among the ZATEC teachers trickled down to their learners as there were poor standards of handwriting experienced in those days due to few minutes dedicated to handwriting and much concentration was on teaching reading (MoE, 2000., Matafwali, (2005) and MoE. 1996).

The MoE (2013) continued to emphasize on the teaching of handwriting at lower primary level. The document indicated that handwriting was to be covered under 'writing' which is one of the five key skills of literacy (NLF, 2013). At lower primary literacy and language is allocated 6 hours 30minutes per week but only eight (8) minutes of the one hour literacy lesson is dedicated to writing skill (where handwriting is embedded) daily from grades one up to grade two term one. This also is an implication that handwriting instruction had very limited time and only ended at grade two term one. But the 6 hours 30minutes at grade 3 and 4 is shared between literacy in Zambian language (3hours) and the other 3hours is for English literacy. The remaining 30minutes is for handwriting in Zambian language with no handwriting material and instruction to use, (MoE, 2013). At upper primary, literacy does not exist instead English and Zambian Languages appear as stand-alone subjects (CDC 2013). These two languages are allocated 28hours per week of 40minutes per period. The revised curriculum of 2013 at upper primary shows that there is less focus on literacy skills (reading and writing particularly on handwriting). Thus, the background information on handwriting instruction on Zambian education system, gives an assumption that learners at grade four had acquired all the necessary handwriting skills that enabled them to write legibly and accurately in the subsequent grades.

In line with this background, Sharp and Brown (2015) indicated in their findings that, teachers teaching upper elementary grade levels viewed explicit handwriting instruction as an expectation only for teachers in the early elementary grade level, hence expecting children to reach fourth grade as legible writers. Thus, it is believed that learners from grade 5 to tertiary are well placed with handwriting if they were consistently and appropriately taught. Despite the link between handwriting instruction and learning outcomes suggested in literacy, few or no researchers had shown interest to analyze the quality of handwriting at grade five level (as

an entrance grade to Zambian upper primary schools). Instead many researchers' concentration was on establishing the reading levels of the early graders.

However, many researchers noted the benefits of gradual handwriting instruction in the learners. Abbott and Whitaker (1997) in their study noted that handwriting fluency moderately correlated with measures of writing achievement and handwriting fluency which continued to make a unique contribution beyond the primary grades abilities. Other researchers; Blaze (2010); Graham and Harris (2005); Saperstein (2012) & Stainthorp (2006) aligns with Abbott and Whitaker (1997) that handwriting impacted letter formation and in turn writing composition skills and reading in the primary school learners. Mwansa (1993) further agrees with other scholars by stating that good readers are among good hand writers and vice versa, as a provable and proven fact popular among Zambian language experts past and present. Due to these assumptions and perceived benefits of handwriting, a study needed to be undertaken so as to analyze the quality of handwriting among the fifth graders. Hence, this background prompted the researcher to carry out a study on analyzing the quality of handwriting among the grade five learners in the selected primary schools of Mongu district.

1.2. Statement of the Problem

The Zambian education system has undergone significant reforms, leading to changes in the curriculum, particularly in the realm of handwriting education. Despite these changes, handwriting education received relatively little attention within literacy programs. However, its inclusion in literacy lessons shifted the focus of educators and researchers toward assessing reading levels and addressing reading challenges in lower primary schools, ((Matafwali, 2005). Other previous studies primarily examined the prevalence and nature of writing at lower grades, revealing that fourth-grade students generally exhibited poor handwriting below grade level, (Phiri, 2015). Recognizing the importance of addressing this issue, a study was conducted to assess the legibility of handwriting among fifth-grade learners (who are transitioning to upper primary) in selected public primary schools in Mongu district of Western Province, Zambia. The research question posed was: "What is the legibility of handwriting among fifth-grade learners in Mongu District, Western Province, Zambia?" This study aimed to bridge the research gap related to handwriting legibility specifically in the context of the Mongu district.

1.3. Purpose of the study

The aim of the study was to analyze the legibility of handwriting among the Grade 5 learners in six (6) selected public primary schools of Mongu district of western province.

1.4. Objectives of the Study.

The objectives of the study are to:

- i. Analyze the legibility of grade five learners' handwriting in selected primary schools of Mongu district.
- ii. Establish factors that influence the legibility of grade five learners' handwriting in selected primary schools of Mongu district.
- iii. Suggest measures which should be undertaken to improve grade five learners' handwriting in selected primary schools of Mongu district.

1.5. Research Questions.

- i. How legible is the handwriting of fifth grade learners?
- ii. What factors influence the legibility of handwriting among the fifth grade learners?
- iii. What measures should be undertaken in order to improve the learners' handwriting in primary schools?

1.6. Significance of the Study

The findings of the study may be helpful in establishing and providing explanation on quality of handwriting among the grade five learners in order to build bridges between research in neuroscience and cognitive and research in theory and practice in curriculum in principals.. It may further provide relevant educational relevant insights that with careful implementation and evaluation could improve schools and other learning environment for generations to come. The study may also help policy makers and Curriculum developers to transform educational strategies to design handwriting programmes that optimize learning handwriting for all ages and needs as the 2023 Curriculum is being validated. The study may further be used by educationists, education managers and teachers as well as other stakeholder as a body of knowledge on the factors influencing the quality of handwriting at upper primary school level and in planning, monitoring and implementing the handwriting programmes in Zambian primary schools.

1.7. Delimitation of the Study

The study was restricted to six (6) selected public primary schools in Mongu district of western province. It targeted grade five teachers who taught grade five classes in 2023. It was confined to 2 urban, 2 peri-urban and 2 rural schools so as to ensure that the findings are comparable.

1.8. Limitation of the Study

The study was limited to only six schools, grade five teachers and learners due to logistical inadequacies. The other limitation was on the status of some school where some had three streams, some two and others one. This reduced the number of targeted teachers from 18 proposed earlier to 11 teachers who participated in the study. Another limitation was on the impossibility of generalizing the findings as the study only targeted minimal samples.

1.9. Definition of operational terms.

Alphabetic Knowledge: The ability to recognize and name upper and lower case letters and recognize symbols in print and know that they are sounds associated with each letter.

Dysgraphia – It is the inability to write correctly.

Fifth grade- It means grade five of upper primary school.

Grapheme- It is a letter symbol represented in written language.

Handwriting- It is the graphical formation of letters and symbols (Edwards, 2003 et. al 2000).

Learner – A school going child in grade 5 aged between 10-15years

Legibility: The state of being read or deciphered; Something (Handwriting) that is easily read.

Literacy: is defined as the ability to read, write and interpret information such as the use of, or the process of using, printed and written information to function in society, achievement of individual goals, and the development of one's knowledge and potential (NCES, 2013).

Messiness – untidy way of writing.

Mirror writing- it is a kind of writing of letters and words just as they appear in the mirror (in a reflected manner).

Phonological awareness - The ability to understand the sound system of a language.

Quality handwriting: legible handwriting.

Quality- It is the state/nature/ standard of something (in this case handwriting).

Reversal writing - It is a kind of writing where letters are written in the opposite direction (as e.g. *b* written as *d*).

Spelling - The ability to write a word or sentence correctly.

Writing - It is the ability to put meaningful thought on paper. The process of putting thoughts, opinions and feelings on paper using graphic symbols or letters according to language's orthography, (Sancheti, 2018)

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0. Overview

This chapter of the report reviewed the relevant literature that had covered studies in line with the quality of handwriting among the primary school learners. The review was covered under the following themes; meaning of quality handwriting, how handwriting is taught in primary schools, legibility (quality) of primary school learners' handwriting, factors influencing the legibility of handwriting and measures undertaken to improve legibility of learners' handwriting in primary schools. The chapter further provides the theoretical framework of the study and a conclusion of the chapter.

2.1. Meaning of Legible Handwriting.

Several studies have examined the development of competence in handwriting so as to determine the level of legibility (quality) among primary school learners. The researchers revealed that practicing teaching handwriting is centred largely on issues relating to form and quality, (Dinehart, 2014). Thus, studies established that quality handwriting was either good or bad. Nelson (2020), indicated that good or bad handwriting can be interpreted differently among school learners. He said that, good handwriting is described as being neat, legible and stylistic while bad handwriting is said to be illegible, sloppy and careless. Other scholars stated that, good handwriting is typically characterized by legibility, consistency, and neatness (Marr & Cermack, 2002). Legibility refers to how easily the writing can be read, while consistency relates to the uniformity of letter size, spacing, and slant. Neatness involves the overall appearance of the writing, including the absence of smudges or excessive cross-outs. Aligning with Nelson, 2020, Zivian, & Elkins, (1984), Schreibmotorik (2017) noted that, good handwriting is characterized by; legible, fluent, fluid, fatigue-free, efficient and individual handwriting fulfilment. Additionally, Perprah and Antibia (2019) indicated, that quality handwriting is a skill characterized by legibility, speed, neatness and efficiency. Bad handwriting, on the other hand, may be difficult to read, inconsistent in style, or messy in appearance. Hence, these findings were linked to the study which focused at legibility of learners' handwriting. The cited source highlighted the characteristics to focus on as the researcher was analyzing the learners' handwriting.

Hence, difficulties with letter formation, spacing, size, slant, and/or alignment may affect handwriting legibility, (Sancheti, (2018)). However, Amundson and Weil (2001) maintain that below-standard performance in letter formation, and size in particular, can greatly reduce handwriting ‘readability’, although a handwriting sample may be readable even though poor alignment interferes with its appearance. Other scholars argued that, the two most important elements in handwriting performance are legibility and speed, (Perprah and Antibia (2019)). They indicated that, legibility is characterized by its components such as letter formation, alignment, spacing, size and slant. While speed is the learners’ handwriting ability to cope with classroom demands, and speed is variable depending on context, instruction given, and whether the child is copying, taking dictation, or free writing. However, (Hamstra, Bletz & Blöte, 1993; Karlsdottir & Stefansson, 2002; Rubin & Henderson, 1982) revealed that, there is a low and no significant correlation between quality and speed of handwriting was found. They indicated that learners’ speed typically decreases when the amount of written work or complexity of the writing task increases. Interestingly, findings from the regression analysis by (Perprah and Antibia (2019) suggest that, two different mechanisms of legibility and speed underlie the quality of handwriting in children with and without handwriting problems. However, it’s important to note that quality handwriting can vary widely among individuals due to natural variation and an intrinsic quality of handwriting (Ellen, 1993).

Another scholar Schreibmotorik (2015) indicated that there is no problem in taking pride in one’s own handwriting, whether it’s “good” or ‘bad’ as long as the writing suffices for its purpose and one is communicating. This is because if one is going to read own notes, it’s understandable to write however, carelessly one wants, as long as one can read them. But if one writes for others to see, or wants the writing to be organized, one might need to make sure everything is neat and easy to read.

In summary, quality handwriting is often categorized as either “good” or “bad.” However, legible handwriting encompasses several essential characteristics, including legibility, neatness, efficiency, consistency, fluency, fluidity, freedom from fatigue, and stylistic elements. These attributes are further described in relation to the mechanics of handwriting, such as letter form, uniformity of letter size (including upper, lower, ascending, square, and descending letters), spacing, slant, alignment, absence of smudges or excessive cross-outs, pen grip, and paper position. These findings were directly relevant to a study focused on assessing the legibility of fifth-grade learners’ handwriting. The identified characteristics guided the researcher’s analysis during the examination of the learners’

handwriting. Therefore, the evaluation of grade 5 learners' handwriting in this study was based on the aforementioned features that collectively constitute legible handwriting.

2.2. How handwriting is taught in primary schools

Education has continued to evolve in search for superlative pedagogy and effective practice and has included advancements of technology. Due to technological advancements, education system encouraged teachers to use technological innovations in teaching literacy to 21st century learners (MacArthur, 2000). Many literatures advocated for use of using technology instruction to teach literacy due to the benefits of digital tools. This was because typing was considered to be more relevant and efficient skill that allowed learners to focus on planning their writing, correct use of grammar, and the composition of writing rather than the mechanics of handwriting which focused on correct letters formation. Carton & Winsleser (1999) and Supon (2009) noted that the advancement of technology had greatly altered the perceptions regarding manuscript and cursive handwriting instruction. Bennett (2009), Blazer (2010) and stainthorp (2006) further described that there was a decline in attention to handwriting instruction due to increased use of technology advancements that had affected the state of handwriting instruction within schools. They indicated that digital tools such as the computers were threatening to replace pen and paper since keyboarding skills had taken priority over learners' development of cursive handwriting skills.

However, other scholars such as Al-Gharbra (2015) in his study of 'handwriting as a matter of Affair' noted that most researchers were convinced that handwriting activated the brain while technology broadens it. James and Engelhardt (2012) also conducted a study by watching the different degrees of brain activation due to handwriting and typing, they indicated that the activated regions in the brain through handwriting were more than those through typing. Medwell et al. (2009), further recommended that training the hand in writing led to the training of the memory to ensure that both the hand and memory work together in order to produce good handwriting. In align with the above, Berninger (2009) confirmed that the effect of using a pen is stronger than that of using a keyboard. He noted in his research findings on the study of 2nd, 4th, and 6th grade learners that, they wrote more and faster when they used a pen. The reviewed literatures have indicated that it is vital to teach children to write using a hand than keyboard. Mangen and Valey (2010), noted that there was strong evidence from neuroscience pointing out that the repeated movements of a hand in writing

led to the memorization of characters in Japanese schools. Thus, it is good to attach prior importance to handwriting for mental letter recognition, James and Engelhardt (2012).

Another literature by Dolin (2016) noted that in the past, California's education system had a separate handwriting curriculum where children were taught handwriting for about 75 minutes of class time, daily. Learners practiced writing while the teacher provided individual feedback and instruction (Gerszberg, 2003). Later handwriting was transformed into an aspect of the language arts curricula where learners were briefly introduced to the letters in combination with language or phonics which left students without guided instruction on letter or number formation (Koenke, 1986). The literature indicated that handwriting was embedded in literacy where it received less attention. Blazer (2010) further contended that the amount of instructional time spent on handwriting was not enough for students to develop proficiency or mastery of handwriting skills.

Due to less attention given to handwriting, its quality of productivity was negatively affected. Sharp and Brown (2015) in their study to explore how practicing teachers addressed handwriting instruction, and how they perceived handwriting instruction personally and professionally, they noted that handwriting was less developed at the fourth grade level although teachers used all accommodations for students who struggled with handwriting development. Some studies further indicated that handwriting was taught through stages; before schooling, in elementary, middle and upper grades. Aligning with this, Wallace & Schomar, (1994) in their study, they revealed that schools transitioned handwriting instruction from manuscript (in early grades) to cursive in later grades. Arnold, and later , Enstron (1969) also advised that once writers develop proficiency with manuscript handwriting, school should transition handwriting instruction from manuscript to focus upon cursive handwriting in order to enable writers to develop legibility, speed and efficiency with handwriting tasks. These literatures reveal that the teaching of handwriting was sequential (taught from simpler-Manuscript to complex- cursive). However, Armitage and Ratzlaff (1985) maintained that cursive handwriting instruction was not to be withheld from learners until they master neatness with manuscript. Align with Armitage and Ratzlaff, Groff (1960), assumed that timing during the transition which schools typically transition handwriting from manuscript to cursive is more rooted in tradition rather than learners' performance with handwriting. There are those who insist to follow the curriculum that the child must learn cursive writing before he leaves the lower primary thus, transition to this type of writing from

manuscript writing will be difficult. From these studies it can be said that transition from manuscript to cursive handwriting should be depended on the learners' needs and abilities with handwriting.

Other researchers such as Graham, Harris, Mason, et al. (2008) conducted a survey to study how handwriting was taught in the United States. They noted that teachers used explicit and systematic instruction where there were well laid procedures to follow and materials to use when teaching handwriting. Aligning with previous researchers, Hart, Firtzpatrick and Cortesa (2009) in their findings showed that direct and explicit instruction on handwriting was very effective as it included the teaching of effective patterns for forming individual letters, modeling the formation of each letter, providing practice, encouraging self-evaluation and giving feedback. However, Sharp and Brown (2015) argued in their findings that, teachers teaching intermediate grades viewed explicit handwriting instruction as an expectation only for teachers in the early elementary grade level, thus expecting children to reach fourth grade as legible writers.

Allen (2011) in his study recommended the use of eclectic approach in teaching handwriting. He indicated that eclectic approach combined a variety of techniques intended to improve the quality of handwriting in primary school children as it proved to be more effective. It could be concluded that using a balanced approach in handwriting teaching contributes positively to the quality of handwriting among the primary school learners.

Edwards (2003) further reviewed that along with several handwriting instructional approaches, such as alphabet practice emphasized letter formation and alphabet rockets targeted handwriting fluency. Additionally, Sheffield (1996), stated that Direct Kinesthetic steps to teaching handwriting leaves nothing to change in developing writing highest level. Essentially, all children learn to write more expeditiously using kinesthetic technique. Because kinaesthetic learning is such a strong learning channel and so reliable, all children need to assimilate accurate information of alphabet to a point that forming these letters require low conscious effort. Align with other researchers, Santangelo and Graham, (2013) in their 18 studies further showed that handwriting instruction improved legibility and fluently in children from kindergarten to grade 7th.

There are things that contribute to quality of handwriting among school going children. As such, handwriting is a skill that need to be taught and enhanced by all education stakeholders. This is because quality handwriting is dependent on concerted efforts by everyone involved

and interested in the education of a child. Therefore, the teaching of handwriting should be well implemented by all stakeholder who intend to provide quality education. Learners themselves need to learn and practice handwriting so that their writing skills are improved. Success in learning to write is influenced by the individual's health, energy, and temperament. Hence, the next part of the chapter focuses on factors influencing the quality of handwriting among the learners.

2.3. Legibility (Quality) of Primary school learners' handwriting

Kgomo (2013) who conducted a study to explore Foundation Phase teachers' content knowledge of Handwriting in Limpopo Province in Capricorn district of South Africa. One of the researcher's research question was on the quality of learners' handwriting. The findings indicated that there was a decline in the legibility of learners' handwriting in terms of letter reversals and fluency as challenges to learning handwriting. This indicated that learners' handwriting was not legible, as there was no one who could read reversal letters. This study was mainly to explore teachers' knowledge of handwriting. But the study also explored the quality of learners' handwriting. Since the study was on teachers, content knowledge of handwriting, it did not indicate the grade level of the teachers and learners whose handwriting was characterized with reversal writing. In line with Kgomo (2013), Haring and Schiefelbasch (1976) further revealed that, some learners with writing difficulties also exhibited reversals of numbers, letters and words as they struggled to write. It was noted that learners wrote letters and numbers which faced along a vertical or horizontal line in such a way that, letters are turned upside down, or in other cases, there was poor transposition, where the sequence of letters in words were out of order. For example, learners wrote letters such as '**b**' as '**d**' or '**p**' as '**q**' '**m**' as '**w**' '**n**' as '**u**'. Other studies by Aukerman (1989) indicated that, some learners writing were characterized by mirror writing which was exhibited by learners with dysgraphia. Ibid (1989) defined mirror writing is writing where a learner writes letters in a reflected manner as in they appear in a mirror. A learner writes words from right to left instead of left to right. For instance, the learner may write 'tap' as 'pat' and letter 'b' as 'd', Aukerman (1989).

Some studies indicated that spelling challenge also characterized handwriting difficulties (Volgel and Adelman, 2006). According to Trio (2008), spelling errors are generally categorized as errors of omission, substitution or addition. Learners with writing difficulties

usually exhibit spelling errors by exhibiting mirror writing, hence distorting the meaning of the word, (Davis and Elen, 1994). For example, the word; “*sand soils*” may be written as “*sanb solis*” where letter “*d*” written as ‘b’ and substituting as in ‘soil’ written as ‘solis.’

Phiri (2015) carried out a study to determine the nature and prevalence on writing difficulties among fourth graders in four selected primary schools in Lusaka district of Zambia. The study used descriptive survey research design and employed both qualitative and quantitative research methods. The results revealed that the fourth graders’ handwriting abilities were relatively low and below the grade level as it was mainly characterized with poor spelling, poor spacing, messiness and combination of upper and lower cases in words and sentences. This study focused at fourth graders’ handwriting which was poor. The indication is that learners reach fourth grade without acquiring the mechanics of handwriting. The acquisition of handwriting mechanics by fourth grade help learners to have legible handwriting and develop automaticity in the later grades. Although the study was appropriate at that level, there has been a lot of studies conducted at early graders but not at upper primary. Hence the need to focus on upper primary grade especially grade five which is the entrance to check if learners are ready for advanced writings.

Many studies such as Margret (1975), Alston and Taylor (1987) and Kennedy (2004) in Europe and the United States of America had revealed a lot on the characteristics of writing difficulties of learners with writing problems. In regard to handwriting problems, Alston and Taylor (1987) observed that learners with extreme writing problem in written work exhibited irregularities in letter formation. Learners failed to write letters exactly as they appear or to copy the exact shape of a letter, thereby writing a word in a deformed manner while the spelling was correct. Kennedy (2004) has observed that, the improper closure of letters exhibited by learners in writing is known as dissociation. This is commonly associated with learners with dysgraphia, where learners fail to properly close letters when writing. Additionally, research studies by Margret (1975) on writing abilities of second graders, revealed that learners with handwriting difficulties also exhibited poor alignment. This is where learners failure to stay on horizontal line or follow the line when writing. In line with (Margret, 1975), Brote and Hamstra (1991) indicate that learners who fail to stay on the line when writing may also overshoot or under shoot the lines and /or letters may be poorly aligned on the line of the book.

Limpo, Parente and Alves (2018) carried out a single subject design study on the fifth graders aged 10 to 11. The study used a multiple-probe design across three participants to test the effectiveness of a handwriting intervention for fifth graders. Some learners displayed less handwriting fluency than their peers but without spelling disorders. The implication in the findings was that there were variations in the fifth graders handwriting legibility in terms of handwriting mechanics. For example learners may mix upper and lower case letters and/or fail to differentiate ascenders and descenders in their writing but the spellings could be correct as in words such as, ‘oppoSERs and ‘NDuMba.’ Critically, findings were in line with the proposition that achieving handwriting fluency is critical in supporting the development of quality handwriting.

A study conducted by Haring and Schiefelbusch, (1976) on third graders in writing activities, revealed that, some learners mixed letters in words in that, small letters and capital letters were found to be in one word. For example, some learners wrote; “HoN mR NDuMba.” This showed that there was no consistence in writing, as letters in a word consisted both capital and small letters, (Haring and Schiefelbusch, 1976). The study was conducted on the third graders and the findings reflected poor quality of handwriting by third grade. While other studies indicated that handwriting legibility improves greatly in grade 2 or grade 3 (Karlsdttir and Stefansson, 2002; Mojet, 1991; Savik & Arntzen, 1991). Futher, Gargot, (2020) stated that, formal handwriting acquisition begins at the age of five years (preschool) and requires about ten years of practice to reach a level of almost complete automation. During this time, handwriting initially evolves on a quality level (from first to fifth-Grade) and then on a speed level (handwriting speed mainly evolves starting from the fourth grade) (Gargot, 2020). These studies align with studies by Graham, Weintraub, & Berninger, (1998) on handwriting speed and legibility in children aged 6 to 15 years. Their findings revealed that handwriting speed and legibility increased yearly although the rate of increase varied with grade level and maturity.

In other studies, findings indicated that some learners’ handwriting exhibited poor spacing and size of letters. Kirk (1972) notes that learners with handwriting difficulties exhibit poor spacing between words and letters. Learners were either leaving too small or too much, or no space at all between the words. In relation to spacing, research studies by Margret (1975) on writing abilities of second graders, also revealed that, written work of second graders was too crowded or clustered together which rendered reading it difficult. Spacing of letters within

words were also poor in that, learners wrote letters within and between the words as a word with spaces or no space at all. For example, a learner wrote, 'bird in a nest' as "*bi rd ina n e s t,*" (Margret, 1975). Such writing exhibited poor quality handwriting. Corresponding with the above literatures Blote & Hamstra-Bletz, (1991) indicated that the speed, space, size and legibility of the handwriting and the associated construction of the handwriting changes over time as children get older and as they tend to write faster.

However, other researchers revealed that slow writing speed is also associated with handwriting challenges difficulties. Thus, O'Hare and Brown (1979) indicated that learners with dysgraphia may write slowly because they press the writing instruments (pencil or pen) very hard as they write, to the extent that, they may even tear the paper, and rendering the written work to look dark and dirty. Wedell (1973) noted that some learners write slowly because their wrists may be too weak or too stiff to even hold a pencil in a correct position, making writing to be too slow, painful and tedious. Additionally, Kirby and Peters (2007) outlined that, learners who write slowly were more likely to exhibit poor letter combination in words.

Graham, Berninger, Wentraub and Schafer (1998) conducted a study to examine the development of handwriting speed and legibility in 900 children in Grades 1—9 in United states. Each student completed 3 writing tasks: copying a paragraph, writing a narrative, and writing an essay. The results showed that children's speed of handwriting on the copying task typically increased from one grade to the next, but the pace of development was uneven during the intermediate grades and leveled off in Grade 9 as speed began to approximate adult speeds. However, improvement in handwriting legibility on the 3 writing tasks was primarily limited to the intermediate grades. Girls' handwriting was more legible than boys' handwriting, and the girls wrote faster in Grades 1, 6, and 7. Right-handers were also faster than left-handers, but there was no difference in the legibility of their written products. Further, handwriting speed contributed significantly to the prediction of legibility on the narrative and expository writing tasks, but the contribution was small, accounting for only 1% of the variance. This study gives an implication that girls wrote more legibly than their boy counterparts. Right handers also wrote faster than left handers. The study focused on speed and legibility of handwriting which are characteristic of quality handwriting. In agreement, Gargot (2020) noted that a gender effect has been observed in handwriting acquisition, with girls

presenting slightly higher quality and speed scores than their male peers, although no effect of handedness was reported in the study.

In line with the above, other scholars indicate the following; Handwriting quality improves greatly during the first year of learning and much more slowly thereafter (Karsldottir & Stefansson, 2003). Mojet (1991) showed that children made a dramatic improvement from Grades 2 to 3, followed by a stagnation in Grade 4 and then by a steady improvement from Grades 5 to 6. In two longitudinal studies, Blote and Hamstra-Bletz (1991) and Hamstra-Bletz and Blote (1990) described the different stages of handwriting development from Grades 2 to 6. From Grades 2 to 3, they observed improved skills in making the fine movements required to write; letter size decreased, word and letter alignment improved, the written line became steady, and links were smoother. Handwriting changed after Grade 4, with the shapes of letters deteriorating, making for ambiguous letter shapes. Letter writing speed increases in a linear manner over the primary school years (Graham et al., 1994; Hamstra-Bletz & Blote, 1990; Karlsdottir & Stefansson, 2003; Sassoon, 1986; Ziviani & Elkins, 1984).

Graham, et al., (2021) investigated handwriting fluency and the quality of primary grade students' writing. This investigation aimed at assessing the association between handwriting fluency and writing quality. They tested whether handwriting fluency made a statistically unique contribution to predicting primary grade students' writing quality on a functional writing task. The results showed that handwriting fluency accounted for a statistically significant 7.4% of the variance in the writing quality of primary grade students. It was also noted that attitude towards writing, language background, grade and gender each uniquely predicted writing quality. Finally, handwriting fluency increased from one grade to the next, girls had faster handwriting than boys, and gender differences increased across grades. An identical pattern of results were observed for writing quality.

Malpique, Pino-Pasternak and Valcan (2017), from Murdoch University examined the handwriting abilities of Kindergarten students in seven government primary schools in Western Australia, and the amount and type of writing instruction delivered by their teachers. They focused on the children's handwriting automaticity – the ability to access, retrieve and write the letters of the alphabet automatically and legibly – as it is related to

the development of effective writing skills. Malpique Pino-Pasternak and Valcan (2017) said, as expected in early years writing development, there were a large number of reverse letters in the alphabet task. The average performance was 9.70 letters in one minute. 'Nine out of the 177 children were not able to write a single letter, and only one child was able to write the 26 letters of the alphabet in the time provided.' The study focused on handwriting automaticity at kindergarten but the results were the same as those at some primary grade level. Hence, handwriting development is dependent on cognitive development and maturity of an individual. This is because individuals develop differently.

Erdogan (2010) conducted an analysis of the legibility of cursive handwriting of prospective primary school teachers from the perspective of legibility. The study was a descriptive one aiming at portraying the existing state of affairs of making use of qualitative methods. Teachers were asked to copy a text using cursive handwriting. The cursive handwriting of prospective teachers was analyzed using the "Cursive Handwriting Assessment Form." The study revealed that the cursive handwriting of prospective primary school teachers was adequately legible, yet not without problems regarding certain issues. The study was on teachers, but the findings are relevant to this study because learners' handwriting is a mirror of the teacher's handwriting (or board work). The study is worth it to be included in this chapter because teachers are always in contact with the learners and agents of changes hence, it may influence the legibility of their learners' handwriting. The cited studies are related to the undertaken one as both focus on the legibility of handwriting although the earlier targeted teachers while the later focused on learners. This is because teachers' handwriting legibility is likely to affect the learners' handwriting since their teachers' handwriting had problems, too. However, Frenzel (1958) in his study on the factors affecting the legibility of cursive handwriting, emphasized that handwriting should not be on perfection but rather on legibility and ease of performance. An implication that the style may be personal yet legible.

Allen (2010) in his study of examining the changes in handwriting in children from early learning experiences to at about late adolescence, noted the following results; a) there was underlying higher order dimension of handwriting that emerged from some of the individual features. b) the variability of handwriting increased from the young children and peak at about 10-11 years old and then decreased across all writing tasks, and that c) within the

general trend there was also the evidence that writing faster than normal led to increased variability in letter formation for youngest children but reduced variability for older children.

However, Graham et al., (1998) found that the quality and legibility of handwriting generally improved with age but the rate of change was not even, as there was little improvement in the younger years and greater improvements in later years. They further stated that the quality of handwriting decreases after grade 6 due to the development of personal styles. Other literatures further noted that the quality of handwriting improved more or less sequentially with grades in primary schools (Graham & Weintraub, 1996; Hamstra-Bleetz & Blote, 1990; Karlsdottir & Stefansson, 2002; Ziviani & Elkins, 1984). These studies denote that handwriting quality and legibility evolves as early as early grades but improvement varies with age, grade level language and cognitive development and maturity of an individual.

The above reviewed literature on mechanics of handwriting presented a relevant platform to investigate the quality of handwriting of grade five learners in Zambian schools after they had been exposed to Primary Literacy Programme (PLP) for four years. With regards to very few or on studies on the quality of handwriting, the study sought to establish whether grade five learners exhibited good quality of handwriting. It is often argued that once learners have acquired foundational skills (especially handwriting) in the early grades (initial grades), learners would be able to transfer the knowledge acquired in initial grades into intermediate grades (Dunn 1983). Therefore, it was worth it to analyze it. Therefore, it is important to determine how handwriting is taught in the study.

Texas Education Agency (2009).

2.4. Factors that influence the legibility of learners' handwriting.

Handwriting performance can be restricted through intrinsic and extrinsic factors (Alston & Taylor, 1987). Extrinsic factors included sitting position, chair/desk height, writing instrument used, type of paper used and its placement on the desk, environmental lighting and noise, blackboard distance when copying, and volume of handwriting the child is expected to complete also influence the quality of handwriting (Ste-Marie, Clark, Findlay, & Latimer, 2004). For instance, desk or chair height that is too low encourages slouching forward and conversely, while when the chair and desk height are too high and/or feet are unsupported, written output may be compromised. It is important to evaluate biomechanical factors when

addressing handwriting difficulties in typically developing children and children with disabilities (Ste-Marie, Clark, Findlay, & Latimer, 2004). Hence, Allen (2011) conducted a study on the developmental aspect of handwriting acquisition. He noted that the key points arising from these are that the motor, maturation, linguistic and cognitive capabilities that might impose restrictions on handwriting performance in children at different developmental stages. But Volman, Van Schendel and Jongmans (2006) investigated the contribution of perceptual motor dysfunction and cognitive planning problems to the quality of children's handwriting problems. The researchers concluded that there were two different mechanisms influencing the quality of handwriting. Fine motor coordination was the predicator for quality of handwriting among children without handwriting problems while those with handwriting problems were influenced by perception. The results showed that quality handwriting was dependent on the effective interaction between cognitive and motor components as they are part of developmental skills.

The general features of good handwriting instruction are an emphasis on motor relaxation accompanied by reasonable speed and endurance, on legibility and quality, and individual attention, and diagnosis. Mass drill, as always, is not very effective. The problem of changing over from manuscript to cursive style in the third grade is thought to be a serious one. The point here is that manuscript writing is a forthright recognition of the developmental viewpoint, according to which writing is not an independent skill, but a phase of language development and a phase of motor development that need to be nurtured.

Teaching method is one of the external factors that affect the quality of hand writing. If a child does not receive sufficient instruction and feedback during handwriting learning process, errors can become habitual and result in poor legibility (Alston & Taylor, 1987; Graham, 1992). However, the teaching of handwriting should be modeled upon the training method already known to be successful in other types of muscular learning. In addition Good handwriting consists of a series of muscular skills that develop as the combined result of mere age, of absence from pressure, and of elimination by diagnostic teaching of such bad habits as need arise. With the ever increasing demands upon children to write before they have learned how, the legibility of script becomes lower and lower with every decade. The nature of handwriting instruction depends closely upon the relative emphasis put upon the quality, rate and legibility of the final product. It is always necessary to consider to what extent each should be stressed. This is because in the past handwriting was regarded as an art. At present, however, it is thought of as a tool which should be taught as to be useful as

possible. There is something wrong with the teaching of writing in view of the fact that it takes 350 hours extended through seven years to raise the quality of writing. It is possible that not only has the diagnosis been neglected but also the proper remedy.

Graham et al., 2007 and Hammerschmidt & Sudsawad (2004) noted that the quality of handwriting among the primary school learners was influenced by explicit and systematic instruction, time allocation, teachers' handwriting, attitude and knowledge of teaching handwriting. Phiri (2015) further asserted that poor handwriting was attributed to teachers' inadequate training to teach handwriting, lack of continuous orientation on handwriting programmes, overcrowded classrooms, lack of assessing learners' handwriting and inadequate administering of remedial work influenced the learners' handwriting in primary schools.

Other scholars such as Berninger et al. 2006; Graham et al., (2007); and Wallace & Schomer (1994) also noted that the curriculum demands for good academic achievements, use of technology and focusing much on some curriculum areas such as reading, language arts and creative writing had negatively influence the quality of handwriting among the primary school learners. Koenke (1986), the results of his study revealed that handwriting was transformed into an aspect of the language arts curricula where learners were briefly introduced to the letters in combination with language or phonics which left students without guided instruction on letter or number formation. Berninger et al., 2006; Graham et al., (2000) stated that the combining of handwriting with other courses was perceived to be misleading as it was found that it decreased the likelihood of explicit handwriting instruction, and made the constancy of instruction more difficult to track (Ste-Marie, Clark, Findlay, & Latimer, 2004). These literatures indicated that handwriting was embedded in literacy where it received less attention compared to other subjects of the curriculum. Due to less attention given to handwriting, its quality of productivity was negatively affected. Thus, the embedding of handwriting into literacy influenced the poor quality of handwriting among primary school learners.

Graham, Santoro, Berninger and Struck, (2006) revealed that there were many features such as spacing between letters and words, the size of the letters, and the alignment of the letters on the line affects legibility. Legibility is an important feature in the process of developing handwriting skills, where letters should be determined correctly (Duran, 2011). Therefore, the more accurate the writing of letters is taught, the greater the legibility.

In line with the above ideas, Kuşdemir, Kurban and Bulut (2018) stated that some of the factors such as Ergonomic factors; the sitting style, paper-notebook position and pencil-holding and positions of the students in writing are not well handled at an early stage, they affect quality of learners' handwriting negatively. In alignment with Kuşdemir, Kurban and Bulut (2018), Davis and Elden (1994) noted that, not all learners were exposed to prewriting skills at an early age. Therefore, lack of proper teaching strategies of writing skills more especially at lower grades (grades 1 to 4 in case of Zambia) may cause serious handwriting problems. Berninger (2007) identified poor handwriting instruction strategies as major contributing factors to handwriting difficulties among learners, which are to do with how writing instructions are given to them. Kuşdemir, Kurban and Bulut (2018) further stated that, readability is a factor that affects the condition of the slope and line, the shape and size of the letters, relative to each other. While spelling challenge is where syllables in words are not complete or letter-syllable skipping. Written expression was the last of the factors that have a positive and negative effect on the handwriting skills. They said that the factor involves application of spelling and punctuation rules and the type and content of the text and that if rules are not followed, the handwriting becomes illegible.

Another extrinsic factor influencing handwriting is the type and duration of instruction the child receives. The timing of these influences their quality of handwriting acquired by a learner, The effect on a given child's handwriting will not follow some pre-determined pattern but rather dependent on the interaction of the internal and external factors that affect the handwriting, which will be reflected in the neuronal connections made and lost in the light of experience (Van, 2011). In addition teaching method is one of the external factors. If a child does not receive sufficient instruction and feedback during handwriting learning process, errors can become habitual and result in poor legibility (Alston & Taylor, 1987, Graham, 1992).

The intrinsic factors includes the developmental processes of handwriting change in children (Weintraub, Drory-Asayag, Dekel, Jokobovits, & Parush, 2007). It was noted that handwriting attracted little attention in the later phases of development. One of the reasons why handwriting attracted little attention in the later phases of development was that handwriting ability is not perceived as being a constraining factor on learning for most children and older children. It was also assumes that older learners would have acquired the handwriting skills in their early stages of development. Therefore, older children were thought to be less conformable to instruction in the case of any dysfunction. This may be a

short-sighted view, however, as later academic performance may indeed be influenced by the ability to execute handwriting efficiently (Summers & Catarre, 2003).

Additionally, Intrinsic factors, also refer to the child's actual handwriting capabilities including: kinaesthesia, fine motor skills, eye-hand coordination, orthographic coding, and visual perceptual and visual motor integration skills. Children who have difficulty in perceiving and storing kinesthetic information will face a new handwriting task every time they repeat previous writing attempts (Lazlo & Broderick, 1991). A well-expanded web space and full range of motion of the carpometacarpel joint in the thumb are components essential for the dexterity needed for good handwriting (Benbow, 1995). Children with poor handwriting do worse than those with good handwriting on fine motor and dexterity tasks measured by the Bruininks Oseretsky Test of Motor Proficiency (Tseng & Murray, 1994). Fine motor Skills and finger functions have been found to be essential factors for handwriting performance (Tseng & Chow, 2000). Visual motor skills affect a child's ability to measure position in space, figure ground perception and copying letters or words (Case-Smith, 2002). Difficulties in this particular area make it challenging for a child to write within a line boundary and to correctly write letters and words. Poor perceptual motor function is a cognitive problem which leads to a poor coordination between vision and fine motor skills. Difficulty in perceptual motor skill results in slow handwriting speed and poor consistency in handwriting (Tseng & Chow, 2000).

Additionally, Wolf and Brower (1993) have highlighted poor motor or dexterity of learners as another cause of handwriting difficulties in learners. This could be attributed to failure by learners to control their fine motor muscles of the fingers. According to Wolf and Brower (1993), when a learner has fingers which are not flexible enough to make required shapes and position of letters, it can make written work illegible and is likely to distort the meaning of words. Farrant (1980) also writes that, when a learner has poor control of fine motor muscles, such a learner may write too hard. In some instances, such a learner will concentrate on how to hold a pen or pencil which in turn, makes writing tasks even more ineligible and complicated.

Further, According to poor vision can affect the learners' visual-motor integration and eye-hand coordination in executing proper writing, (Blote and Hamstra, 1991). Learners with visual-spatial problems may have decreased awareness regarding the spatial arrangement of letters, words or sentence on the page. Visual spatial problems manifest themselves in a

learner, when s/he fails to write on a straight line, but will either write going up or down the page, (Blote and Hamstra, 1991). According to Kirk, Gallagher and Anastasiow (2006), learners with visual spatial problems usually write letters or words that seem to be suspended in the air, and not fixed on the horizontal line. Haring and Schiefelbusch, 1976) have also indicated that some learners are unable to write words from memory or dictation due to poor visual memory. Such learners cannot remember how words look like. Additionally learners who are easily distracted or have poor attention span, are more likely to find writing difficult as they forget to remember how letters are formed or how they appear, (Haring and Schiefelbusch, 1976).

Studies such as Kavale, Forness and Bender (1987), Crystal (1996), Shaywitz (1998) and Snowling (2000), have attributed handwriting difficulties to poor reading skills among learners. Kavale, Forness and Bender (1987) states that, dysgraphia can occur along side with dyslexia (impaired reading ability). Thus, Crystal (1996) indicate that when learners face reading difficulties, they are very likely to experience writing problems as well, because reading and writing are complementary skills that usually develop simultaneously. According to Shaywitz (1998) and Snowling (2000), it is approximately estimated that 5-18 % of the learners affected by dyslexia in schools often have associated difficulties with writing. Hence learners who are dyslexic are likely to exhibit spelling errors which become evident when they try to write. Berninger (2007) adds that reading difficulties seem to have such a potentially devastating consequence in acquisition of writing skills. The studies cited are linked to the current study by help the researcher to compare note on research objective two which tried to establish the factors influencing handwriting legibility.

In addition to reading difficulties, Paris (2005) reveals that research on assessment and instruction of learners in literacy skills shows that, alphabet knowledge and phonemic awareness are the enabling skills and significant predictors of later writing achievement. Lack of adequate experience with sounds and patterns, makes learners to be unable to recognize a sound, discriminate and use those sounds in speech and consequently in writing. Therefore, the inability in turn, makes it difficult for young learners to sound out words in print, resulting in writing difficulties, (Paris, 2005). The above observations by Paris (2005) entail that, learners who fail to identify components of sounds within a word they try to spell can have handwriting difficulties, because they are more likely to find it difficult to link sounds and syllables to make a correct word. According to Berninger (2007), inadequate phonemic awareness inhibits learners from writing words that are unfamiliar. Additionally,

Ronald and Eldem (1994) state that a problem with development of speech is likely to interfere with a learner's progress in writing. Research studies on literacy development, particularly in acquisition of reading and writing skills, has shown that speech development may be an early warning sign of dysgraphia, (Ronald and Eldem, 1994).

Woolley-Wade and Geva (2000) have recorded that, biliteracy acquisition often entails the challenge of learning new phonological information and the ability to reliably assign this information to the appropriate graphic representation. Therefore, the challenge of learning to read and write in two orthographies simultaneously or immediately one after the other is a great challenge on the learner especially in initial grades. Dixon and Nessel (1983) state that it is generally accepted that writing is more difficulty than listening, speaking or reading. Producing meaning through writing requires more effort than recognizing meaning through listening or reading. Mubanga (2010) indicates that what can be said aloud cannot be expressed as easily or quickly in writing. Usually learners develop writing abilities after oral language abilities are rather well established, (Nessel, 1983). Hence, problems with oral language point to problems with writing skills because learning the skills of written expression can be difficult for ESL learners who must learn to write a language which is orally unfamiliar.

Therefore, factors that may affect handwriting performance in children may be intrinsic, stemming from the child's actual performance capabilities (discussed in the previous section) or extrinsic, relating to environmental/biomechanical issues. The reviewed literatures have shown that the noted factors influence the quality of handwriting either positively or negatively.

2.5. Measures undertaken to improve learners' handwriting in primary schools.

Kgomo (2013) conducted a study to explore Foundation Phase teachers' content knowledge of Handwriting in Limpopo Province in Capricorn district of South Africa. He noted that teachers showed knowledge of the key aspects of handwriting, but could not teach handwriting. The study advocated for an intensive teacher training in handwriting pedagogy to improve their teaching skills. Thus, teachers' skill knowledge should correlate with good and correct strategies that help the teacher to teach appropriately. Muwafaq Al-Ghabra (2015) made a request that aimed for the Ministry of Education, and the Ministry of Higher Education and Scientific Research to make a remedial action through establishing awareness campaigns to show the importance and necessity of updating curriculum to focus on using

handwriting to enhance and support the students' reception of information. In order to achieve the success of the mentioned efforts, the researcher refers to training the trainers and establishing writing units that are joined to the learning institutions.

Cook (2021) conducted a study in Central Kentucky to compare the efficacy of two handwriting programs (handwriting Without Tears (HWT)) and Write Start) implemented in grade one classes to achieve legibility. The results indicated that there was a great improvement in first graders' handwriting legibility as both programmes demonstrated clinical significance and improved learners' handwriting legibility and fine motor skills. Therefore, re-considering enshrining the policy, theory, pedagogy and practice made handwriting become automatic earlier in writers' handwriting. It implied that designing effective handwriting programmes in the curriculum contribute to the development of cognitive and motor skills in the learners. Thus, handwriting was to be taught using well balanced techniques that cater for cognitive and motor skills.

DOBE (2011) in Kgomo (2013) also noted that handwriting could be taught by focusing on the key aspects of handwriting such as posture, directionality and movement, alignment, pencil grip, letter formation, shape and size, paper positioning and the use of sequenced handwriting instruction. This is because acquisition of the key skills lays a strong foundation for legible handwriting. The implication is that the acquisition of the key aspects of handwriting (as basics) enable early graders learning to develop legible handwriting. In addition, in most of the studies encountered in the literatures, it has been suggested that the problem of writing stems from letter writing, which is the first stage of writing, and hence, this stage should be emphasized in order to eliminate handwriting difficulties (Kodan, 2016). Therefore, emphasis on the key aspects of handwriting help in eliminating the problem of handwriting difficulties among learners. In line with the above point, Poole (1991) stated that some of the factors such as Ergonomic factors in writing need to be taught and emphasized to learners so that they do not become a problem of handwriting difficulties. This implies that learners ought to be trained in sitting style, paper-notebook position and pencil-holding positions of the students as the preparation stage of writing skill.

Jewel and Karan, opined Knowledge of letters was the single best predictor of reading success. Children learn to discriminate letters by their distinctive visual features rather than holistically. Jewell and Karen (1991) suggests that when the child is learning to visually discriminate between letters, visually similar letters should be taught in isolation before they

are contrasted. Adams (1972) suggests that teaching upper case letters separately from lower case also reduce visual confusion. Writing letters help children focus on the visual features of each, particularly when their formation is emphasized. Handwriting approaches that teach letters in groups with distinctive labels and visual clues are ideas for this, teaching formation.

Graham et al., (2008) conducted a survey to study how handwriting was taught in the United States. They indicated that ninety three percent (93%) teachers reported that they taught handwriting in whole class lessons. Most teachers felt that handwriting was to be taught as a separate subject and that direct instruction was more important to learning handwriting in incidental learning. Graham et al., (2008)'s study suggests that handwriting should be an independent subject that should be delivered using direct handwriting instruction. Therefore, the literature suggested that handwriting should be taught separately.

Kodan (2016), further noted that the methods and techniques applied to teaching handwriting are an important factor for the elimination of handwriting difficulties. He stated that methods and techniques should be appropriate to the age and grade level, and most importantly addressed to all learners' needs and abilities. In the similar study, Calp (2013) emphasized that the methods and techniques to be applied should be specially prepared for the learners. This is because methods and techniques prepared individually for the learners enhances the possibility of successful results in handwriting. In line with Calp (2013), Adaş and Bakir (2013) and Datchuk and Kubina (2012) emphasized that the use of contemporary approaches based on learners help to eliminate writing difficulties and increase success in handwriting legibility. MacArthur (2000) argued that modern methods and techniques should be applied in relation to technology because it is the technological age of today.

Some studies proposed a method of self-instruction based on the reflection of handwriting performance after each writing exercise. The purpose was to improve the planning element of the handwriting for the next exercise. Scholars found that such methods did work, they stated that self-instruction yielding improvements in handwriting quality in poor writers above that achieved by poor writers not receiving such instructions (Karmiloff-Smith, 1992).

Individuals can reflect upon their handwriting and act upon those reflections leading to overall beneficial effects to the writer since they understand and internalize the lessons learned from those reflections. The nature of these reflections may be influenced by social aspects of the writers, such as their desire to please, to write neatly, or to write elegantly. Following these reflective processes, writers have the capacity to modify their handwriting to

a certain degree to achieve particular aims (such as writing neatly or quickly). Such processes have the capacity to alter the appearance of a child's handwriting and these will be picked up by increasing variability in the handwriting during the periods in which they occur. They will also be constrained by the child's ability to control the fine movements of the fingers and hand and this aspect will be considered. This reflective capacity suggests that the handwriting skill is available to the mind of the individual for mental manipulation, as anticipated by the Karmiloff-Smith's theory of skill acquisition.

However, self-instruction is not effective because handwriting is not developed naturally but rather it should be taught. Therefore, there is need for direct and explicit instruction includes the demonstration of activities through Gradual release Model (GRM). 'Malpique and Pino-Pasternak (2017) explained that, the main goal with explicit teaching and practice is to provide children with opportunities to develop handwriting automaticity, which in turn will allow them to focus on translating their ideas into writing. This is because Both the amount of time students spent writing and the amount of time teachers spent on writing instruction ranged from 20 minutes to five hours per week by using 'I do, we do and You do.' In classrooms where teachers reported spending more time to teach writing per week, more time was allocated to teaching lower-order skills than to teaching higher-order skills. Graham et al., 2007 and Hammerschmidt & Sudsawad (2004) also acknowledged that the quality of handwriting among the primary school learners was influenced by explicit and systematic instruction, time allocation, teachers' handwriting, attitude and knowledge of teaching handwriting. Explicit instruction is systematic, direct, engaging, and success oriented--and has been shown to promote achievement for all students, (Archer and Hughes, 2010 and Sedita, 2022).

Limpo, Parente and Alves (2018), employed a multiple-probe design across three participants to test the effectiveness of a handwriting intervention for fifth graders (age 10–11) displaying less handwriting fluency than their peers, but without spelling disorders. The study employed 5-h handwriting intervention that provided students with explicit instruction and intensive practice in writing cursive letters, words, and sentences, through fast-paced alphabet and copying activities. Intervention effects were examined on handwriting fluency, written composition (i.e., text length, clause extension, and story elements), and self-efficacy beliefs. Results showed that the handwriting intervention was highly effective in increasing students' handwriting fluency. There were also improvements in written composition in terms of clause extension and number of story elements. After the intervention, students were also reported to

have strengthened self-efficacy beliefs for grammar and usage skills. Overall, this study showed that handwriting interventions can effectively help students with limited handwriting skills to become fluent hand writers.

Some studies have reported that supplementary instruction enhanced both handwriting performance and story writing ability, whereas others reported improvement in component skills (i.e. visual–motor control, in-hand manipulation). Several studies have investigated the effect of supplementary handwriting instruction using varying types of handwriting practice based on an educational and/or motor learning model. The idea of providing supplementary handwriting instruction as the first line of defense in remediating handwriting difficulties, appeared to have merit as suggested by several authors.

In addition, Direct Kinesthetic steps to teaching handwriting leaves nothing to chance in developing writing skills to its highest level. Essentially, all children learn to write more expeditiously using kinesthetic technique. Because kinaesthetic learning is such a strong learning channel and so reliable, all children need to assimilate accurate information of alphabet to a point that forming these letters require low conscious effort Sheffield (1996).

Nevertheless, Hart, Fritzpatrick & cortea (2009) indicated that even though teachers employ a number of effective strategies, there is room for improvement in implementing effective, research-approved handwriting instruction. In particular, daily, explicit instruction, writing for fluency, writing from memory, and use of self-evaluation are areas that need improvement. Some research results indicated that the lack of emphasis on these practices impacted the quality of teaching and learning of handwriting skills.

Additionally, Iseng, Cermek (1993) stated that, the goal of direct treatment is for child's writing to become automatic and about letters formulation and can produce adequate volume of work in an expected period of time without undue fatigue. Practice with letter formulation is certainly a necessary component of remediation. In addition, the child's motor skills and sensory processing abilities that contribute to and are considered to underline good handwriting are important to consider.

To help learners become enthusiastic writers in schools and in future, Ott (1994) has argued schools to adopt a whole school writing policy where learners are allowed to engage in creative and expressive writing such as poems, short stories, and personal experiences. Thus, by finding a simple way in which the children could help with the teaching, the emotional

blocks hampering some of them would be removed. The interest aroused and sustained was motivating and the children participated in democratic living- hence led to the improvement of handwriting among the learners.

Bounds (2010), Feder & Majnemer (2007) and Singh (2009) investigated the effect of supplementary handwriting instruction using varying types of handwriting practice based on an educational and/or motor learning model. Some studies have reported that supplementary instruction enhanced both handwriting performance and story writing ability, whereas others reported improvement in component skills (i.e. visual–motor control, in-hand manipulation). The idea of providing supplementary handwriting instruction as the first line of defense in remediating handwriting difficulties, appeared to have merit as suggested by several authors.

Sustained attention in handwriting features affecting legibility such as the smoothness of joints between letters, the evenness of the spacing between letters and words, consistency of size and evenness of alignment to the writing line all tend to improve with age (Hamstra-Bletz & Blote, 1990) is also necessary. Sustained attention on the features enable the child to effectively perform handwriting task for an extended period to an extent that they are likely to show less challenges within writer variation. Such improvements are to be reflections of the general improvements in fine motor skills leading to greater automaticity of the writing process as children grow older. Since the research was focusing on the variability of letter forms and proportions in handwriting, the effect of greater consistency should be to reduce variability. However, this may be confounded if the writer's style of handwriting was changing as consistency would then decrease especially during any transitional phase between styles.

Considering all the handwriting difficulties, Marcus (1977) indicated that correct diagnosis of handwriting challenges should be investigated since it forms the basis of the programme to be implemented. Diagnosis of the learners should be done carefully and consistently where individual differences between the learners are taken into consideration while making all the planning. After the appropriate diagnosis phase, the learner should be encouraged to get rid of his prejudice against his handwriting skills and his work. When motivation and interest skills are provided in handwriting, the implementation phase should be implemented in a planned and continuous manner. Hence, during the implementation phase, consistent and long study should be taken into consideration as it tends to increase the efficiency to eliminate the handwriting problem (Graham and Harris, 2008). Completing the diagnostic phase in a

healthy way is an important step to eliminate the handwriting difficulties. This enabled a learner feel that handwriting difficulty is not a disease but a difficulty (Marcus, 1977). The problem of handwriting difficulties, which affect learners both academically and socially, needs to be eliminated. In line with stated point above, Feder & Majnemer (2003) noted that external intervention were almost imperative for individuals to have correct and healthy handwriting skills. Thus, the implementation of the plan designed for the learner should be followed by the execution of the work in cooperation with the parent (Marcus 1977).

Additionally, Lerner (1993) indicated that, more writing time is a necessity and should be given to learners with writing difficulties by having one-on-one tutoring. In the same line, Gearheart, Weishahn and Gearheart (1988) have observed that, learners should be allowed practice writing activities at least 10 to 15 minutes in a day, more especially when using the Fernard VAKT approach. This allows teachers to give help to learners in specific writing difficulties appropriate to learners' needs as well as age, (Gearheart, Weishahn and Gearheart, 1988) and (Kirk, Gallagher and Anastasiow, 2006).

The cooperation between the teacher (as an expert) and the parents is very important in all handwriting practices (Poole, 1991). During the application, the systematic work of teachers, parents and students strengthens the probability of success. After the studies, it is possible for the student who has difficulty to repeat at home and the support he receives from his parents can positively affect his determination to eliminate the problems experienced in handwriting. In addition, when the learners were examined, it was seen that the school success of the learners who had close communication with their teachers had improved (White, 2013). Therefore, it is important for teachers to work closely with learners who have problems in handwriting process.

2.2. Conclusion

In summary, the reviewed related literature on handwriting and the theories that guided the studies revealed differences in terms of population, research method, and sites and they focused at different grades. Most studies carried out in Zambia focused on writing at lower grade levels. Those from other countries either focused on teachers and other grades. But those that focused at fifth grade level concentrated on establishing the effectiveness of the implemented strategies. Limpo, Parente and Alves (2018) carried out a single subject design study on the fifth graders aged 10 to 11 to examine the effectiveness of 5hs. This denotes that the reviewed literatures employed several research methods while others used descriptive

research design and had different theories that guided their studies. However, most of the study findings from the reviewed literature are linked to the study in terms of characteristics of legible handwriting and factors influence legibility. But the identified gap is that no study was conducted specifically at grade five level (being the transition grade to upper primary) to examine handwriting legibility at that level. Hence, this prompted the researcher to conduct a study in line with the identified gaps. This is because the policy on handwriting pedagogy, theory and practice play a vital role on the quality of handwriting in primary schools. The modern method of teaching handwriting therefore places emphasis on the learner, abilities and needs rather on form and quality. Therefore, the researcher intends to analyze the legibility of handwriting among the grade five learners in the selected primary schools of Mongu district since there was no such a study conducted at grade five level in the district.

2.3. Theoretical Framework

Handwriting is a complex activity that involves continuous interaction between lower level handwriting and motor skills and higher-order cognitive processes. Low-level process' entails execution of handwriting production, which involves neuromotor and ergonomic skills, whereas 'high-level process' refers to cognitive processes involved in handwriting (López-Escribano, Martín-Babarro and Pérez-López, 2022). Hence, the production of legible handwriting with a reasonable speed is an automatic writing process among adults, but for young children, handwriting development is a complex task in which low- and high-level processes constantly interacting. Thus, development of legible handwriting requires the coordination of several cognitive, motoric and neuromotor processes (Smits-Engelsman et al., 2001). The theoretical frameworks that guided the study included neuroscience, cognitive load, and motor learning theory as they crosses several disciplines in an attempt to effect and link handwriting instruction, literacy, and learning outcomes as they relate to the proposed purpose of the study. Each of these different areas provides a different theoretical framework or lens by which quality handwriting can be examined.

The neuromotor model provides a biophysical lens to view learning processes and handwriting skill acquisition. Neuromotor skills' refer to components related to handwriting that may include fine motor skills (in-hand manipulation, bilateral integration and motor planning) and gross motor ability, visual-motor integration (VMI), visual perception, kinesthesia and proprioception, sensory modalities and sustained attention which influence handwriting acquisition. Most studies on handwriting-related motor developments focus on

VMI, fine motor skills and gross motor ability, which are important in the development of the ability to control a writing tool, thereby allowing for good handwriting. Therefore, the physical and mental act of handwriting in conjunction with brain functioning in relation to motor and cognitive aspects of memory and learning can be determined. Hence, the research questions focused the attention on the contributions of the handwriting process as it is neurologically connected to memory and learning for young children (Roeltgen, 2003).

Cognitive load theory (CLT) provides a second lens through which handwriting instruction and learning outcomes can be viewed. Cognitive Load Theory is a theory of instructional design and model of research focused on complex instruction (Sweller, 1988; Sweller, Ayres, & Kalyuga, 2011; Van Merriënboer, & Sweller, 2005). Cognitive processes entail working memory, long-term memory and executive attention which closely interact during performance of complex tasks, such as handwriting. Hence, CLT focuses on matching instructional processes with experiences to maximize working and long-term memory for optimizing learning with the goal of producing a relatively permanent change in knowledge or behavior (Kirschner, 2002; Mayer, 1982). Considering the limitations of working memory and the learning demands with complex tasks such as handwriting, that relate to the demands placed on working memory for processing and planning letter formation while simultaneously transcribing thoughts into written content. This lens affords researchers the ability to study the idea of handwriting automaticity with transcription skills for producing letters drawing from long term memory and minimizing the demands on working memory so that greater cognitive capacity is available for thoughts to be produced in writing while minimizing cognitive load (Sweller, 1988; Sweller et al., 2011). It is important to allocate mental resources to these high-order processes since these processes place a great demand on cognitive capacity. This is possible when lower-level skills such as transcription are effortless and fluent. Thus, proficient writing relies on well- developed handwriting skills.

Motor Learning theory provides the third lens through which quality of handwriting can be viewed. Motor learning is defined as “a set of processes associated with practice or experience leading to relatively permanent changes in the capability for movement” (Schmidt & Lee, 2005, p. 302). Thus motor Learning is the acquisition of skillful movement in a coordinated and controlled fashion as a result of the interaction of the individual (the organism), the task, and the context in which the task is being performed; therefore, motor

learning is the result of a confluence of all functionally related components (Kamm, Thelen, & Jensen, 1990; Guadagnoli, & Lee, 2004; Wolpert, Ghahramani, & Flanagan, 2001). The Motor Learning theory components are in three stages; cognitive, associative, and autonomous. These asserts that increasing the adaptability of learning and ease of transfer of skills is achieved differently with children as compared to adults and this motor learning impacts task performance (Poole, 1991; Shumway-Cook & Woolacott, 1995).

In summary, the study combines insights from neuroscience, cognitive load theory, and motor learning principles to enhance handwriting instruction. By understanding the intricate interplay of cognitive, motoric, and neuromotor processes, educators can promote legible handwriting, which in turn contributes to improved literacy and overall learning outcomes.

This chapter was in two parts. The first part focused at reviewing related literatures in line with the three research objectives. Lastly the second part focused at theoretical frameworks that guided the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Overview

This chapter focuses on the description of methods applied in the research that was conducted. It gives a description of the research design used in this study; research site; population; data collection; data analysis; and ethical considerations before the study commenced and after. It also describes the strategies used by the researcher. Research methodology is a broad term involving all strategies that describe how, when and where data was to be collected and analyzed (Chilisa and Preece, 2005). The implication in the term, methodology is the justification of the decisions made on the research design, population of the study, the sample size, sampling procedures, research instruments, data collection tools and data analysis in pursuit of research question and study objectives.

3.1 Research Design

The study used a qualitative research approach (Milingo, Tambatamba & Cheyeka, 2021; Milingo, Ilubala-Ziwa, Mwale, N & Madalitso, 2020; Milingo, 2019) with an exploratory descriptive design (2009). The exploratory descriptive design delves deeply into a phenomenon (handwriting) legibility, describing its features and identifying potential influencing factors. The study implemented this design by analyzing handwriting samples from grade five learners for a comprehensive understanding of their handwriting legibility. The analysis was based on established criteria specified in an appendix. Additionally, interviews were conducted with teachers to gain insights into their views on handwriting legibility.

3.2 Study population

The targeted study population included all the public primary schools, all grade five class teachers and all grade five learners' books from all public primary schools in Mongu district of western province.

3.3 Sampling Techniques and Study sample size

3.3.1. Sampling Techniques

Sampling refers to methods of gathering information from a number of chosen people random or purposively (Kombo and Tromp, 2006). A sample also refers to the number of participants selected to constitute a desired sample. Therefore, this study used purposively sampling technique to select expert participants. Purposive sampling was employed to six selected primary schools, eleven teachers and sixty learners (books). Teachers were also purposively sampled due to virtue of their direct involvement in handling the grade five (5) learners. Six (6) primary schools were evenly sampled from Urban, Peri-urban and rural areas (two schools from each area of the district) for comparative results. Grade five (5) learners' books were also purposively sampled from each school for document analysis. This is according to Best and Kahn (2009) who explained that qualitative research uses naturalistic inquiry which involves the use of design strategies of emergent design, flexibility and purposeful sampling and studying the real situation as it unfolds naturally.

3.3.2 Sample Size

Sample size was part of the population from which information was obtained. The researcher selected six (6) public primary schools where a total of seventy--one (71) participants were purposively sampled. The sample was made up of eleven (11) grade five (5) class teachers; 6 from two (2) urban schools, four from 2 peri-urban and one from rural school (while the other teacher from another rural school declared interest). The distribution of teachers was uneven due to location, status of the schools and infrastructure. During the study it was noted that urban schools were adequately staffed and there was specialization in teaching. From the sampled urban schools, one had three (3) streams (classes A, B, C) with an average enrolment of 65 learners in each class. The other one had two streams (class A and B) with the enrolment of 58 pupils in a class. One Peri urban school had two streams with two different teachers handling them. The classes had an enrolment of about 38-42 learners in each class. The other peri urban school had one stream (class A) with two teachers sharing subjects. The two rural schools were single stream (class A only) with an average enrolment of 85 learners. In both peri urban and rural schools there was no specialization. Additionally, one rural

teacher declared interest indicating that she had nothing to share during interviews. It was also noted that the teacher sample was more of females with only one male. The reason was that most primary schools had more female teachers than males. Hence, the uneven teacher distribution in the sampled schools. Teachers were subjected to interviews.

A total of 60 learners' books were got for document analysis. The books were purposively sampled from both boys and girls. The whole purpose was to help the researcher collect divergent ideas or views from different participants who participated in different categories. Below is a summary of a sampled size;

Primary School	Teachers		Total	Average Years in service for Teachers	Learners' book for document analysis		Total
	M	F			M	F	
Orange	1	2	03	6- 23	05	05	10
Mango	0	2	02	9-13	05	05	10
Nut	0	3	03	11-19	05	05	10
Banana	0	2	02	7-10	05	05	10
Apple	0	0	00	Nil	05	05	10
Watermelon	0	1	01	0-3	05	05	10
Total	1	10	11	3-23	30	30	60

Table 1 above gives a summary of sample size of participants in the study.

3.4 Methods of Data collection

This study collected data using the following techniques;

3.4.1. Semi structured Interviews

Interview is a qualitative research method used to gain an in-depth understanding of the participant's feelings and beliefs about the specific topic in order to collect qualitative data (Sidhu, 2014). It is a method that relies on asking open ended questions within a predetermined thematic framework. Generally it involve participants in a deep exploration experiences, beliefs and thoughts about the topic at hand. Therefore, the interviews were one-to-one with individual grade 5 teachers and each session took 20- 30 minutes. These were

either teaching Zambian Language or English and those teaching other subjects such technology studies, social studies, and expressive arts or Science. The purpose was to collect divergent ideas on the legibility of handwriting since handwriting cuts across all subjects. Interviews were used to collect data on objective one, two and three. The researcher audio recorded interview sessions while taking notes in case of failure of the recording gadgets.

3.4.2. Document analysis.

Another method used to collect data was the document analysis. Document analysis in qualitative research is the process of reviewing or evaluating documents both printed and electronics to uncover meaning, gain understanding, and making a conclusion (Bowen, 2009). In this study, document analysis was used to analyze legibility of handwriting among the grade five sampled learners' books and it aligned with objective number one. Sixty learners' note books were selected and analyzed in order to determine the quality of their handwriting. During the document analysis, the content was categorized into distinct themes, similar to the transcripts from interview for easy analysis. The researcher was taking notes while analyzing the handwriting.

3.5 Research Instruments.

The researcher used the following data collection instruments;

3.5.1. Interview guides.

The interview guides were administered to teachers with the intention to gather detailed responses from them. The interviews were conducted to eleven (11) grade five teachers teaching English, Zambian language or other subjects such as technology studies, expressive arts, social studies or science. Teachers of other subjects were involved because handwriting caters across all subjects (learning Areas). During the interviews the researcher used the recording gadget and took notes in order to capture relevant information in which other used instruments may not have captured and to ensure validity of recorded data and back up when compared with written notes. The instruments were used for the purpose of getting teachers experiences, perspectives and belief on the quality of handwriting among the fifth graders. Hence, the guides were used to achieve objective one, two and three.

3.5.2. Document Analysis checklist Guides on Grade five learners' note books.

A document review/analysis checklist guide which contained open ended questions was used in form of a table to analyze some features that qualify the legibility of grade five learners' handwriting. They were used to analyze the grade five learners' selected note books so as to determine the quality of their handwriting. A total of 60 books from the six primary schools were purposively sampled for analysis (i.e. 10 learners' books from each school).

All the above discussed research instruments were used to validate results and in the process complementing each other.

3.6 Data Collection Procedure.

The researcher first sought permission from the University of Zambia by submitting the proposal for ethical clearance, the Provincial Education Office-Western Province, the District Education Board Secretary (DEBS) of Mongu district and the Head teachers of the sampled schools. Thereafter, interviews were also conducted while the recordings were taking place and the researcher was also taking notes. Document review (analysis) was last to be conducted.

The study gathered both primary and secondary data. Primary data was obtained through semi-structured interviews with 11 Grade 5 teachers and analysis of documents using checklists. The teachers, who taught various subjects including English and Zambian language, shared their observations and experiences about their students' handwriting legibility in response to the interview guide. The interviews were recorded for further analysis and transcription.

Secondary data was collected from learners' books, journals, articles, and other references. The researcher analyzed the books of 60 grade five learners, with ten books from each school. The analysis involved a thorough review of the students' handwritten work to assess their handwriting legibility. The evaluation focused on elements like letter formation, spacing, alignment, and overall legibility, as outlined in the document checklist guide.

3.7 Methods of Data Analysis.

The researcher utilized thematic analysis, a qualitative method, for the study. The data, obtained from interviews and document analysis, was then summarized using a qualitative

approach. This involved several steps: data collection, preparation, organization, transcription, and coding. The coding process involved identifying recurring themes or patterns in the data. These themes were then used to draw conclusions about the handwriting legibility and factors affecting it. The coded data was represented using verbatim in relation to the research question. Only information relevant to the study was included in relation to the research questions. Cohen et al. (2007) support this approach, stating that qualitative data analysis heavily depends on the interpretation of emerging themes. These themes played a crucial role in data analysis and validation..

3.9. Ethical Considerations in Research.

According to Kombo, et al., (2000) states that researchers whose subjects are human beings or animals have to be mindful of the conduct of their research. This entails that particular attention has to be given to issues of ethics that are associated with the carrying out of their research. Thus, the researcher considered all possible ethical issues by obtaining permission from different levels of reporting. Permission and clearance by the supervisor, the languages and social science department and other relevant authorities of the University of Zambia (UNZA) such as the ethical clearance committee were considered (Refer to appendix I). Permissions were also requested from the Provincial Education office-western province, District Education Board Secretary's office-Mongu district, and the Head teachers including all the study participants for the selected schools were consulted before the commencement of the study in order to allow the researcher conduct the research in their premises.

To preserve confidentiality, participants' names and other personal details were not demanded. Instead the researcher used numerals 1, 2, 3, 4... to identify the learners' books and letters A, B, C, D,... were for teachers' identification. While names of fruits such as Apple, Banana, Mango, Nut, Orange and watermelon were used to name the selected schools. Additionally the researcher assured all the participants that the data collected would only be used for the purpose of the academic references. Furthermore, the researcher gave all the engaged grade 5 teachers consent letters to voluntarily participate in the research. The researcher was interested only in the information the participants provided in the study. In a situation where some participants declared interest, no force or persuasion of any kind was exerted on them to withdraw their decisions. All the necessary authorization documents from the University of Zambia; such as approval letter to conduct a study in the district and schools where the study took place are appended. For data collection instruments, references may be

made to appendices III to VIII. For ethical clearance, see appendix I While the participant information sheet is appendix II. For sampled learners' quality of handwriting see samples 1 to 8 for learners while for teachers' sampled handwriting see samples 9a and 9b.

3.9 Summary

This chapter has provided information on the methodology which this research used. The research applied a qualitative research design. The study population, sample size, sampling techniques, research instruments, data collection, methods of data analysis and procedures and ethical considerations were among the main sub themes contained in this chapter of methodology. The next Chapter is on the presentation of the findings of the study.

CHAPTER FOUR

PRESENTATIONS OF FINDINGS

4.0. Overview

This chapter presents the findings of the study. The results were derived from the data collected from teachers' semi structured interviews, learners' focus group discussions, lesson observations and document analysis. The findings of the study were guided by the following research questions.

- i. How legible is the handwriting of fifth grade learners?
- ii. What factors influence the quality of handwriting among the fifth grade learners?
- iii. What measures should be undertaken in order to improve the learners' handwriting in Primary schools?

4.1. RQ1. How legible is the handwriting of fifth grade learners?

To answer this question, the findings were presented according to the quality of learners' handwriting from semi interview, focus group discussion, lesson observation and document analysis guides.

4.1.1. Presentation on the quality of handwriting from Teachers' interviews.

In this section, the researcher presents data on the quality of learners' handwriting according to teachers' judgements.

4.1.1.1. Teachers' perceived good quality of Handwriting by their learners

Some teachers indicated that some learners had good handwriting. They explained that some learners' handwriting was legible and were able to copy the teacher's work from the board correctly. For instance teacher A from Mango school indicated:

"Some of my learners in my class have good handwriting. I can say three quarters of the pupils have good handwriting and only one quarter is struggling."

-

Teachers B from orange school also stated:

“My learners’ handwriting is legible.”

Teacher C gave the following explanation:

“if I am to use scale 10, I would say, 5 are able to write legibly while the other 5 are unable. So I say the handwriting for the grade five learners is not all that bad. This is because they are able to write legibly as they were able to copy from the teacher’s board work.”

Five of the interviewed teachers indicated that the learners’ handwriting was good. This would be further confirmed with the sampled learners’ books analyzed during document analysis and lesson observations which will be presented later in this chapter.

4.1.1.2. Teachers’ perceived Poor quality of handwriting among grade five learners.

Most teachers reported that the quality of learners’ handwriting was poor. They explained that some learners were mixing upper and lower case letters, could not differentiate the formation of ascenders and descenders, no spacing between words, and omission of some letters and mirror writing of letters. The following were responses from teachers A, B and C:

“most of the learners’ handwriting is bad as they are mixing capital letters with small letters and they were not leaving spaces between the words in the sentence.” (Teacher A)

“My children’s handwriting is not very good because most the learners do not know how to write; some letters are left out as they are writing.” (Teacher B)

“the learners’ handwriting was bad as they were unable to leave spaces between words and very slow in writing.” (Teacher C)

Meanwhile, Teacher A from watermelon school stated the following:

“Our learners have a problem with letter formation. They write ‘m; as ‘w’, ‘p’ as ‘q’ or ‘b’ as d.”

From the above results, six of the interviewed teachers revealed that the quality of the learners’ handwriting at grade five was poor. Later, findings from documents analysis based on learners’ actual writing is be presented below to complement the interview data.

4.1.2. Presentation of findings on the Quality of Handwriting from document Analysis

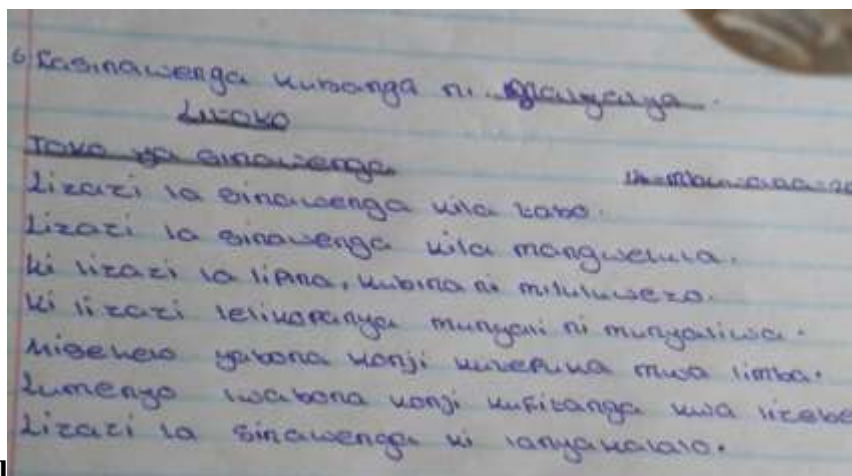
In order to analyze the quality of handwriting, document analysis with open ended phrases was used. This involved analyzing learners` books to check how they wrote. This was useful because it provided an objective basis for judging the quality of handwriting by grade five learners. A total of 60 books were collected. However, extracts from only 8 of them are presented in this section.

4.1.2.1. Learners' Quality of Handwriting: Document Analysis.

In this section, the researcher presents some of the actual characteristics of the quality of handwriting for some of the grade five learners, referred to as samples. Samples would be presented on each category of the features to show some typical characteristics of the quality of handwriting among the grade five learners. These characteristics overlap on each sample and below are the sample on style, form, alignment, upper and lower case letters, Ascender and descenders, shape and size, slanting and directionality, messiness, mirror and reversal letter.

4.1.2.1.1. Style of handwriting

The learner's style of handwriting is characterized by print and tailed. Some letters are in print form since most of the letters are not joined to each other. While other letters are tailed such as a, g, y, m and t. There was a lot of script style of handwriting in the provided sample. Thus, the rest of the learner's style of handwriting is indicated in sample 1 below.



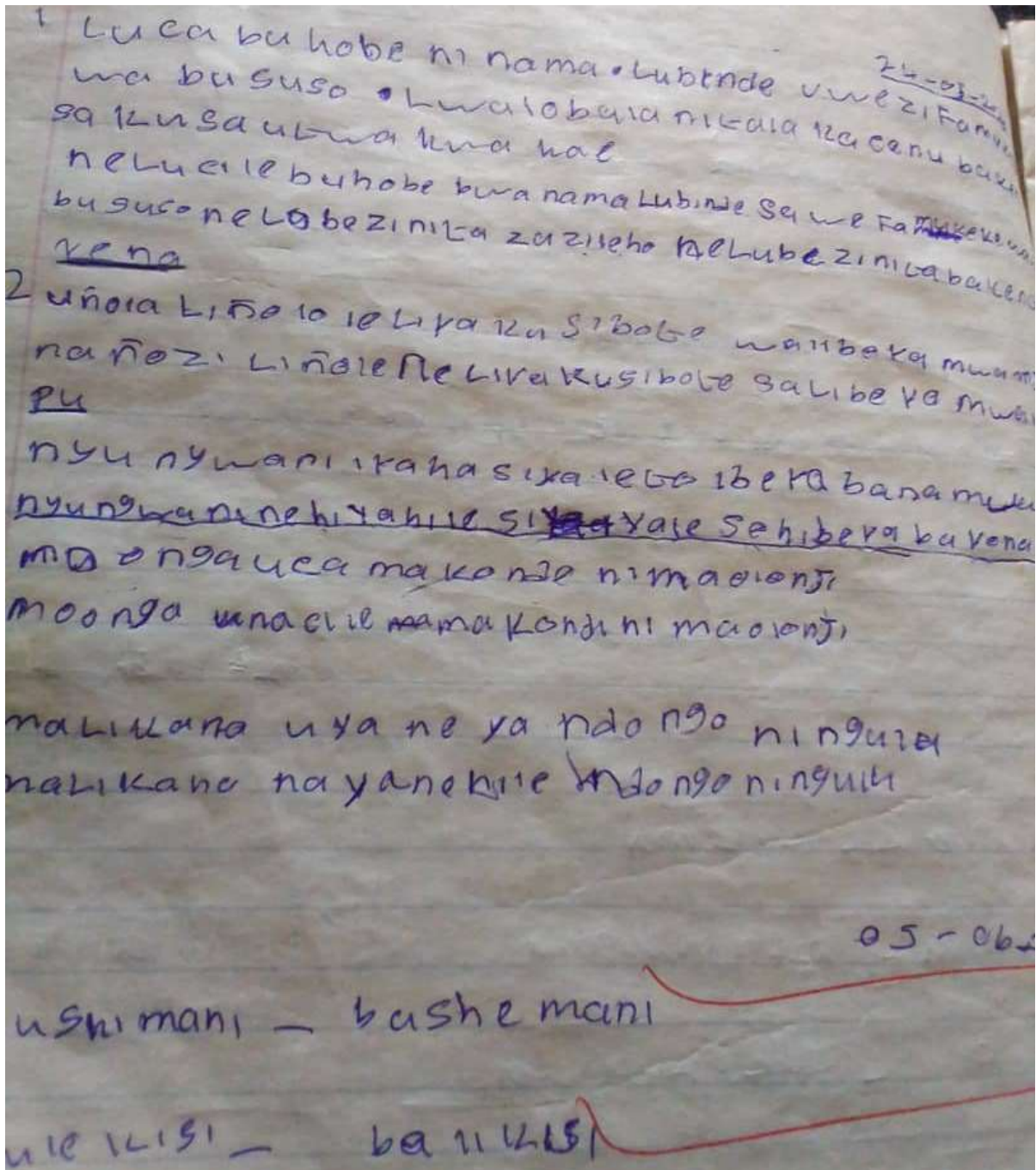
Sample 1: Pupil A from Orange school on style of handwriting

4.1.2.2. Form

15
1. Kimani yu na sata 67 kuli muu kuna hae
nzila yuna busisa? Alitaka
2. Kwa e zakaiani kwabanindwa
3. buna ka bule te tura ni? Kuli ba ye kwandub
4. mushemi wa buna aini ku bona habahani
5. kimana ka na bu la hite ko mu ni kiisheshi
6. kasi ka ma ni senesite size kulia s
he li ma ni mezi ya li sheshi

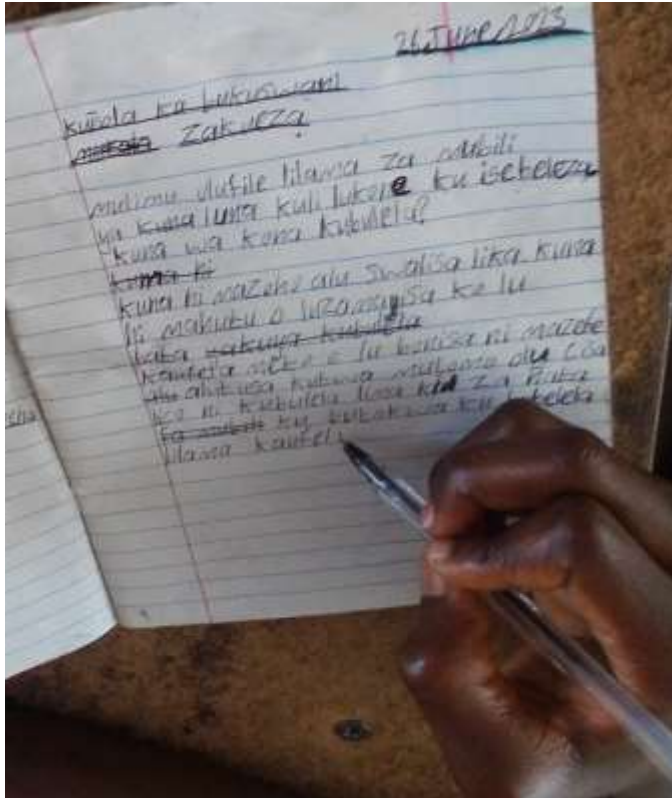
Sample 2: Pupil B from Banana school on form.

4.1.2.3. Ascending and descending letters



Sample 3: Pupil 5 from Apple school on ascending and descending letters

4.1.2.6. Messiness.



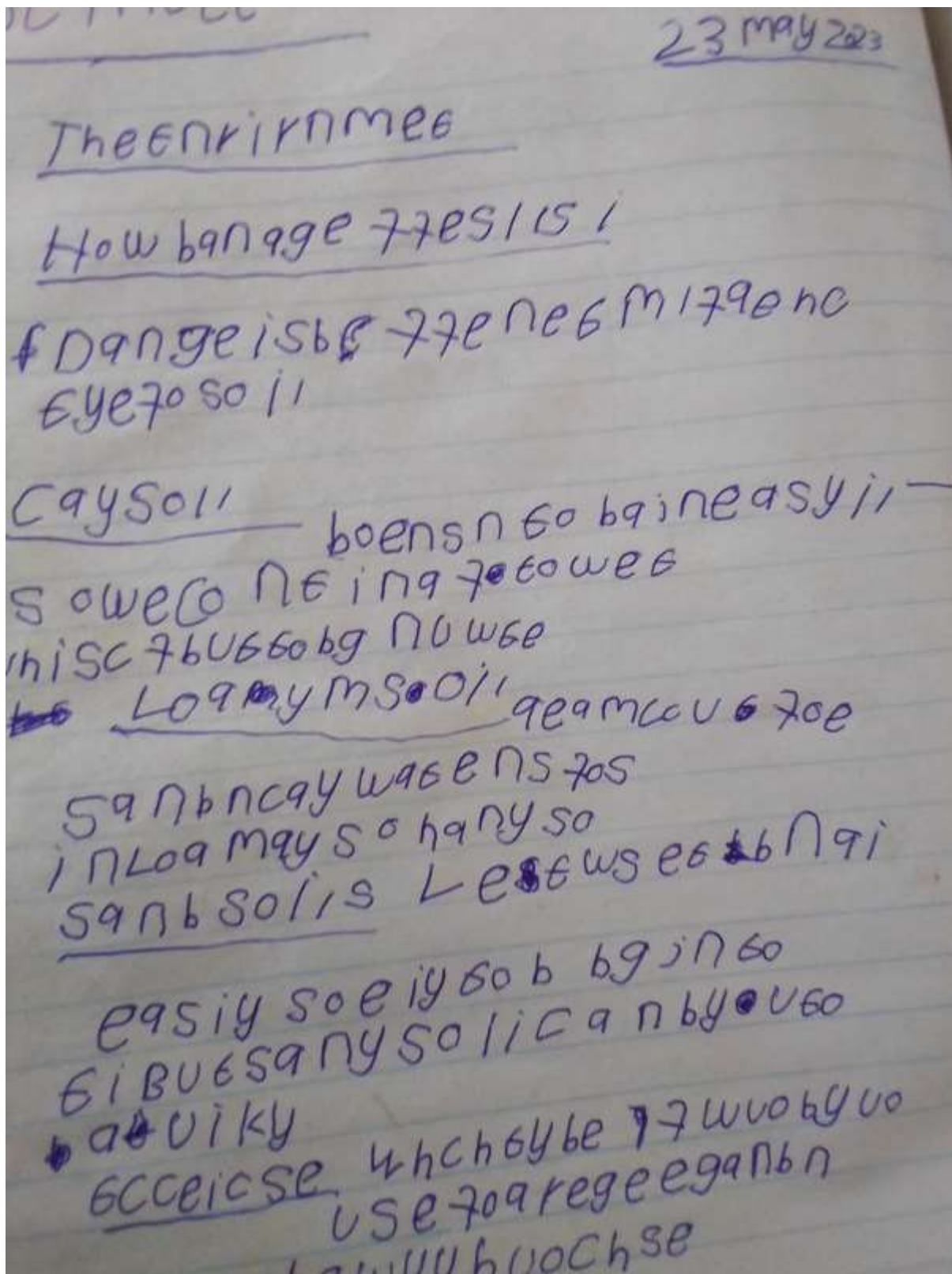
Sample 6: Pupil 1 from Mango primary school on messiness.

4.1.2.7. Upper and lower case letters.

MATHS: LIFE IN THE URBAN AREAS IS BETTER
 DEBATE 08/10/2008
 IT ALIVE - EIN BILB
 PROP CASES: NAZ URGED ALOT PHENOM VARIOUS SUBJECTS
 OFF ASER SBG HIGHER AND LOWER CASES AND SILENT
 DATE: 8th Nov VE MR R2011
 TIME: 02:00 HRS OFFICERS
 CHAIR FOR SEV: HON MR R2011 N DUT NAZR IS (Chairman)
 BRG HON COMMISSIONER (Chairman)
 SEER CHAIRMAN HON MR R2011 NAZR (KAZI WAZIR)
 TIME 02:00 HRS HON MR R2011 NAZR (KAZI WAZIR)
 PRO PRO HRS
 Nazim Khan
 Nazim Khan
 Judges
 Mr. The Chief Justice (Bright Chairman) Mr. Justice
 MISS: Justice Esterhuizen and Mr. Justice
 EXTRAISE
 What is the main issue about DEBATE
 What school was in the center of the main issue
 EXTRAISE
 How long did the debate last? (02:00 HRS)
 What was the result? (Voted in favor)

Sample 7: Pupil 4 from mango school on upper and lower case letters.

4.1.2.8. Mirror and reversal handwriting



Sample 8: Pupil 6 from Watermelon School on mirror and reversal writing

4.2. RQ2: What factors influence the legibility of handwriting among the fifth grade learners?

The second research question sought to establish the factors which contributed to the quality of handwriting among grade five learners. The data was sought through interviews with teachers. Below are findings which have been presented thematically:

a. Developmental capabilities factors.

The study revealed that developmental aspects of learners was influencing their quality of handwriting. The researcher asked what influenced the good quality of grade 5 learners' handwriting at each of the sampled schools. Teachers' responses included age, development of motors skills, learning capabilities and going through transitional stages of development or grades influence the legibility of handwriting. Teacher C, a female teacher from Orange school attested as follows:

“when learners have fully developed their gross, fine, cognitive, visual and perception motor skill, tend to have good handwriting. This is because their muscles were flexible to enable a learner have good posture, hold the pencil correctly and see correct letters as they are engaged in writing. This is attributed to age as one grows old (move from one age to the other) the handwriting also improves,”

Teacher C from Nut school explained:

“if learners pass through all the developmental stages or grades, they are able to acquire all the necessary skills to have good handwriting. Learners are able to start from scribbling, tracing, pattern writing, letter formation and do complex writing.”

b. Background knowledge factors.

Out of the eleven (11) teachers interviewed, three (3) of them indicated that background knowledge on handwriting influences its quality. They expressed that having good background of handwriting knowledge enables learners to have legible handwriting. For example, Teacher A from Orange school indicated:

“If learners had good background knowledge from lower primary where handwriting is taught, they tend to have legible handwriting as they come to grade 5.”

In addition teacher A from watermelon primary stated:

“good foundation of learners on how to learn to write enables them acquire good handwriting skills so that they have legible handwriting. This is because how learners were taught at lower primary impact the quality of handwriting at upper primary.”

Another teacher C from Nuts school stated as follows:

‘a good background knowledge where learners are first introduced to pre activities such as writing in the sand, pattern writing, tracing, molding, directionality and discrimination help learners acquire the skills that enable them to have good handwriting.’

Teachers expressed that good background knowledge on how to write contribute positively to having good handwriting in upper grades. This Knowledge also enables learners to be good readers which further lead to success in their academics.

c. Pedagogical factors

The researcher noted that few teachers revealed that how handwriting is taught affected its quality either positively or negatively. They indicated that, if the instructions are clear and learners are able to follow them, then they will be in the position to develop good handwriting. For instance, teacher A from Watermelon indicated:

‘the way the teacher teaches handwriting influences its quality. I mean if the teacher teaches it very well by following how it should be taught, then learners are able to acquire legible handwriting.’

Another teacher A from Mango and teachers B from Nuts school indicated:

‘Understanding how to write (following instructions) leads the acquisition of good handwriting. This deals with the guidance the teacher gives during writing time.’

Teacher B from Banana school aligns with teachers from Mango and Nuts schools by stated:

‘Frequent guidance and emphasis on how to write enables learners to have good handwriting.’

d. Mechanism of handwriting

From the teachers' interview, it was found that some teachers stated that key aspects of handwriting had an influence on learners' handwriting. They indicated that acquisition of handwriting key aspects such as, correct sitting posture, writing tool gripping, book positioning and letter formation (of upper and lower case, ascending and descending letters). Three quarters of the interviewed teachers indicated that the above aspects of handwriting if performed correctly they tend to produce good quality of handwriting.

Teachers A and B from Orange and teacher B from Mango school indicated:

'correct pencil gripping where learners use the thumb and pointing finger to hold the pen or pencil with less pressure exerted on it enables learner to produce good quality of handwriting.'

While teachers B from orange and Mango, stated:

"correct sitting posture where the feet is flat on the floor, sitting in a natural manner, directly in front of the writing surface enables learners to write correctly."

Teacher B from Orange and Nuts school stated:

"the placing of the book in the correct position influences the quality of handwriting."

Teacher A from nuts stated:

"the correct formation of ascending and descending letters contribute to good quality handwriting. As learners are writing, how they form different types of letters mostly affects the quality of handwriting. They should also follow lines as they are writing."

e. Teacher`s own handwriting as a contributing factor

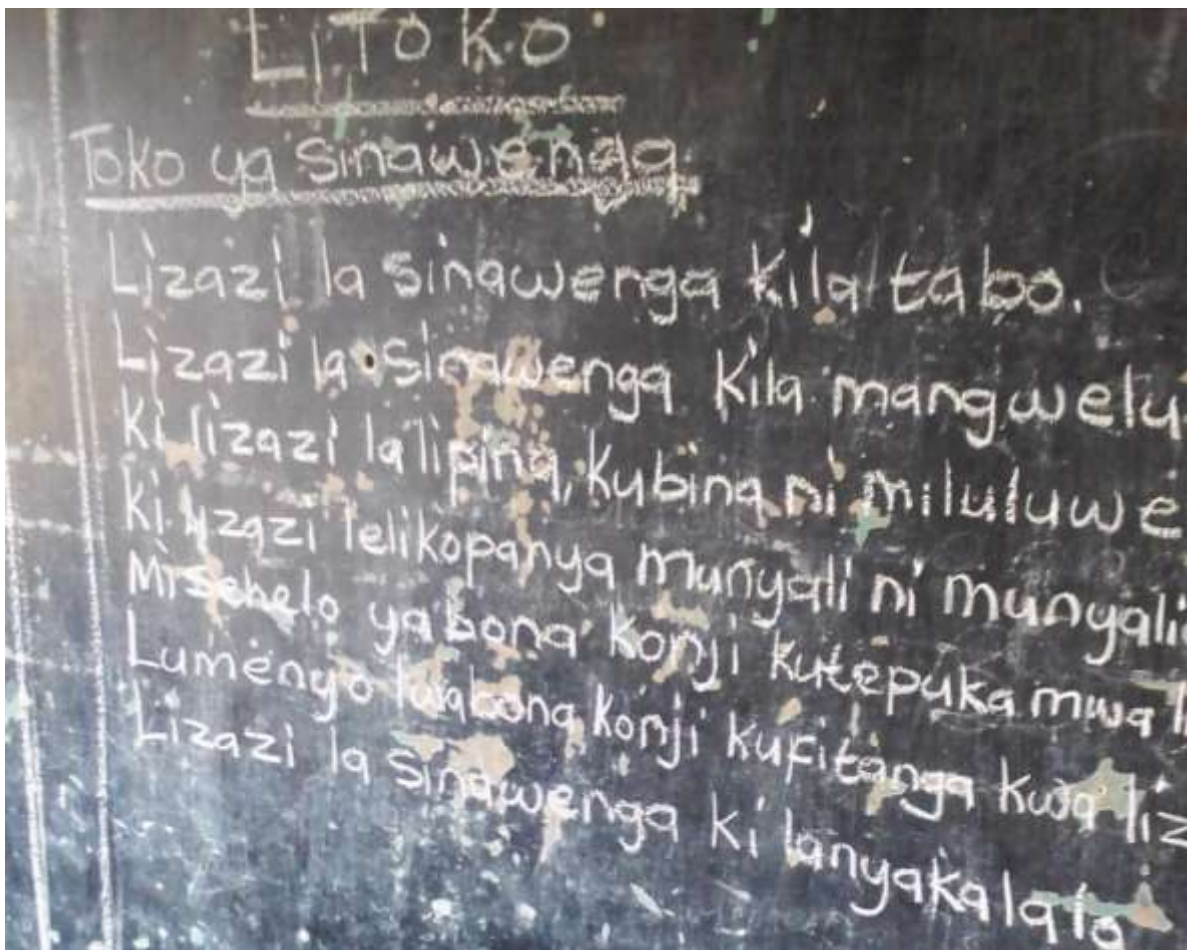
The interviewed teachers indicated that teachers with good handwriting are a model to learners. The expressed that when the teachers handwriting is legible learners will write legibly too. As indicated by teacher A from Banana school;

“Teacher’s knowledge about handwriting and models of good handwriting on the board makes learners to copy the same handwriting.”

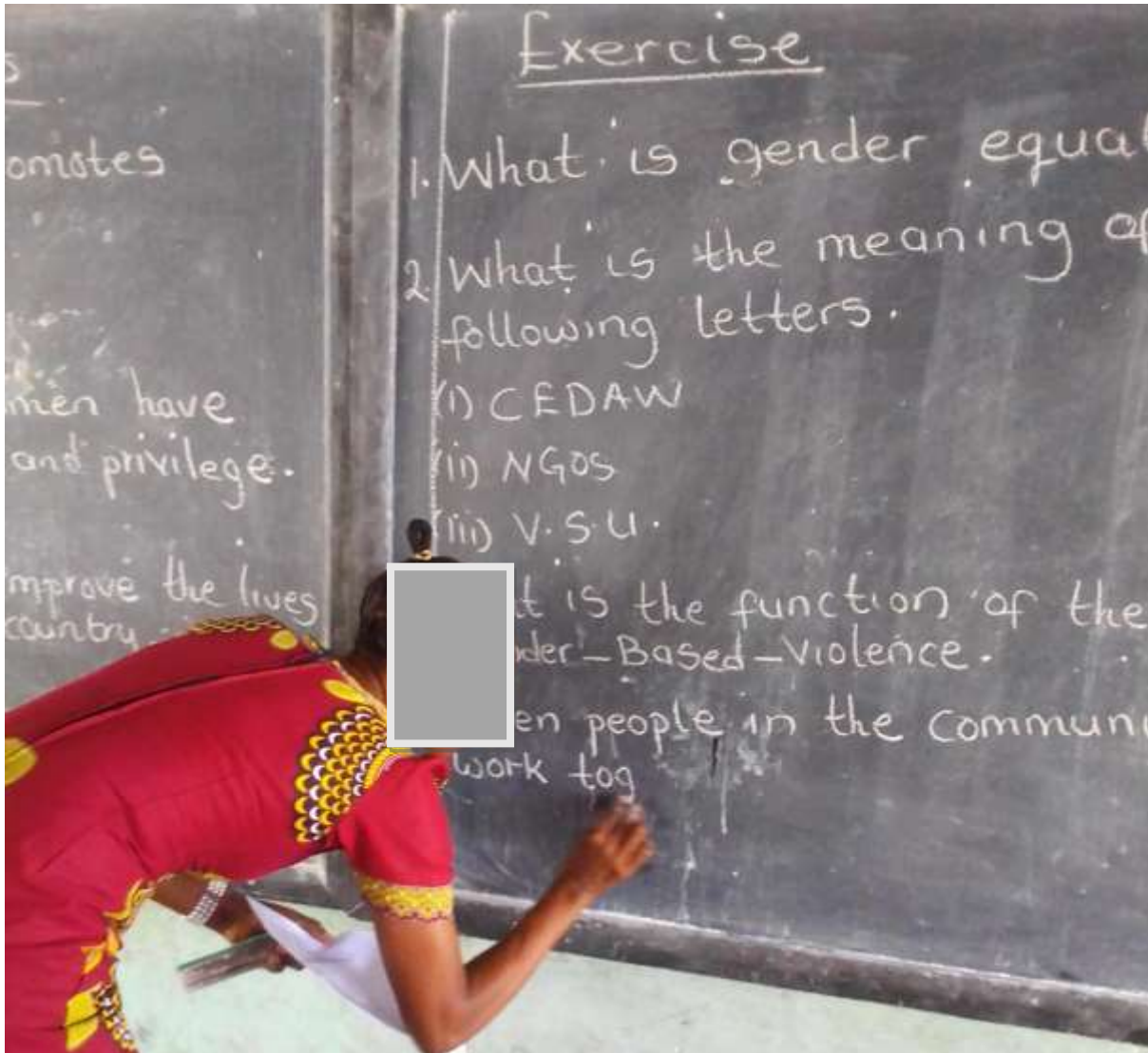
In align with teacher A from Banana school, teacher A from Nuts school stated:

“Learners normally imitate or copy the teacher’s handwriting.”

Hence, below are two samples showing Teacher’s handwritings as references on how a teacher influences the learner’s handwriting.



Sample 9a: Teacher A’s handwriting as a model from Orange primary school.



Sample 9b: Teacher's handwriting as a model from nut primary school.

f. Teacher's Subject Knowledge

Teacher's knowledge on handwriting is another factor that affects learners' handwriting. Some teachers revealed that if teachers knew how to form letters, demonstrate good handwriting and have the knowledge on how to teach handwriting, they contribute positively to the good quality of handwriting. Some indicated that teachers' poor handwriting makes learners to copy the same handwriting. Teacher B from Nut primary stated:

'some teachers still had poor handwriting, how do you expect them to model or teach handwriting? This also negatively impacts the quality of handwriting among the learners.'

Another teacher A from Banana school indicated:

‘Some of us teachers were not well trained at the college on how to teach handwriting, so I remember 2 years ago when I was teaching grade one, I was just telling them to copy from the learner’s book.’

The findings show that some teachers were not conversant with handwriting. Therefore, teacher’s handwriting knowledge either contributes positively or negatively to the quality of learners’ handwriting.

g. Learners Intelligence.

The findings in this study noted that learners’ abilities affect their performance in handwriting. Some interviewed teachers stated that learners’ intelligence influences their quality of handwriting they produce. For instance teacher A from Banana school indicated:

“learners whose performance is good, have good handwriting too.”

Other teachers such as teacher C from Orange school revealed:

“it was noted that our learners who have interest in school do well and have good handwriting. This is because they know why they are in school.”

The above expressions indicate that learners’ intelligence or learning abilities had an influence on the learners’ handwriting.

h. Learner Attendance.

Attendance was one of the factors noted to influence the quality of handwriting among the grade five learners during teacher interview sessions. Some of the interviewed teachers had an impression that learners who attended lessons regularly seemed to improve on their handwriting. As noted from teacher A at Banana primary who indicated the following:

“When a child attends lessons so often, that learner likes school and you will find that his/her performance improves. Even the teacher will make sure that the child is helped to learn. In doing so, even the child’s handwriting will improve”.

Another teacher C from Mango primary stated:

“I think continuous attendance of lessons positively impacts learners’ performance including the quality of handwriting. Because as learners continue attending lessons they practice writing which improves their handwriting.”

The above expressions indicates that regular lesson attendance has an impact on the quality of handwriting among the fifth grades.

Although, some teachers indicated that there were some learners with good quality of handwriting, the researcher established that there was poor quality of handwriting among the fifth graders. It was noted that only very few learners had legible handwriting which had challenges with the key aspects of handwriting. This was noticed by the researcher as she was doing document analysis. Thus, what teachers indicated during the interviewed was contradicting the findings in the document analysis. Another factor that influenced the poor quality of handwriting among grade 5 learners is;

i . Learning Disability

Other teachers stated that learning disabilities such as mirror and reversal writing, slowness, mental illnesses and lameness influence poor quality of handwriting. Teacher B from Orange primary revealed:

“in my class I had two pupils with physical disability and slow learner. The one with physical disability lost a right thumb in an accident, so the child finds difficult to write using the left hand. While the slow learner had difficulties to follow instructions and copying board work. These challenges influenced their poor quality of handwriting.”

Another teacher B from Banana primary stated:

“Some of my learners have learning difficulties of letter formation. They find it difficult to write letters m, w, p, q, b and d. These learners are giving me a problem as they are slow learners. Their handwriting is extremely bad.”

During the interviews, it was discovered that children with special education needs had challenges with handwriting. Hence, disability influenced the poor quality of handwriting among the grade 5 learners.

4.3. What measures should be undertaken in order to improve the learners' poor handwriting among fifth graders in Primary schools?

In this section, the researcher presents the findings on the measures to put in place to improve the poor quality of handwriting among the fifth graders. The data has been presented by indicating measures teachers put in place to improve poor quality of handwriting among the grade 5 learners. Thereafter, teachers' suggestion on the measures to be taken to improve the quality of handwriting among the grade five learners in homes, schools and in Zambian education system in general.

4.3.1 Measures currently undertaken by class teachers to help learners with poor handwriting to improve.

The eleven teachers who took part in the interviews were asked to give their personal experiences and views regarding what they normally do to grade five learners with poor handwriting. The following were some of the teachers' experiences and views;

Teacher A from Orange primary said,

“as a class teacher I normally try by all means to model good handwriting on the board, after that I go round the class to check their work by marking and assist those learners with handwriting challenges, encouraging them and praising those with good handwriting. Before we knock off, I do give them more work to write.”

In alignment with teacher A from Orange primary, teacher B from the same school and other teachers from the other schools indicated that,

“As teachers we do encourage them to copy what is on the board, observe and guide them as they are writing. We further give them extra writing activities (such as copying stories) to those with challenges so that they practice.”

Another teacher from Mango primary indicated that,

“we do have remedial work before or after classes for one hour, so those with poor handwriting are dealt with in this one hour.”

Another teacher from Nut and Banana echoed the same statement that,

“we have ‘catch up programme’ where learners from grade 3 to 7 with learning difficulties are met for one hour everyday either before or after lessons. In this programme, learners are put into categories according to their learning challenges inclusive of handwriting, so we do have some remedial with them. This programme is really helping the learners.”

Last but not the least, a teacher from Nut primary indicated that,

“I remember last time, I called one parent over her child who was unable to write. I explained the child’s problem to the parent. Luckily the parent was open enough by saying that the child was an orphan from the village and dropped out of school in grade 3. Looking at his age (14years), I had to say the child was in grade 5. As a class teacher, I advised the parent to be truthful when enrolling a child in school so that s/he is helped accordingly. Thereafter, I told the parent that she should be checking the learners’ books so that he is helped at home. Thus, I think teachers should collaborate with parents so that learners are assisted both at home and school.”

4.3.2 Teachers’ suggestions on measures that could be undertaken to improve the quality of handwriting among the grade five learners in schools.

Teachers were asked to suggest some measures that should be taken to improve handwriting skills of grade five learners in the Zambian education system; they recommended provision of handwriting materials in schools, pre training on handwriting, introduction of workshops in handwriting, time tabling of handwriting, Monitoring of teachers specifically on handwriting, enhancement of remediation and Assessment on handwriting, teaching handwriting according to abilities and grade level, Provision of furniture in schools, improve school community partnership, enhance collaborative working among teachers, Encourage exchange visits among schools, consider specialization in teaching handwriting in schools and teachers to encourage learners to practice handwriting activities (key aspects) regularly as well as having handwriting competitions.

a. Provision of Handwriting books and materials in Schools

Presented below are some of the suggestions from teachers who participated in the study. For example, teacher B from Orange school said;

“The ministry of education should start providing handwriting books to enable learners practice how to form and write the different types of letters and handwritings. This would motivate pupils to learn how to write.”

Aligning with the above point, Teacher, C from Nut and teacher A from Orange proposed that,

“If the Ministry of education could bring back those old handwriting books we used in grade one in the 1980s. Those started with the patterns of the letters, letters and then words and sentences. We also used to recite the direction in which we move to form the letters. The current ones used in grade one are not very learner friendly.”

However, teacher B from Orange school suggested that,

“Teachers should also be innovative in the production of handwriting materials such as templates for tracing activities, alphabet charts, slate and many more from locally available materials.”

b. Teachers should be taught handwriting during their initial teacher preparation

Another teacher A from Nut school indicated that,

“Ministry of education should ensure that handwriting is taught in colleges. We have seen poor handwriting left on the board by fellow teachers. Such teachers can improve their handwriting only if they are trained on how handwriting is taught in the colleges.”

Other teachers from Banana and watermelon schools further said,

“I think teachers should be taught on how to teach handwriting. The Ministry of education should see to it that teachers are taught the strategies on how to teach children to learn how to write. Once teachers acquire the skills on handwriting, they will start modelling good handwriting to their learners”

c. In service teachers to be trained on handwriting through workshops

Teacher C from Orange school further proposed that, “

“we need workshops for teachers on handwriting. This is because some teachers lack the knowledge on handwriting, so through workshops we can improve. Schools can also include handwriting in their Continuous Professional Development (CPD) meetings”

Aligning with teacher C from orange, teacher A from Nut school said

“Trainings on handwriting for in-service teachers should be continuously be there because handwriting is a big problem among teacher. Teachers should be including handwriting aspects in their CPDs.”

d. Handwriting should be a stand alone topic in the syllabus

In addition other teachers suggested that handwriting should be a stand-alone subject which should be time tabled. The purpose is to ensure that enough time is allocated to handwriting. For example, teacher B from Banana school stated that,

“The ministry of education should introduce handwriting as a lesson on its own, so that there is more time allocated to it. The current curriculum has not allocated more time to handwriting because it is taught in literacy where the five key skills are taught within one hour. A writing component is just given few minutes with a lot of writing activities inclusive of handwriting.”

Almost all the interviewed teachers echoed on the statement by saying that,

“There should be specific lessons for handwriting at lower primary. This enables teachers to have enough time to teach handwriting and learners to practice it.”

e. Need for monitoring of teachers by ministry of Education

Another teacher suggested that,

“The Ministry of education should start monitoring of teachers on handwriting and check their planning records. This would compel all teachers to plan and teach handwriting.”

Teacher A from Banana primary indicated that,

“All language teachers should play a role in ensuring that handwriting is taught at all levels of education. Handwriting lessons should be on-going because teachers at upper levels do not concentrate on teaching handwriting. I also suggest that handwriting aspects should be integrated in all subject lessons since it cuts across all subjects.”

f. Need for remedial work in Handwriting

Additionally, most teachers from almost all the schools involved in the study asked for the enhancement of remedial work in schools. For instance, teacher A from Banana primary indicated that,

“Even if we have remedial work every day after lessons for one hour, I think it is better to have remediation on handwriting activities only. The catch up programme includes all subjects and all learners in one hour.”

g. Handwriting should be assessed.

However, another teacher B from Orange primary suggested that,

“Assessment of handwriting should be introduced into schools and it should be recorded. To do this, learners should have separate books specifically for handwriting. When this happens teachers will be able to identify the type of help to give to individual learners.”

Other teachers from Banana, Orange and nut primary schools added by stating that,

“Learners’ handwriting can be improved by regular checking and marking of their written work. They should also be encouraged to do more of the writing activities whether individually or with friends. The focus should be on holding pens, letter formation, sitting posture, and positioning a book.”

h. There is need for adequate desks and classroom furniture

Teacher C from Nut primary stated that,

“The free education had invited more children to come to school, due to this free education, there is a scarcity of desks in schools. For example here at our school, in term one (of 2023) three or four pupils were sitting on one desk and they could not write well. Therefore, I suggest if the government can provide desks to schools to help improve the quality of handwriting.”

Teacher A from Orange primary echoed on the same and said that,

“Over enrollment in schools has affected us very much that desks are no longer enough to cater for all learners, so more desks are needed in schools.”

i. Need for teacher-parent collaboration.

The teacher B from Banana primary, suggested that,

“Teachers and parents to the children should work together. It makes it easy for parents to help their children with handwriting homework at home. For example, if parents are literate, when they see their child with poor letter formation they can assist in forming the letters.”

Another teacher A from Mango and watermelon schools aligned with the above teacher by saying that,

“We need to talk to parents so that they help their children at home. They also need to be oriented on handwriting issues so that they are able to help their children correctly.”

4.4. Chapter summary.

The goal of this chapter was to present the findings of the study according to research questions. The key findings of the study are that; the quality of handwriting among the fifth graders in selected primary schools of Mongu district were characterized with; omission of letters, poor spacing and combination of upper and lower cases in words, poor letter formation (ascending and descending letters), poor alignment, and reversal mirror writing. These findings were confirmed with the samples provided on document review. Some factors that contribute to learners' poor quality of handwriting included; lack of continuous orientation of handwriting programmes of teachers in schools, teacher's poor modeled handwriting as samples 9a and 9b above, overcrowded classrooms and insufficient time to teach handwriting as well as lack of handwriting assessments and inadequate administering of handwriting remedial work. To mitigate handwriting difficulties, teachers suggested that, the MoE should introduce handwriting workshops to train and orient teachers on how to teach handwriting skills and to time-table handwriting on the school time table. Learners also suggested the teaching of the alphabet and sounds.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.0 Overview

This chapter discusses the main findings of the study which sought to analyze the quality of handwriting among grade five learners in schools. The discussion of findings has been done in accordance with the three objectives in chapter one that guided the study: The quality of handwriting among grade five learners in schools; factors that influence the quality of handwriting among learners at fifth grade; and measures that should be undertaken to improve the quality of handwriting among learners at fifth grade. Additionally, the findings have been discussed in relation to what other scholars have said with regard to the quality of handwriting among primary school learners.

5.1. Quality of Handwriting among the fifth graders.

Graham, Karen, Harris, and Lynn (2001), indicated that, at grade four, learners are expected to exhibit accuracy in key aspects of handwriting such as spacing, writing speed, pencil (pen) grip, sitting posture, punctuation marks, shape and size, straight line (alignment), letter formation, paper position, capitalization and spelling. An implication that by the time learners reach fifth grade, they should exhibit legible handwriting. During the study, it was noted that the quality of handwriting among the sampled fifth grade learners was generally poor and very worrisome. The results from all the techniques of interview and document analysis complemented each other.

The study results exhibited diversified handwriting challenges. The general handwriting challenges exhibited by learners in an effort to write were in form of poor spellings, omission of letters, poor alignment, poor letter formation, combination of upper and lower cases in words, incorrect writing of ascending and descending letters, shape and size, mirror and reverse writing, ineligibility, poor spacing and messiness as depicted in the samples 1 to 8. In line with the study findings, Limpo, Parente and Alves (2018) indicated that their findings revealed variations in the fifth graders handwriting legibility in terms of handwriting mechanics. Additionally, Kennedy (2004) noted that dysgraphia manifests itself as difficulties with spelling and poor handwriting. Thus, the assumption by Graham, Karen, Harris, and Lynn

(2001), has not being realized in the Zambian context. An indication that a large number of learners passed through each grade level without knowing how to write legibly. The implication from the study findings is that, the general performance trend on the handwriting of learners at grade five level is very worrisome especially in the sampled schools. Arslan and Ilgin (2010) maintained that teaching different handwriting styles could create problems for students and lead students to writing with a mixed style, which could have a negative effect on the legibility and the speed of handwriting in later grades as seen in sample and 4.

Sample one (1) of pupil 1's handwriting was characterized by print and tailed styles. Some letters are in print form since most of the letters are not joined to each other. While other letters are tailed such as a, g, y, m and t. There was a lot of script type of handwriting in the provided sample. The sample depicted legible handwriting but not as expected at the learners grade level. This because learner by grade three, they are introduced to cursive type of handwriting. This finding is in line with Aligning with this, Wallace & Schomar, (1994) in their study, they revealed that schools transitioned handwriting instruction from manuscript (in early grades) to cursive in later grades. However, Frenzel (1958) disputed the earlier findings by stating that the problem of changing over from manuscript to cursive style in the third grade is thought to be a serious one. Hence, Arnold, and later , Enstron (1969) also advised that once writers develop proficiency with manuscript handwriting, school should transition handwriting instruction from manuscript to focus upon cursive handwriting in order to enable writers to develop legibility, speed and efficiency with handwriting tasks. These literatures reveal that the teaching of handwriting was sequential (taught from simpler-Manuscript to complex-cursive) as learners progress to intermediate grades. But learners' handwriting needs and abilities has to be considered before transitioning to another style.

However, Armitage and Ratzlaff (1985) maintained that cursive handwriting instruction was not to be withheld from learners until they master neatness with manuscript. Align with Armitage and Ratzlaff, Groff (1960), assumed that timing during the transition which schools typically transition handwriting from manuscript to cursive is more rooted in tradition rather than learners' performance with handwriting. Therefore, transition from manuscript to cursive should be depended on learner's needs and abilities in handwriting. Thus, the curriculum that insist that the child must learn cursive writing before he leaves the lower

primary makes transition to cursive very difficult. Therefore, transition from manuscript to cursive handwriting should be depended on the learners' needs and abilities on handwriting.

Another characteristic of handwriting challenge among grade five learners was characterized by poor letter formation. The results revealed that most of the sampled learners failed to write some letters and words correctly. Sample 2 gives the rest of the descriptions of how different letters in the written work are formed with reference to the quality of learner's handwriting. The Sample showed how the learner (s) formed different types of letters. Examples of such letters are 'k' in the first and last words of sentence 1 and 2. Letter 'e' in the words 'hae, kwaezahalan'i, bulelelwan'i, mezi and kwalibayekwandu'. It appears that the formation of the stated letters do not reflect correct hand movement to form the different parts of the letters. Some learners failed to write letters exactly as they appeared, or failed to copy the exact shape of a letter, the letters were deformed leading to illegibility of some words. The result was in line with Alston and Taylor (1987) who observed that, learners with extreme handwriting problem, exhibited irregularities in letter formation.

In line with letter formation, the results further revealed that learners had challenges of ensuring that the shapes and sizes of the letters were of equal proportion. There are three types of letters; ascenders; b, d, f,.. square, a, c, e, i.. and descenders g, j, p.... and these should have equal heads, bodies and tails. But it was noted that learners did not consider shaping and sizing the letters proportionally. Some ascending tails and some upper case letters were too long as in sample 4, while descending tails were short. Some square letters 'a' and 'e' exceeded the line they were supposed to lie on, as depicted in sample 2, 3, 4, 6, 7 and 8. While in samples 2, 3, 6, 7 and 8, the three different types of letters ascending, square and descending' letters cannot be easily identified. This handwriting is legible but the rules for forming letters in terms of shape and size were incorrect hence, qualifying the handwriting to be poor. Good quality handwriting ensures that the heads, bodies and tails of all the letters in a word should be of the same size. Other scholars stated that, good handwriting is typically characterized by legibility, consistency, and neatness (Alston and Taylor (1987) Legibility is refers to how easily the writing can be read, while consistency relates to the uniformity of letter size, spacing, and slant (Margaret, 1975). Neatness involves the overall appearance of the writing, including the absence of smudges or excessive cross-outs. Berninger et al., (2006); Graham et al. (1997) and McCutchen, (2000) stated that

students who do not receive sufficient handwriting instruction, especially those at risk for poorly formed letters, continue to focus on how to form letters rather than constructing sentences and spelling words and this could be an academic obstacle as children progress into higher grade levels with increasing academic demands (Kandel, & Valdois, 2005; Marr & Cermak, 2002).

Marr and Cermak (2002) investigated the handwriting consistency of 93 kindergarten students from the beginning of kindergarten year to the middle of the first grade year. The researchers found that 42% of the kindergarteners that were performing in the low handwriting group were still in the low group in first grade. Findings suggest that, without intervention, there is a high probability that these students will continue to demonstrate similar handwriting abilities and patterns. Hence, there is need to intervene in the handwriting difficulties faced by primary school learners.

Another handwriting challenge some of the grade five learners exhibit is poor alignment. Alignment is the ability to keep letters lined up properly in the writing space. This implies that starting letters from left-to right direction and starting at the very left of the page. It also means keeping letters straight on the line or going in a diagonal direction on the page. The results showed that most learners were either writing on the line, samples 3, 4, 5,6, 7 and 8 or not as revealed by the description. Additionally, Amundson and Weil (2001) indicated that below-standard performance in letter formation, and size in particular, could greatly reduce handwriting 'readability', although a handwriting sample may be readable even though poor alignment interferes with its appearance. However, Başaran, (2020) indicated that the relationship between the direction of drawing the letter lines and the drawing speed and the line quality constitute the quality of handwriting portrayed by learners. While Margaret (1975) indicated that quality handwriting is a skill characterized by legibility, speed, neatness and efficiency. Bad handwriting, on the other hand, may be difficult to read, inconsistent in style, or messy in appearance.

With regards to using upper and lower case letters, study findings also indicated that there were some learners in grade five who were combining upper and lower case letters in one word. This was seen in sample7 where 'opposers' is written as 'oppoSERS. While sample 4 denotes that some learners were not even aware that a sentence should start with an upper case letter, sentences in sample 4 start with lower case letter 'w'. The handwriting is legible but does not meet the features of quality handwriting. In line with the findings, Amundson

and Weil (2001) indicated that below-standard performance in letter formation, and size in particular, could greatly reduce handwriting 'readability', although a handwriting sample may be readable, poor alignment interferes with its appearance. Therefore, the findings also continued to indicate that, there were learners who progressed in the education system without even knowing when to use upper and lower case letters. Hence, affecting their school achievement at each grade level. Keys (2000) aligns with the study when he said, when a learner fails to develop certain basic handwriting skills, this affected his or her ability to communicate effectively what the school system demanded. Other scholars revealed that, the basic production of letters, shapes and numbers to quality handwriting was positively linked to academic performance (Carlton and Winsler, 1999; Dinehart and Manfra, 2013; Feder and Majnemer, 2007; Grissmer et al., 2010; Jackman and Stagniti, 2007; Kulp, 1999; Luo, Jose, Huntsinger and Pigott, 2007; Mayes and Calhoun, 2007; Rosenblum et al., 2003; Son and Meisels, 2006; Sortor and Kulp, 2003).

Further, the results of the study also revealed that, the grade five learners' handwritten work was characterized by poor letter formation. It was noted that the incorrect way of forming letters was caused by poor direction and movement in the process of forming letters. Samples 2, 3, 6, 7 and 8 shows how a learner combined upper and lower case letter and also how ascending and descending letters were formed. For example, descender *g*, *y*, *j* and *p* were written as ascender making them appear as ascenders *b* and *l*. This is because some grade five learners could not differentiate ascenders from descender as they could not write them correctly. They either failed to write letters exactly as they appeared, or failed to copy the exact shape of a letter, thereby writing a word in a deformed manner leading to correct or incorrect spellings especially for samples 6, 7 and 8 where letters 'k, f, s, y and w'. Letter formation, direction and movement are interrelated as lack of one skill affects the other. The above observation is in line with Alston and Taylor (1987) who observed that, learners with extreme handwriting problem, exhibited irregularities in letter formation.

Some of the findings of the study revealed that some of the learners who participated in the study exhibited mirror or reversal letter writing. These are irregularities in the formation of letters. In this study, some learners wrote letters which faced along a vertical or horizontal line in such a way that, some letters were turned upside down, or in other cases, there was poor transposition, where the sequence of letters in words were out of order. Other learners too, exhibited reversal writing of letters in which letters were turned upside down. In line with the findings, Haring and Schiefelbusch (1976) indicated that, some learners with

handwriting challenges also exhibit reversals of numbers, letters and words as they struggled to write. Sample 8 gives a full description of mirror or reversal type of writing letters for example, 'sand soils' was written as 'sanb solis' and many more words.

Mirror and reverse writing led to writing completely different words which did not imply a word at all. For example sample 8 denotes words written differently as compared to the words the learner was copying from. Such type of writing changes the spelling and makes the work illegible. (Ibid, 1976) indicated that spelling difficulties of some learners could be attributed to some learners' poor visual memory that contributes to the quality of handwriting. In alignment with (Ibid, 1976), Case-Smith (2002) noted that visual motor skills affect a child's ability to measure position in space, figure ground perception and copying letters or words. Difficulties in this particular area make it challenging for a child to write within a line boundary and to correctly write letters and words. Indeed, some learners failed to recall the visual appearance of some familiar words even though they knew their meaning. Thus, Davis and Elen (1994) said that, learners with handwriting challenges usually exhibited omission or addition of letters in words thereby distorting the meaning of the intended word.

The findings of the study further revealed that some of the learners had handwriting challenges of spacing. Some of the learners' work was characterized with poor spacing between words and sentences where learners were leaving either bigger, small, no spaces or putting spaces where they were not supposed to be (in their written work). This poor spacing made the written work to be illegible or give a different meaning as indicated in Samples 2, 3, 6, 7 and 8. For example in sample 3, words such as 'luca buhobe' was written as 'lu ca bu ho be' while the word 'bashemini' was written as 'b a sh e mani.' Hence, such words give different means whenever they are read. Thus, the handwriting is illegible, denoting poor quality handwriting. This is because spaces were left where they were not appropriate.

Messiness is a handwriting challenge where learners' exhibit excessive untidiness, in that, the written work is excessively rubbed or cancelled or lack or inappropriate spaces. The results from the study indicate that, some learners in grade five still exhibited a lot of untidy written work which was unpleasant to the eyes of the reader. For example samples 2, 3, 6, 7 and 8 exhibited messiness in the sampled learners' handwriting. The samples were characterized by excessively rubbed or cancelled or lack or inappropriate spaces. The impact

of untidy rewritten work is that, it becomes illegible. Therefore, Messiness writing is common among learners with dysgraphia whose fingers are clumsy and stiff. Learners with clumsy fingers usually press the writing utensil to an extent of even tearing the writing pad. O'Hare and Brown (1979) observes that, messiness in handwriting is attributed to learners who press the writing instruments (pencil or pen) very hard to an extent that, they can even tear the paper. This handwriting challenge makes the written work to look dark and dirty. In some cases, messiness is as result of poor vision which makes coping from the textbook or chalk board very strenuous. In addition, Wedell (1973) stated that, writing process for learner with dysgraphia may be slow and tedious resulting into messiness writing. Nelson (2020), further said that, poor handwriting was difficult to read, inconsistent in style, or messy in appearance.

Rodgers and Case-Smith (2002) estimated that as many as 25% of regular education children experience handwriting problems. Comparative studies of the handwritten output of children with and without handwriting difficulties revealed differences in the accuracy and readability of letters, words, and sentences (Ferreti, MacArthur, & Dowdy, 2000; Reisman, 1991). The handwriting quality of children with difficulties has been described in studies as "poor" and can be characterized by inappropriate spacing between letters or words, incorrect or inconsistent shaping of letters, poorly graded pencil pressure, letter inversions, and mixing of different letter forms (i.e., script and square) (Hamstra-Bletz & Blote, 1993; 31 Kaminsky & Powers, 1981; Maeland & Karlsdottir, 1991; Rubin & Henderson, 1982; Sovik et al., 1987a, 1987b).

In conclusion, findings on the quality of handwriting among the fifth graders revealed that almost all the learners had challenges with one or more key aspects of handwriting (letter formation, alignment, spacing, shape and size, pencil grip, posture direction and movement) of handwriting. The mechanics of handwriting are interrelated and once a learner is incompetent in one aspect, may even have challenges with other aspects. For instance once a learner has a challenge with letter formation, then other challenges related to letter formation such as shape and size, alignment direction and movement would emerge too. These challenges therefore, are linked to the theories of neurological, motor and cognitive theory in the theoretical framework. Thus, good handwriting consists of a series of muscular skills that develop as the combined result of mere age, absence from pressure, and of elimination by

diagnostic teaching of such bad habits as may arise, (Fellasufal & Mustadi, 2019). This chapter presented the findings, analyzed and provided an empirical and theoretical discussion of the research findings by linking them with the literature review in order to answer research questions given in chapter one. Therefore, the following section focuses on the causes of the handwriting challenges among the grade five learners in the selected primary schools of Mongu district.

5.2. Factors influencing poor quality of handwriting among grade five learners.

In line with study objective two, the study had established a number of factors which were attributed to poor quality of handwriting among the learners at fifth grade level in the sampled schools. Some factors were to a lesser extent related to school/classroom-based factors such as overcrowding and furniture which account for poor handwriting in public schools and lack of handwriting teaching and learning resources were also established. Overall, some factors were related more to teacher and with lesser extent to learner, parental involvement, and policy and curriculum factors. The identified factors were considered to have a critical role in influencing poor quality of handwriting.

Therefore, handwriting performance requires the careful and simultaneous use of a number of cognitive (e.g., intellect, attention), sensory, and psychomotor (e.g., motor development, muscle development) behaviours (Dodd & Carr, 2003, p.128). Along with these behaviours, handwriting is affected by social factors such as constraints to use the right hand and environmental factors such as the literacy curriculum (Ziviani & Wallen, 2006). Handwriting quality increases more rapidly during the first years of learning and develops more slowly at later ages (Karsldottir & Stefansson, 2003). Handwriting requires cognitive effort not only for children at the beginning of the literacy process, but also for students at all grade levels (Morin, Morin, Lavoie, & Montésinos-Gelet, 2012) since writing needs to be produced fluently at a certain speed so that feelings and thoughts can be expressed effectively at all stages of learning.

One of the school contributing factor to poor handwriting among learners at grade five were changes in education policy and Curriculum. Research findings have revealed that, handwriting is covered under writing which is a component of literacy at lower primary. The interviewed teachers indicated that handwriting is not given much attention in the school

curriculum since little time is dedicated to it. For instance, The Ministry of Education had two literacy programmes since 1999; Primary Reading Programme (PRP) and Primary Literacy Programme of 2013 in the revised curriculum (. Both programmes aimed at improving reading standards in the country. PRP had three major components, namely, New Break Through to Literacy (NBTL), Step into English (SITE) and Read on Course (ROC) (MOESVTEE, 2000). While PLP had five key competence; phonemic awareness, phonics, oral fluency, Vocabulary and comprehension with the inclusion of writing (MOESVTEE, 2013). According to Matafwali (2005), the main purpose of these programmes was to improve reading skills as further supported by (MoE, 1996). Therefore, lack of adequate programmes within the school curriculum aiming at enhancing the teaching of handwriting does not encourage teachers to teach handwriting adequately. This is because teachers could not render handwriting instruction fully which contributed to poor handwriting among the fifth graders.

Blazer 2010 also noted that, handwriting in the United States was once taught in schools as an individual lesson receiving a separate grade on a child's report card. Yet, over the last decade, and more recently since the adoption of the Common Core State Standards (National Governors Association Center for Best Practices [NGA Center] and the Council of Chief State School Officers [CCSSO], 2012), the importance of handwriting in elementary education has diminished significantly (Carpenter, 2007; Pressler, 2006). Therefore, the integrated learning areas and the numbers of sessions per day, compromised the legibility of handwriting instruction. Due to little attention given to handwriting, there was poor legible of handwriting productivity among the sampled grade five learners written work.

The other school related factor is inadequate time of teaching handwriting which contributed to handwriting difficulties among learners in schools. Handwriting is embedded in writing skill which is allocated 8 minutes out of the 60 minutes of literacy (Moe, 2013). This implied that it 8 minutes was not enough to cater for all writing tasks. Most teachers involved in the study stated that there was little time in the school curriculum allocated to teaching handwriting. Aligning with the study findings, Dolin (2016) noted that in the past, California's education system had a separate handwriting curriculum where children were taught handwriting for about 75 minutes of class time, daily. Learners practiced writing while the teacher provided individual feedback and instruction (Gerszberg, 2003). Koenke (1986)

aligned with the statement as he indicated that handwriting was transformed into an aspect of the language arts curricula where learners were briefly introduced to the letters in combination with language or phonics which left students without guided instruction on letter or number formation. These literatures indicated that handwriting was embedded in literacy where it received less attention. The little time allocation affected handwriting instruction.

Despite the less time allocated to teaching of handwriting in the curriculum, the researcher further noted that most of the urban schools had double or triple streams which led to less time allocated to classroom use due to insufficient infrastructure. For instance, during data collection, there were only three hours at lower primary to teach six subjects and five to six hours at upper primary to teach 8 subjects in a day before another class came in to use the same classroom. Therefore, there was less time for teacher-learner contact time in schools due to over enrolment and inadequate infrastructure. These research findings are also supported by Kelly (1999:154) who stated that, *“double or triple sessions and tied timetables found in most government schools in Zambia, worked against quality teaching-learning”*. This implies that multiple sessions affected the contact time for handwriting instruction thus, it contributed to learners’ illegible handwriting performance.

The other school factor that contributed to poor handwriting among grade five learners who was free education policy which influenced over enrolment. The results indicated that school factors such as over enrolment was another factor which contributed to poor quality of handwriting among the fifth graders. According to the participants’ views the findings seem to suggest that over enrolment contributed to scarcity of desks which in turn denied the learners to sit correctly and practice good handwriting. This was noted during teacher interview where teachers indicated that 3 to 4 learners were occupying one desk. Some teachers lamented that over enrollment led to shortage of desks which further contributed to poor posture, poor paper positioning and letter formation. The Zambian government is committed to the Universal Declaration of Human Rights of 1948 which include article 26 which states,

“everyone has the right to education, which shall be free, at least in the elementary and fundamental stages, and which shall be directed to the full development of the human

personality and to the strengthening of respect for human rights and fundamental freedoms” (NIF, 2007: 20).

The conclusion drawn from this quote is that access to schooling and equity issues seem to be more pronounced in educational policy at the expense of quality. The argument here is that sending children to school is good as the government is just aiming at achieving EFA in terms of increased enrollments through the provision of additional educational facilities or schools and the expansion of the existing ones as stated in (NIF, 2007). While not think about what kind of education children would receive, is irrelevant. It is only hoped that the process of provision of desks would be fulfilled by the end of 2023 as promised by the current government of UPND. Thus, some policies if not strategically implemented they tend to have a negative influence. According to this study, the findings have revealed that the policy impacted the enrollment which further caused poor handwriting among the fifth grade learners in the sampled schools as depicted in samples 1 to 8.

This finding is also supported by Mubanga (2010) who stated that, lower primary classes were mostly overcrowded, such that, there were no opportunities for pupil-teacher contact in order to offer individualized learning-support to needy pupils. Congestion due to over-enrolment in most of the classes contributed to poor class management on the part of the teachers. Sometimes, this made teachers to behave quite emotionally, a situation which eventually contributed to poor teaching and learning.

Another school related factor that had a negative influence on the legibility of handwriting among the fifth graders was lack of handwriting materials (books, slates, templates etc.). Teachers revealed that, they had no or very limited books on handwriting. That is lack of writing materials such as story books or books with different forms of handwritings as samples influenced poor handwriting among the grade 5 learners. Aligned with the factor on the use of resources, EFA (1992) advises that learning resources are key ingredients for learning. Learning materials that are known to enhance pupil achievement significantly are text books and teachers’ guides. Additionally, Dean (1997) indicated that in designing and producing teaching and learning materials; we need to remember that the materials produced must be motivating to the learners and, not so easy that there is no challenge. Findings from other studies in Kenya have also revealed that pupils who had most learning resources such as pencils, pens, exercise books, notebooks, erasers and rulers were estimated to achieve

better in reading than pupils who had hardly any learning materials, (Bara, & Morin, 2013). UNESCO (2006) also revealed that a substantial number of children between the age of 15 and 24 in Sub-Saharan countries have not mastered basic literacy skills and, the majority of pupils at primary schools are failing to read and write at the expected levels - due to weak school systems in terms provision of resources.

The views stated in the paragraphs above seem to suggest that teaching and learning materials play a vital role in the improvement of education. However, findings from interviews in this study showed that, all schools did not have handwriting books but text books were available with few story books. While the researcher may agree with the views above, it can still be argued that non availability of resources in schools cannot be heavily depended on the MoE. It cannot be used as an excuse for teachers' failure to pay attention on learners' handwriting challenges. Schools will always have some materials, and if they are inadequate, teachers can either obtain or generate them from the local community through improvisation.

Therefore, rather than putting the blame on the MoE for not constantly supplying teaching and learning materials in schools, teachers too, should be creative enough so that they are able to obtain the teaching and learning resources from the surrounding environment such as planks, card boxes, posters, magazines, newspapers, and pamphlets from other disciplines. The researcher therefore tends to differ with the teachers' view that the MoE is obliged to provide all the teaching and learning materials for them to use when planning the lessons. Instead, teachers should make sure that they use materials obtained from many sources as this will expose pupils to a wide range of writing materials. However, this can happen only if teachers are motivated enough to teach the curriculum.

Teacher factors are other factors that contributed to poor handwriting among grade five learners who took part in the study. The first teacher factor was the ineffective handwriting instruction. This study established that most teachers had insufficient training which affected the effective teaching of handwriting skills. For instance, the type of training offered to teachers at the inception of the PLP was not sufficient. Mubanga (2010) indicated that teachers were only subjected to short orientation programmes in form of workshops organized at district, Zone and school levels and these training sessions only ran for less than

one week. In the PLP, the teaching of handwriting was not given much prominence as compared to reading. PLP requires teachers to instruct learners to copy the handwriting work from the learner's book or chalkboard (where learner's books are not enough or unavailable) where teachers were supposed to be going round assisting and marking learners' works. This kind of teaching methodology paid much prominence to teaching reading than writing. Therefore, learners with handwriting difficulties were rarely attended to by teachers. This trend made learners to perform more poorly in handwriting activities than they did in reading. This is because teachers were not rendering adequate instruction and guidance to learners during writing activities. Berninger and Fuller (1992) suggest that handwriting instruction may be particularly challenging for students who lack foundational skills in writing. But teachers could not determine the effectiveness of the strategies used as indicated by Gove & Ceviche (2011) in Liberia, which found that, teachers who were untrained, were required to teach literacy skills without adequate training and supervision, and were required to determine by themselves how to recommend pedagogical methods. Abreu et al., (2017) echoed on the same by saying, large variation was noted in the amount and type of writing instruction reported by teachers that automaticity was associated with the teaching of revising strategies but not with the teaching of handwriting.

The results further indicated that some teachers lacked training on handwriting or had limited knowledge on how to teach handwriting. Lack of handwriting teaching skills either during pre/in-service trainings largely influenced the learners' poor handwriting. This meant that teachers were not adequately equipped with enough information and skills needed in the teaching of handwriting skills. This assertion is also related to findings in a study conducted by Gove & Ceviche (2011) in Liberia, which found that, teachers who were untrained, were required to teach literacy skills without adequate training and supervision, and were required to determine by themselves how to recommend pedagogical methods. Aligning with Gove & Ceviche (2011), Dinehart (2017) noted that, during the education, pre service teachers must be trained to have excellent writing skills. The learning of writing skill is taught at the elementary school level. Graham et al., (2007) and Hammerschmidt & Sudsawad (2004) also noted that the quality of handwriting among the primary school learners was influenced by explicit and systematic instruction, time allocation, teachers' handwriting, attitude and knowledge of teaching handwriting.

Due to lack of handwriting knowledge and pedagogy, teachers' poor handwriting also contributes to handwriting difficulties among the learners. The findings of the study revealed that some teachers had poor handwriting especially on letter formation, combining capital letters with small letters, style of handwriting, alignment and do not differentiate ascending letters from descending letters as indicated in sample 9a and 9b. This made learners to imitate or copy the teacher's bad handwriting. In teaching writing to students, the teacher should be a role model so that it can provide concrete examples [3]. This certainly requires the teacher's writing skills. Thus, during the education, pre service teachers must be trained to have excellent writing skills (Sassoon, (2003). Therefore, the learner's handwriting is the reflection of the teacher's board work. It is worth noting that teachers should be role models even in handwriting as they have a greater influence on the learners' handwriting.

Another teacher related factor that influenced the quality of handwriting among the fifth graders was the lack of considering learners' age and learning ability. The findings revealed that most of teachers were using the handwriting not appropriate to the age or grade level of the learners. This is because all the sampled teachers work were using script form (style) of writing at grade five level where cursive form was supposed to be used as depicted in sample 9a and 9b. But this form of handwriting was going to be appropriate to the learners who could have cursive handwriting challenges or in grades 2 and 3. Hence, the teachers were not considering the learner's age and ability. This lack of consideration of learner's age or ability can be attributed to teacher's insufficient handwriting teaching methodology and knowledge. Some teachers during the interviews indicated that among lower primary teachers, some were using cursive handwriting which also negatively caused poor handwriting among the learners.

To support the finding, Ellen (1993), stated that, handwriting is a skill product that is regarded as being unique to each individual. The uniqueness is derived from two components of a person's handwriting. Firstly, the particular combination of forms of the letters used (style) to produce the handwriting will vary from person to person depending on a number of factors. Secondly, the variability of execution of the letter forms varies from one writer to another. This variability is usually called natural variation and is an intrinsic quality of handwriting. From such an indication, the researcher may agree with the assertions made by teachers that teacher's knowledge on handwriting pedagogy is inadequate. This is because if teachers were conversant handwriting methodology, they would be teaching according to the

age and/or (grade) ability levels of the learners. Thus, script or cursive handwriting was going to be used appropriately according to grade level and learning ability. In contrary, the researcher again seem not to agree with the teachers views because most of the six sampled schools had 'catch up' programmes which included handwriting in the one hour of remediation. The argument here is that teachers could easily use 'catch up' materials to gain knowledge on how to help learners with handwriting challenges in the normal sessions. This situation therefore seems to suggest that teachers had a negative attitudes towards handwriting aspects as they believed that the focus on handwriting is only at lower primary thus influencing the learners' handwriting skills. EFA (1992) also noted that when teachers lack sufficient subject knowledge to teach pupils adequately in one particular subject area, pupils are disadvantaged.

In line with the above factor, the study also revealed that learner's age and developmental levels do influence handwriting challenges. Some findings seem to suggest that due to lack of handwriting teaching and learning materials in the selected schools, there was a mismatch between the learner's ability and the lesson content in relation to handwriting. Dean (1997) states that if children are to learn well the tasks they are asked to undertake and those they choose for themselves must match their learning needs, being difficult enough to challenge but within their capacity. The findings also noted that some teachers failed to plan suitable writing activities for the learners because they did not have enough text books and other instructional materials to use. Additionally, through the participants' expression the researcher noticed that, teachers' lack of handwriting skills and instruction affected the learners' handwriting poorly. This was because teachers could not teach according to learners' ability or age. Samples 9a and 9b depicted the type of handwriting used at fifth grade level characterized by print and tailed handwriting instead of cursive handwriting. This is because teachers did not consider the grade and ability levels. Brote and Hamstra (1991) echoed that learners who fail to stay on the line when writing may also overshoot or under shoot the lines and /or letters may be poorly aligned on the line of the book. Hence, handwriting instruction should consider the age, grade and ability levels of the learners.

Further, study findings revealed that learners have a key role in their education. Hence, learners' factors also contribute to acquisition of poor quality of handwriting. Learners' absenteeism was noted during the study that it contributed to handwriting challenges. Keitheile and Mokubung's (2005) findings in Botswana which revealed that absenteeism is

one of the most frequently reported pupil related factors contributing to the learner's performance. The findings of the study showed that learners who were regular absentees lagged behind in performance. The views expressed above agree with the conclusion drawn from this research that learners who were regular absentees received inadequate instruction therefore, were likely to have handwriting challenges as compared to their counterparts. The implication of being absenteeism from school is that the affected pupils tend to miss lessons and their handwriting is negatively affected.

Another finding in the study indicated that Learners attitudes, interest and concentration towards schooling and writing had an influence on their performance. The findings of the study revealed that some learners have a negative attitude towards writing. The results indicated that even when learners are told to write, they would pretend but later they stopped writing because of a negative attitude towards writing.

The findings here indicates that attitude, interest and seriousness among some grade five learners influences their quality of handwriting negatively. The study also revealed that learner's learning disability influences the poor quality of handwriting among the fifth graders. Some teachers stated that learning disabilities such as mirror and reversal writing, slowness, illnesses like stroke and physical disabilities influenced illegible of handwriting.

Additionally, MOE (1990) indicates that learners who are easily distracted or have poor attention are likely to find handwriting difficult, as they just forget to remember how letters are formed or how they appear. During the interviews, it was discovered that children with special education needs had challenges with handwriting. Hence, disability influenced the quality of handwriting among the grade 5 learners. Berninger and Graham, 1998; Berninger et al., 1991; Graham, 1992, 1999, stated that, children with handwriting difficulties are said to develop a negative experiences of writing, including frustration, decreased self-efficacy and poor motivation. From a social-emotional perspective, students who experience frustration in their writing are less likely to want to write, more likely to feel bad about their writing and generally be less likely to produce detailed, comprehensive material (Berninger and Graham, 1998) indicated in the writing errors commonly made by first graders (Feder and Majnemer, 2007).

In relation to learning disabilities, the researcher further noted that some learners had poor memory, poor visual-spatial skills and poor fine motor ability, in some ways also could have affected learners' handwriting abilities. For example, a teacher B from Banana school indicated that, some learners exhibited poor handwriting because they had stiff finger muscles which made it difficult for them to hold the pencil correctly. The teacher highlighted that there was nothing she could do to assist such learners because such learners couldn't learn how to write properly no matter how one tried to assist them. This observation is supported by Blöte and Hamstra, (1991) who noted that, poor visual spatial skills and poor fine motor skills were intrinsic factors that could make it difficult copying a word from the chalkboard or text book by some learners. Deficits in these areas can affect the learners' visual-motor integration and eye-hand coordination. Therefore, learners with visual-spatial problems had decreased awareness regarding the spatial arrangement of letters, words or sentence on the page. It was noticed in the samples highlighted in the study that, some learners wrote words and sentences that were suspended in air or some on the line due to visual spatial difficulties. This point is also supported by Haring and Schiefelbusch, (1982) who also observed that some learners were unable to write words from memory or dictation due to poor visual memory, because some learners failed to remember. Therefore, special education needs have negative impact on the acquisition of handwriting skills which lead to poor handwriting if intervention are not there.

Some teachers revealed that children's home environment/background had an influence on the learners' handwriting. They said that some learners come from homes where parents and other relatives do not have literacy skills. Hence, learners lack knowledge on how to write and no assistance is rendered to them at home when given homework. This entails that home environment has an impact on the child's handwriting. The implication is that, a poor home environment that lack learner support and literacy materials makes children not to acquire literacy skills inclusive of handwriting. Therefore, lack of parental/community involvement in the child's education contributes to poor acquisition of handwriting skills. This is because there should be enough time to practice writing even at home. Thus, parents, siblings, care givers or guardians are key players in the education of the child.

In conclusion, we would see that the findings have highlighted a number of learner, teacher school and parental involvement factors that contribute to fifth graders' poor quality of

handwriting amongst which are: Absenteeism, negative attitude towards school (writing), learning disability and poor handwriting background/ home environment inclusive of parental involvement. Marr and Cermak (2002) investigated the handwriting consistency of 93 kindergarten students from the beginning of kindergarten year to the middle of the first grade year. The researchers found that 42% of the kindergarteners that were performing in the low handwriting group were still in the low group in first grade. The findings suggested that, without intervention, there is a high probability that these students will continue to demonstrate similar handwriting abilities and patterns. Thus, below are the suggested measures to improve handwriting abilities among the grade five learners in the selected schools.

5.3. Measures that should be undertaken to improve the quality of handwriting among learners at fifth grade.

Although the teachers were doing something to remediate the handwriting challenges with the grade five learners, they had also suggested some measures. The findings suggested that there should be trainings and/or more intensive and extensive handwriting orientation programs for primary school teachers as one of the measures. The trainings will help teachers acquire knowledge to teach handwriting effectively. This would help to improve poor quality of handwriting among grade five learners in primary schools. Most teachers indicated that they needed trainings or orientation on handwriting as most of them lack the pedagogy to teach handwriting. They suggested that these could be done during Continuous Professional development activities (CPDs), just as it is with reading. This is in line with MoE (2002) which encourages teachers to continuously share best methodologies of teaching literacy skills during Teacher Group Meetings (TGMs) sessions..

Additionally, study findings revealed that, government through the MoE should introduce workshops on the teaching of handwriting in schools just as it is done with reading. This would help teachers acquire more knowledge and latest skills (methods) of teaching handwriting as well as know how to assist learners with handwriting challenges. Swaroop (2010) indicates that teachers are required to know how to train learners in finger movements exercises so that, learners could improve their fine motor skills and enable them execute good handwriting. Therefore, pre-service teacher training in colleges of education should also revise their literacy curriculum so that it is tailored towards equipping teachers with effective way of teaching handwriting. Graham (1997) emphasized that teacher's guiding role is an

important factor for success in eliminating writing difficulties. This implied that teachers should have sufficient knowledge handling handwriting so as to make the teaching and learning processes fun.

It was also established in the study that, the current curriculum does not pay much attention on handwriting. Most teacher respondents claimed that handwriting needed enough time so that it is fully acquired. There was a suggestion by the sampled teachers that handwriting should be an independent subject (lesson) and be time tabled. Timetabling handwriting would compel all teachers to prepare, plan and teach the skill effectively and efficiently. This is because they will have enough time to teach, supervise and assist learners with handwriting challenges. Thus, Gearheart, Weishahn and Gearheart (1988), indicated that learners should be allowed to practice handwriting activities at least 10 to 15 minutes in a day. This indicates that handwriting needed to be an independent subject and timetabled in order to have enough time to handle it adequately.

The researcher further noted from document and reviews that apart from teaching mechanics of handwriting spacing, size, writing straight on lines and spellings would be learners to write legibly and intelligibly. This is because most learners' samples revealed poor acquisition of handwriting aspects. Therefore, with regard to prewriting activities, Teachers can also encourage learners to use paper with raised lines to keep writing straight on the line (Hallahan, 2009). In line with Hallahan, (2009), Pollowry, Patton, Payne and Payne, (1980) stated that, fine motor skills could be developed by including fine motor activities such as sorting out beads or seeds, tracing around objects, template letters, or around finger and writing in sand or saw dust. Learner's poor spacing and writing on horizontal line could be corrected by following, Molloy (1985) suggestion who said that, learners can avoid writing too sequenced or too spaced work by using stamp pad or their fingertips placed between each word as they write. Berninger et al., (2006); Graham et al. (1997); and McCutchen, (2000) suggested that students who do not receive sufficient handwriting instruction, especially those at risk for poorly formed letters, should continue to focus on how to form letters rather than constructing sentences and spelling words and this can be an academic obstacle as children progress into higher grade levels with increasing academic demands (Kandel, & Valdois, 2005; Marr & Cermak, 2002).

In another finding, some teacher participants suggested that there supposed to be collaborative teaching among teachers. This was revealed by six teachers who participated in the study. They indicated that team work among teachers was good because teachers are able to assist each other in terms of planning, teaching, prepare teaching and learning resources. It enables teachers to consult from each other or delivering a lesson on behalf of the other especially in subject area where the class teacher is not competent. Handwriting teaching also call for collaborative teaching so that all teachers carb the challenges MoE face on handwriting. Thus, a good teacher should possess three CCC (collaborative, consultative and creative). This implied that teachers needed to work as a team, consult each other and be creative in coming up with ways to improve the teaching and learning processes. Therefore, teachers are encouraged to work as a team to ensure that the standards on handwriting are improved.

Additionally, the study revealed that the introduction of assessments and enhancement of remediation contributes positively to good handwriting. Learner 10 from orange school indicated that to improve their handwriting, their handwriting should be assessed by both teachers and leaners themselves. Assessment allows both teachers and learners to identify handwriting challenges faced and then come with the remedies. Therefore, teachers should remediate learners' specific challenge. Spelling errors by involving learners with spelling difficulties in exercises that involve different usage of words and simple repetitive spelling tasks that can increase spelling accuracy, (Kirk, Gallagher and Anastasiow, 2006).

All these remedial and teaching strategies can only be applicable and effective when teaching of handwriting is time tabled on the school or class timetables. Therefore, time tabling of handwriting enable teachers to have enough time to conduct one-on-one mentorship. It can also allow teachers to prepare suitable remedial therapies for learners with handwriting problem that can be administered through an individualized education programme (I.E.P), (Lerner, 1993). Thus, assessment and remediation were highly recommended by teachers that it also contributed to the improvement in handwriting.

The findings also indicated that MoE was to consider specialization in the teaching of handwriting. Some teachers stated that since some of them lacked handwriting proficiency, there was need to consider teachers who are/were conversant with handwriting skills to teach

handwriting. Teachers stated that school administrators should be identifying good language teachers who have good handwriting skills to teach handwriting so that they model good handwriting to the learners. Teachers indicated that since government has recommended specialization at primary school, then the teaching of handwriting should go in that line especially if it is made a stand-alone subject and timetabled.

Aligning with specialization, it was further recommended that monitoring and supervision activities on the teaching of handwriting should be introduced or enhanced (if they were there) in the Zambian education system. Teachers suggested monitoring of handwriting teaching in schools just like what is done on reading. This is because monitoring will help in ensuring that those teachers with a negative attitude towards work become committed. Teachers would also be helped and encouraged to teach handwriting effectively and efficiently. Some teachers who participated in the study also indicated that, the MoE should attach great seriousness to handwriting by monitoring it just like what is done to reading under literacy. Teacher B from orange school emphasized that all educational stakeholders should attach seriousness to handwriting. He further stated that there are a lot of non-governmental projects on reading but none on handwriting. The researcher, noted that most of the participants were claiming that handwriting was supposed to be independent, timetabled, practiced, monitored, assessed and remediated.

The researcher, further noted that, the results suggested the provision of handwriting materials to schools. During the study, teachers indicated that schools lacked handwriting materials to use when teaching handwriting. They indicated that the current books used in schools especially in grade one lacked details on key aspects of handwriting. As indicated by teacher C from Nut school that the Ministry of Education (MoE) should bring back those handwriting books used during Zambia Primary Course(ZPC) which had details on handwriting. This was further noted among the learners who suggested that MoE Should provide books in schools where they could copy good handwriting. The claim on the provision of materials (especially handwriting) was echoed by other literatures such as; EFA (1992) which advises that learning resources are key ingredients for learning. Learning materials that are known to enhance pupil achievement significantly are text books and teachers' guides. The provision of right handwriting material enhances the teaching and learning of handwriting. This would enable teachers to teach handwriting according to age,

grade and ability level since the materials would render guidance and handwriting content (MoE, 1972). This is because every grade and ability level has its own handwriting form (style) to practice at each particular stage/or grade.

The study finding further suggested that schools and teachers should improvise teaching and learning materials on handwriting. It was recommended that teachers should use locally available materials to make handwriting material such as slates, tracing templates, letter cards and many more. Additionally, Dean (1997) stated that in designing and producing teaching and learning materials; we need to remember that the materials produced must be motivating to the learners and, not so easy that there is no challenge. The implication here is that teachers and teachers should utilize the locally available material as the availability of resources make Teaching and learning effective. In doing so, teachers should improve material that are appealing to the learner and appropriate to the age and ability level of the learners. Apart from the provision of resources, over enrollment in schools led to the suggestion that schools and the MoE should provide desks into schools. It was noted during the study that 3 or 4 to some extend 5 learners sat on one desk. The occupation of 3 or 4 learners on one desk forced learners to have poor sitting posture and poor book positioning which further led to poor quality of handwriting. Therefore, MoE was urged to help in the provision of desks to schools to ensure that equity and quality education is provided to learners.

The findings of the study also suggested that; learners needed to be motivated by schools by holding writing competitions on specific aspects of handwriting at a tender age, where they could even win prizes. Otto (1994) suggests that schools can adopt a whole school writing policy where learners are allowed to engage in handwriting competitions such as quiz, poems, short stories, and personal experiences and compete at school writing fairs. Engaging learners in various writing activities would improve handwriting abilities of learners. This was echoed by learner 2 from orange school who stated that they should be given a lot of writing activities. Because when they continuously write, their fingers and hands become more soft leading to development of fine and gross motor skills which further lead to good quality of handwriting. Thus, teachers needed to be motivating and innovative, if learners were to learn in a more natural and enjoyable way.

In line with the above, teachers further suggested that school exchange visits contribute positively to improving teaching and learning handwriting skills. They stated that exchange visits would help teachers and learners learn how handwriting is tackled by other schools. This would enhance the teaching of handwriting on the part of the teachers. Learners would become motivated and imitate what other learners would be doing well in handwriting. Such visits encourage good collaboration among the schools. If schools are engaged in exchange visits, there would be uniformity in terms of handwriting content and instruction.

Another proposed measure is the enhancement of school/ community partnership. This means that remediating handwriting difficulties among grade five learners, required consented efforts from MoE, Non-Governmental organizations (NGOSS), school system, teachers and parents. Parents are the co-teachers at home, hence, their involvement in the education of their children is key. In this vain, independent writing activities should be properly supervised and assessed by teachers at school. While Parents/guardians and caregivers continue helping their children with writing activities at home focusing on the mechanics of handwriting. Hence, schools and teachers should motivate learners to do writing activities within the school calendar and at home when they are given home works to enable they practice in order to improve their handwriting skills. In addition, Westwood (2008), emphasized that by providing family support for motivation, the students with handwriting problems can continue practicing writing activities outside the school and thus be successful in solving the problem. It was noted in other literatures on motivation studies that motivating learners continuously and receiving family support are also important factors for success.

In line with measures to apply to improve quality of handwriting among primary learners, Marr and Cermak (2002) investigated the handwriting consistency of 93 kindergarten students from the beginning of kindergarten year to the middle of the first grade year. The researchers found that 42% of the kindergarteners that were performing in the low handwriting group were still in the low group in first grade. Findings suggest that, without intervention, there is a high probability that these students will continue to demonstrate similar handwriting abilities and patterns. Hence, there is need to intervene in the handwriting difficulties faced by primary school learners.

Finally, it can implicitly be deduced from the study that multilingualism and monoglossic language policies and practices in the classroom affect the teaching and learning of handwriting. In this view, it can be argued that in addition to another remedies highlighted in

the study, teachers may need to consider translanguaging during handwriting instruction to make learners understand the instruction. This is necessary considering that there is overwhelming evidence to suggest that translanguaging aides' comprehension and improves learning outcomes ((Nyimbili and Mwanza, 2021; Mashinja and Mwanza, 2021; Mwanza, 2020; Mubita and Mwanza, 2020; Banda and Mwanza, 2020; Mwanza and Bwalya, 2019; Banda and Mwanza, 2020).

5.4. Chapter summary

It has been established from this chapter that the quality of handwriting of grade five learners who participated in the study was generally poor and below their grade level. The prevalence of handwriting challenges on the key aspects of handwriting among learners was generally below average. The majority of the learners, who participated in the study, including learners with good handwriting, had some challenges on one or more key aspects of handwriting such as posture, pencil grip, book positioning, alignment, letter formation shape and size, direction and movement. This chapter has revealed that school and teacher factors contributed more to learners' poor handwriting than learner factors. The major school factors that contribute to poor handwriting included: lack of continuous orientation on handwriting programmes of teachers in schools and inadequate pre service training, overcrowded classrooms and insufficient time to teach handwriting skills. While teacher factors include; lack of adequate knowledge to teaching handwriting, lack of assessing learner with handwriting difficulties and inadequate administering of handwriting remedial work, whereas, learner factors include absenteeism, poor attitude, interest and motivation, Learner's age and ability level, poor home background and parental involvement. The finding on the measures to be taken suggested that MoE was to introduce new programmes aimed at teaching handwriting skills to learners, timetabling handwriting on the school time table, providing teaching and learning materials such as handwriting teacher's and learner's books, monitoring the teaching of handwriting so as to compel teachers to teach handwriting.. Having discussed the finding, the next chapter presents the conclusion and recommendation.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.0. Overview

The chapter concludes the study and also makes some recommendations based on the major findings of the study

6.1. Conclusion

The study found that many grade five learners in the selected schools displayed poor handwriting skills, often unaddressed by educators. The handwriting was characterized by illegibility, poor spacing, messy writing, inconsistent use of upper and lower case letters, poor letter formation, and alignment, among other issues.

Even learners with seemingly legible handwriting faced challenges in key aspects such as posture, pen grip, letter formation, and handwriting style. Most of these learners struggled to write at the required proficiency level, particularly in cursive handwriting.

The poor handwriting quality was largely attributed to school and teacher factors, with learner and parent factors playing a lesser role. If not addressed promptly by the Ministry of Education and other stakeholders, these handwriting issues could lead to further difficulties in learners' academic lives. Solutions could include a well-structured handwriting curriculum, adequate teaching time, continuous teacher training programs, and a conducive physical environment.

The study aimed not to criticize the Ministry of Education but to highlight the impact of handwriting quality on learners' academic, social, and psychological wellbeing.

The findings underscored the importance of early-grade literacy, particularly handwriting. Ignoring or under-resourcing this aspect could lead to underachievement and high rates of school failure. Therefore, urgent action is needed. Emphasizing early-grade handwriting learning could improve educational achievement and lay a foundation for successful learning in school and the wider community.

6.2. Recommendations

Based on the findings and in line with study objectives, the following recommendations were made:

6.2.1. Recommendations to MoE

- The MoE through the Directorate of Teacher education and Specialized Services (TESS) should enhance pre-service training in Colleges of Education (CoE) and Universities and continuously promote orientation programmes for in-service teachers on teaching of handwriting skills in order to enhance teachers' knowledge and skills on handwriting.
- The MoE through the directorate of administration and planning should ensure that furniture and infrastructure is provided in schools in order to curb over enrollment so that learners' acquisition of the key aspects of handwriting are enhanced.

6.2.2. Recommendations to Curriculum Development Center (CDC)

- The Curriculum Development Center should ensure that handwriting is made a separate subject from literacy so that time-frame for teaching handwriting skills is clearly stipulated and time-tabled on the school time table for effective teaching of handwriting in primary schools. This should be accompanied by resources such as content, methodology and appropriate books,
- The Curriculum Development Center should develop curricular for handwriting skills and develop handwriting teacher's guides and learner's books for each grade level in order to address issues of content and methodology at each grade level. This will enable teachers to use a variety of teaching materials and strategies in a more natural and conducive environment so that learners are motivate to acquire handwriting skills.

6.2.3. Recommendations to Education Standards Officer and Head teachers

- Educators should ensure that Continuous professional development programmes on handwriting teaching is implemented so that teachers are compelled to teach handwriting. Additionally, they should formulate clear local handwriting policies so that a platform for handwriting skills, assessment and remedial work are regularly conducted in schools

6.3. Future Research

- An area proposed for future possible research was for this similar study to be conducted among grade five learners, in more private and public primary schools, both in rural and urban areas, other districts and provinces of Zambia, using a variety of assessment tools, in order to determine if the findings would be similar.
- The MoE should ensure that research work on Literacy levels in Zambia should also reveal the legibility of handwriting among learners at different grade levels in schools, in order to determine the magnitude of handwriting difficulties among school going children

REFERENCES

- Abott, R. D., & Berninger, V. W. (1993). *Structural equation modelling of relationships among developmental skills and writing skills in primary- and intermediate-grade writers*. *Journal of Educational Psychology*, 85, 478–508.
- Adas, D. & Bakir, A. (2013). *Writing difficulties and new solutions: Blended learning as an approach to improve writing abilities*. *International Journal of Humanities and Social Science*, 3(9), 254-266.
- Allen, M. J. (2011). *Developmental aspects of handwriting acquisition. A thesis submitted in Partial fulfilment of the requirement of Staffordshire University for the degree of Doctor Of philosophy*.
- Alston, J. (1985). *The handwriting of seven to nine year olds*. *British Journal of Special Education*, 12(2), 68–72. doi:10.1111/j.1467-8578.1985.tb00609.x.
- Alston, J., & Taylor, J. (1987). *Handwriting theory, research, and practice*. New York, NY: Nichols.
- Amundson, S. J., & Weil, M. (2001). Prewriting and handwriting skills. In J. Case-Smith (Ed.) *Occupational therapy for children* (4th Ed.). St. Louis, MO: Mosby.
- Archer, A. L., & Hughes, C. A. (2011). *From Explicit Instruction: Effective and efficient teaching*. New York: The Guilford Press.
- Hughes, C. A., Morris, J. R., Therrien, W. J., & Benson, S. K. (2017). *Explicit instruction: Historical and contemporary contexts*. *Learning Disabilities Research and Practice*, 32(3), 143. doi:10.1111/ldrp.12142.
- Arnold, E. (1933). *The transition from manuscript to cursive writing*. *Elementary School Journal*, 33(8), 616-620.
- Banda, F., & Mwanza, D. S. (2020). "The Idea was that those who were Trained needed to Teach others, Critical Reflections on the 2014 Zambian Language of Initial Literacy Policy Change". In A. Abdelhay., B. S. Makoni & C. G. Severo (Eds.), *Language*

Planning and Policy: Ideologies, Ethnicities and Semiotic Spaces of Power (pp.125-154). Cambridge: Cambridge Scholars Publishing.

Banda, F and Mwanza, D.S. (2020). Introduction. *Multilingual Margins: A journal of Multilingualism from the Periphery*. 7 (3): 5-13.

Bara, F., & Morin, M. F. (2013). *Does the handwriting style learned in first grade determine the style used in the fourth and fifth grades and influence handwriting speed and quality? A comparison between French and Quebec children*. *Psychology in the Schools*, 5(6),601-617.[https:// onlinelibrary.wiley.com/ doi/epdf/10.1002/ pits.21691](https://onlinelibrary.wiley.com/doi/epdf/10.1002/pits.21691).

Barnett, A. L., Prunty, M., & Rosenblum, S. (2018). *Development of the handwriting legibility scale*

(HLS): A preliminary examination of reliability and validity. *Research in Developmental Disabilities*, 72, 240–247. [https://doi.org/10.1016/j. ridd.2017.11.013](https://doi.org/10.1016/j.ridd.2017.11.013).

Başaran, M. (2020). *The relationship between the direction of drawing the letter lines and the drawing speed and the line quality*. *Pamukkale University Journal of Education*, 52, 86-118. doi:10.9779.pauefd.682929. Accessed from https://dergipark.org.tr/en/download/article_file/1367279 on 02.01.2021.

Bediako Y.A. (2021). *The Use of Explicit Instruction in Writing Amongst Students of Colleges of Education in the Ashanti Region of Ghana*. *European Scientific Journal, ESJ*, 17 (38), 75. <https://doi.org/10.19044/esj.2021.v17n38p75>.

Bell, M. (1968). *Manuscript writing after the primary grades*. *Education*, 89(1), 81-83.

Benbow M. (1995). *Principles and practices of teaching handwriting*. In Henderson A, Pehoski C, editors. *Hand function in the child*. St. Louis: Mosby: 255–281.

Bennett, J. (2009). *The curse of cursive*. *Newsweek*, 153(8), 44.

Berninger, V., & Schwarz, J. (2009). *The Pen may be Mightier than the Keyboard*, *UW Today*, University of Washington, Retrieved September 16, 2009 from

<http://www.washington.edu/news/2009/09/16/the-pen-may-be-mightier-than-the-keyboard>.

Berninger, V., Abbott, R., Jones, J., Wolf, B., Gould, L., Anderson-Youngstrom, M., et al.

(2006). *Early development of language by hand: Composing, reading, listening, and speaking connections; three letter-writing modes; and fast mapping in spelling*.

Developmental Neuropsychology, 29(1), 61–92. doi:10.1207/s15326942dn2901_5.

Berninger, V., & Bounds, G. (2010). *How Handwriting Trains the Brain*. *The Wall Street Journal*.

Berninger, V. (2012). *Strengthening the Mind's Eye, Principal*. Retrieved 02nd January 2023, from <http://www.azed.gov/special-education/files/2014/05/f2.9-article-eye>

[handwriting.pdf](#) [13] J. W.

Blazer, C. (2010). *Should cursive handwriting still be taught in schools?* (Vol. 0916).

Retrieved from: <http://files.eric.ed.gov/zeus.tarleton.edu:82/fulltext/ED544702.pdf>

Blote, A.W. & Hamstra-Bletz L. (1991). *A longitudinal study on the structure of handwriting*. *Percept Mot Skills* 72: 983–994.

Carlton, M.P. and Winsler, A. (1999). *School readiness: The need for a paradigm shift*.

School Psychology Review 28: 338–352.

Case-Smith, J., Holland, T., & Bishop, B., (2011). *Effectiveness of an integrated handwriting program for first-grade students: A pilot study*. *American Journal of Occupational Therapy*, 65, 670-678.

Case-Smith, J., Holland, T., Lane, A. & White, S. (2012). *Effect of a co-teaching handwriting program for first graders: One-group pretest–posttest design*. *American Journal of Occupational Therapy*, 66(4), 396-405

Cohen, et al., (2007). *Research methods in Education*. New York: Routledge.

Cook, W. (2021). "A Comparison of the Effectiveness of Two Handwriting Programs on Legibility in First Grade Students" *Occupational Therapy Doctorate Capstone* 14 Projects. 76. <https://encompass.eku.edu/otdcapstones/76>

Creswell, (1994). *Research design qualitative and quantitative approaches*. US: Sage

Publications.

- Creswell, J. (1998). *Qualitative Inquiry and Research Design: choosing among five traditions*. London: Sage Publications.
- Creswell, J.W. (2009). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. SAGE Publications, Incorporated.
- Datchuk, S.M., & Kubina, R. M. (2012). *A review of teaching sentence-level writing skills to Student with writing difficulties and learning disabilities*. Remedial and Special Education, 34, 180-192.
- Dean, J. (1997). *Organizing learning in the primary school classroom (2nd Ed)*. U.S.A. Routledg.
- Dinehart, L, H (2014). *Handwriting in Early Childhoods Edu: Current research and Future Implications*. U.S.A, FL: Florida International University.
- Dixon, C.N. & Nessel, D. (1983). *Language Experience Approach to Reading and Writing*. Hay ward, California: The Alomancy Press.
- DoBE (2011). *ACTION PLAN TO 2014: Towards the Realisation of Schooling 2025*. Pretoria: Department of Basic education.
- Dolin, E.T. (2016). *An analysis of the effectiveness of Curriculum embedded Handwriting instruction and its impact on student learning*. Fresco: California State University.
- Dunn, O. (1994). *Beginning English with Young Children*, London: Macmillan Publishers.
- Education for All [EFA]. (1992). *Jomtien, Thailand. World declaration on education for all and framework for action to meet basic learning needs*. Published by the Inter-Agency Commission UNICEF House, New York, April 1990.
- Edwards, L., (2003). *Writing instruction in kindergarten: Examining an emerging area of research for children with writing and reading difficulties*. Journal of Learning Disabilities, 36(2), 136-148.
- Enstrom, E. (1969). *Myths about manuscript writing*. Education, 90(1), 51-55.

- Erdogan, T. and Erdogan, O. (2012). "An analysis of the legibility of cursive handwriting of prospective primary school teachers," *Procedia - Social and Behavioral Sciences*, vol. 46, pp. 5214-5218.
- Erolebacher, Adrienne and Herrick Virgil, E (2021). *Quality of Handwriting Today and Yesterday*. Madison: University of Wisconsin.
- Farrant, J.S. (1980). *Principles of Education. 3rd ed. Nigeria Lagos: Longman Publishers*
- Feder K and Majnemer A (2007). *Handwriting development, competency, and intervention. Developmental Medicine & Child Neurology*, 49(4): 312–317.
- Fellasufa, F. & Mustadi, A. (2019). *Cursive Handwriting skills in Primary School Preservice teachers*. Indonesia: Yogyakarta State University.
- Feng, S., & Powers, K. (2005). *The short- and long-term effect of explicit grammar instruction on fifth graders' writing*. *Reading Improvement*, 42(2), 67-73
- Ferreti, R., MacArthur, C. & Dowdy, N. (2000). *The effects of an elaborated goal on the persuasive writing of students with learning disabilities and their normally achieving peers*. *Journal of Educational Psychology*, 92(4), 694-702
- Fitzpatrick, P., Vander Hart, N., & Cortesa, C. (2013). *The influence of instructional variables and task constraints on handwriting performance*. *The Journal of Educational Research*, 106(3), 216-23.
- Fogel, Y., Rosenblum, S., & Barnett, A. L. (2022). *Handwriting legibility across different writing tasks in school-aged children*. *Hong Kong Journal of Occupational Therapy*, 35(1), 1–8. <https://journals.sagepub.com/doi/pdf/10.1177/15691861221075709>
- Graham, S. & Miller, L. (1980). *Handwriting research and practice: A unified approach. Focus on Exceptional Children*, 13, 1–16.
- Graham, S. (1992) Issues in handwriting instruction. *Focus on Exceptional Children* 25(2):1–

14.

Graham, S. & Weintraub, N. (1996). *A review of handwriting research: Progress and prospects from 1980 to 1994*. *Educational Psychology Review*, 8, 7–87.

Graham, S. (1997). *Executive control in the revising of students with learning and writing difficulties*. *Journal of Educational Psychology*, 89 (2), 223-234.

Graham, S., Berninger, V., Abbott, R., Abbott, S., & Whitaker, D. (1997). *The role of mechanics in composing of elementary school students: A new methodological approach*. *Journal of Educational Psychology*, 89, 170–182. doi:10.1037/0022-0663.89.1.170.

Graham, S., Weintraub, N., & Berninger, V. W. (1998). *The relationship between handwriting style and speed and legibility*. *The Journal of Educational Research*, 91(5), 290- 296. <https://www.tandfonline.com/doi/abs/10.1080/00220679809597556>

Graham, S., Berninger, V., Weintraub, N., & Schafer, W. (1998). *Development of handwriting speed and legibility in grades 1-9*. *The Journal of Educational Research*, 92(1), 42-52. <https://www.tandfonline.com/doi/abs/10.1080/00220679809597574>.

Graham, S. (1999). *Handwriting and spelling instruction for students with learning disabilities: A review*. *Learning Disabilities Quarterly* 22(2): 78–98.

Graham, S., & Harris, K. R. (2000). *The role of self-regulation and transcription skills in writing and writing development*. *Educational Psychologist*, 35, 3–12.

Graham, S., Weintraub, N., & Berninger, V. (2001). *Which manuscript letters do primary grade children write legibly*. *Journal of Educational Psychology*, 93, 488–497. DOI: 10.1037/0022-0663.93.3.488.

Graham, S., & Harris, K. R. (2005b). *Improving the writing performance of young struggling writers' theoretical and programmatic research from the center on accelerating student learning*. *The journal of special education*, 39(1), 19-33.

Graham, et al., (2007). *How do primary grade teachers teach handwriting? A national Survey*. 21, 49–69 DOI 10.1007/s11145-007-9064-z.

- Graham S, Harris KR, Mason L, et al. (2008). *How do primary grade teachers teach handwriting? A national survey. Reading & Writing 21(1-2): 49-69.*
- Graham, S. & Harris, K. (2010). *Writing difficulties. Handbook of Research on Reading Disabilities, 232-241.14.*
- Graves, D. & Hansen, J. (1983). *The Author's Chair. Language Arts, 60(2), 176-183*
- Gearheart, B. R., Weishahn, M. N. & Gearheart C.V. (1988), *The Exceptional Student in the Regular Classroom*, (4th edition), Toronto: Merrill Publishing Company.
- Gerszberg, C. O. (2003). *Handwriting: A lost art. Parent Magazine.*
- Greifeneder R, Alt A, Bottenberg K, et al. (2010). *On writing legibly: Processing fluency systematically biases evaluations of handwritten material. Social Psychological and Personality Science 1(3): 230-237.*
- Guadagnoli, M., & Lee, T. (2004). *Challenge point: A framework for conceptualizing the effects of various practice conditions in motor learning. Journal of Motor Behavior, 36(2), 212-224.*
- Hallahan, D.P. (2009). *An Introduction to Learning disabilities in Special Education.* New York: Pearson.
- Hamstra-Bletz L, Blote A. (1993). *A longitudinal study on dysgraphic handwriting in primary school. J Learn Disabil 26:689-699*
- Hammerschmidt, S. L., & Sudsawad, P. (2004). *Teachers' survey on problems with handwriting: Referral, evaluation, and outcomes. American Journal of Occupational Therapy, 58(2), 185-192. <http://dx.doi.org/10.5014/ajot.58.2.185>*
- Haring, N.G. & Schiefelbusch, R. L. (1976). *Methods in special education.* London: McGraw-Hill Inc.
- Jones, C., & Hall, T. (2013). *The importance of handwriting: Why it was added to the Utah Core Standards for English language arts. The Utah Journal of Literacy, 16(2), 28-36.*
- Jongmans, M. J., Linthorst-Bakker, E., Westerberg, Y., & Smits Engelsman, B. C. M. (2003). *Use of a task-oriented self instruction method to support children in primary school*

- with poor handwriting quality and speed. Human Movement Science, 22, 549–566.*
- Al-Grabra, M. & Iman, M.M.(2015). *Handwriting: A Matter of Affairs*. Baghdad: Baghdad University.
- Kaminsky, S., & Powers, R. (1981). *Remediation of handwriting difficulties: A practical approach. Intervention in School and Clinic, 17(1), 19-25.*
- Kamm, K., Thelen, E., & Jensen J. (1990). *A dynamical systems approach to motor development. Physical Therapy, 70(12), 763-775.*
- Kandel, S., & Valdois, S. (2005). *The effect of orthographic regularity on children's handwriting production. Current Psychology Letters: Behaviour, Brain & Cognition, 17(3), 1-11.*
- Karlsdottir, R., & Stefansson, T. (2002). *Problems developing functional handwriting. Perceptual and Motor Skills, 94(2), 623-662.*
- Kavale, K.A., Forness, S.R. & Bender, M. (1987). *Handbook of learning Disabilities. Volume 1. London: Taylor and Francis limited.*
- Keithelle, M., and Mokubung, M., (2005). *The Quality of Primary Education: Some Policy Suggestions Based on a Survey of Standard 6 Pupils. Gaborone: Ministry of Education.*
- Kelly, M.J. & Kanyika, J. (1999). *Learning Achievement at the middle basic level, Zambia's National assessment project. Lusaka: Ministry of Education.*
- Kelly, M. J. (1999). *Origins and Development of Education in Zambia. Lusaka: Image publishers.*
- Kennedy, D. (2004). *Teaching students with dyslexia and dysgraphia. Lesson from teaching science. Baltimore: Paul. H. Brookes.*
- Keys, C.W. (2000). *Investigating the Thinking processes of eighth grade writers during the composition of scientific laboratory report. Journal of Research in Science Teaching, 37, 676 – 690*
- Kirk, S.A. (1972). *Educating Exceptional Children. Boston: Houghton Mifflin Company.*

- Kirk, S.A., Gallagher, J., Anastasiow, A. & Coleman, M.R. (2006). *Educating Exceptional Children*. Boston: Houghton Mifflin co.
- Kirk, U. (1981). *The development and use of rules in the acquisition of perceptual motor skills*. *Child Development*, 52(1), 299–305. doi:10.2307/1129243.
- Kgomo, M.E. (2013). *An Exploration of Foundational Phase Teachers' Knowledge of Handwriting in Limpopo Province*: *Reading and Writing Journal*. Johansberg: Springer Netherlands.
- Koenke, K. (1986). ERIC/RCS: *Handwriting instruction: What do we know? The Reading Teacher*, 40(2), 214-216.
- Kirschner, P. A. (2002). *Cognitive load theory: Implications of cognitive load theory on the design of learning*. *Learning and Instruction*, 12(1), 1-10.
- Landy, J., & Burrige, K. (1999). *Fine Motor Skills & Handwriting activities for young children*. New Jersey: Pearson Education Inc.
- Lerner, J. (1983). *Learning disabilities*. Boston: Houghton Mifflin.
- Limpo, T., Parente, N., and Alves, R. A. (2018). *Promoting handwriting fluency in fifth graders with slow handwriting: a single-subject design study*. *Read. Writ. Interdiscip. J.* 31, 1343–1366. doi: 10.1007/s11145-017-9814-5.
- MacArthur CA (2000). *New tools for writing: Assistive technology for students with writing difficulties*. *Topics in Language Disorder* 20(4): 85–100.
- Maeland, A., & Karlsdottir, R. (1991). *Development of reading, spelling and writing skills from third to sixth grade in normal and dysgraphic school children*. In: J. Wann, A. Wing, & N. Sovik (Eds.), *Development of Graphic Skills, Research perspectives and educational implications*. (pp. 179-189). London, England.
- Malpique, A.A., Deborah, P.P. and Valcan, D. (2017). *Handwriting automaticity and writing instruction in Austrarian Kindergarten: An Exploratory Study*. Retrieved from <http://doi.org/10.1007/011145-017-9753-1>

- Marcus, M. (1977). *Diagnostic teaching of the language arts*. New York: John Wiley and Sons.
- Margret, M.B. (1975). *Helping Children with Learning Disabilities*. New York: Oxford University Press.
- Marr, D. and Cermack, S (2002). *Consistency in early elementary student*. American Journal of occupational therapy.
- Mayer, R. E. (1982). *Learning*. In H. E. Mitzel, J. H. Best, W. Rabinowitz, & American Educational Research Association Staff (Eds.), *Encyclopedia of educational research* (5th ed., pp. 1040-1058). New York, NY: Free Press
- McAdams, (1978). *The Zambian Primary Course: Languages in Zambia*. Lusaka Ministry of Education.
- Mc Cutchen, D. (2000). *Knowledge, processing, and working memory: Implications for a theory of writing*. Educational Psychologist, 35(1), 13-23.
- Marr, D., & Cermak, S. (2003). *Consistency of handwriting in early elementary students*. American Journal of Occupational Therapy, 57(2), 161-167.
- Marr, D., Cermak, S., Cohn, E. S., & Henderson, A. (2003). *Fine motor activities in Start and Kindergarten classrooms*. American Journal of Occupational Therapy, 57(5), 550-557.
- Marr, D., & Dimeo, S. B. (2006). *Outcomes associated with a summer handwriting course For elementary students*. American Journal of Occupational Therapy, 60(1) 10-15
- Marr, D., Windsor, M. M., & Cermak, S. (2001). *Handwriting readiness: Locatives and visuomotor skills in the kindergarten year*. Early Childhood Research & Practice. 3(1), 2-16.
- Markham, L. R. (1976). *Influences of handwriting quality on teacher evaluation of written work*. American Educational Research Journal, 13(4), 277-283.
- Mashinja, B & Mwanza, D.S. (2021). The efficacy of translanguaging as pedagogic in selected Namibian multilingual primary classrooms. Multilingual Margins 7(3): 49-68.

- Matafwali, B. (2005). *Nature and prevalence of reading difficulties at third grade*. Thesis (MED), Lusaka: University of Zambia.
- Medwell, J., Strand, S., & Wray, D. (2009). *The links between handwriting and composing for Y6 children*. *Cambridge Journal of Education*, 39(3), 329- 344.
- MESVTEE (2000). *Zambia Basic Curriculum Framework*. Lusaka Curriculum Development Centre.
- Milingo, T.C, Tambatamba, A, B., Cheyeka, A, M. (2021). “From White Fathers” to “Black Fathers” in Kasama and Mpika Dioceses in Zambia *in Social Sciences Journal Vol 7, No. 2* pp. 1-35.
- Milingo, T.C, Ilubala-Ziwa, Mwale, N, and Madalitso B. (2020). Religion and Migration in Zambia: Experiences of Christian Households Hosts of Migrant Youths in Lusaka’s Urban Context *in Multidisciplinary Journal of Languages and Social Sciences Education, Vol 3, No. 5* pp 1-22 (online).
- Milingo, T.C. (2019). The Inculturation of Religious Life in Two Female Congregations of Zambia: A Sense of Feeling of Being at Home in Multidisciplinary Journal of Languages and Social Sciences Education, Vol 2, No. 1* pp 35-57.
- MOESVTEE, (2013). *Zambia Curriculum Framework*. Lusaka: Curriculum Development Centre.
- MOE. (1972). *Handwriting Manual*. Lusaka: MOE
- Ministry of Education. (2002). *Learning Achievements at the Middle Basic Level: Report on Zambia National Assessment Project*, Lusaka: Ministry of Education.
- Ministry Of Education (1996). *Educating our future; National Policy on Education*. Lusaka. ZEPH.
- Ministry of education. (1990). *Zambia Basic Education Course*. Grade 1 English Teachers Guide Part 1. Lusaka: Kenneth Kaunda Foundation.
- Mojet, J. W. (1991). *Characteristics of the developing handwriting skill in elementary education*. In J. Wann, A. Wing, & N. Sovik (Eds.), *Development of graphic skills: Research, perspectives and educational implications* (pp. 53–75). London: Academic

Press.

Mubanga, E. (2010). *Nature and prevalence of reading and writing difficulties at grade 2*. Thesis. (MED). Lusaka: University of Zambia.

Mubita, W.S., & Mwanza, D.S. (2020). Factors Contributing to Pupils' Poor Performance Literature in English. *International Journal of Humanities Social Sciences and Education (IJHSSE)*, 7 (3), 55-65.

Mustadi, A, (2009). "*The development of writing learning through beyond centers and circle time method in English subject at PGSD 9 (in Bahasa)*," pp. 1-21,

Mwanza, D.S., & Bwalya, V. (2019). Democratisation or Symbolic Violence? An Analysis of Teachers' Language Practices in Selected Multilingual Classrooms in Chibombo District, Zambia. In F. Banda (Ed.), *Theoretical and Applied Aspects of African Languages and Culture (pp.215-241)*. Centre for Advanced Studies of African Society (CASAS).

Mwanza, D.S. (2020). Critical Reflections on the Zambian Education System and the Teaching of English in Post-Colonial Zambia. *English Literature and Language Review*, 6(2), 15-23.

Nelson, D, (2020). *What your Handwriting says About You: The Science Behind Handwriting*. Spinnaker.

Nyimbili F & Mwanza, D.S. (2021). Quantitative and qualitative benefits of translanguaging pedagogic practice among first graders in multilingual classrooms of Lundazi district Multilingual Margins, 7(3): 69-83.

O'hare, A.E. & Brown, J.K. (1989). *Childhood Dysgraphia: An Illustrated Clinical Classification*. Boston: Goodman Inc.

Ott. P. (1997). *How to detect and manage dyslexia*. London: Guilford and King's Lynn.

Paris, S.G. (2005). *Reinterpreting the development of reading skills: Reading Research Quarterly*, Vol.40 No.2 April/May/June 2005.

Peverly, S. (2006). *The importance of handwriting speed in adult writing*. *Developmental*

- Neuropsychology*, 29(1), 197-216.
- Phiri, J. (2015). *Nature and prevalence of writing Difficulties among Learners at fourth Grade*. Lusaka: UNZA.
- Poole, J. (1991). *Application of motor principles in occupational therapy*. *American Journal of Occupational Therapy*, 45(6), 531-537.
- Reisman, J., (1991). *Poor handwriting, who is referred*. *American Journal of Occupational Therapy* 45(9), 849-885.
- Roeltgen, D. P. (2003). *Agraphia*. In K. M. Heilman & E. Valenstein (Eds.), *Clinical Neuropsychology*, 4th ed. (pp. 127-145). New York, NY: Oxford.
- Rogers J and Case-Smith J (2002). *Relationships between handwriting and keyboarding performance of sixth-grade students*. *American Journal of Occupational Therapy* 56: 34–39
- Rubin, N., & Henderson, S. (1982). *Two sides of the same coin: Variation in teaching methods and failure to learn to write*. *British Journal of Special Education*, 9(4), 17–24. doi:10.1111/j.1467-8578.1982.tb00576.x.
- Sancheti, R.N. (2018). *Speed writing in improved handwriting* (1st ed.). Alphabet Education. zb/hw21/files/H2948_HW_Summit_White_Paper_eVersion.pdf
- Sassoon, R. (2003). *Handwriting: The way to teach it*. London: PauChapma Publishing.
- Schreibmotorik Institut e.V. (2017). *What is good handwriting?* Retrieved [January 12, 2024] from: <http://www.schreibmotorik-institut.com/index.php/en/facts-tips/expertise/505-what-is-good-handwriting>.
- Sheffield, B. (1996). *Handwriting: A neglected cornerstone of literacy*. *Annals of Dyslexia*, 46(1), 21-35.
- Shumway-Cook, A., & Woolacott, H. (1995). *Motor learning and recovery of function*. In *Motor control, theory and practical applications* (pp. 23-43). Baltimore, MD: Williams &

Wilkins.

Sidhu, K. S. (2014). *Methodology of Research in Education*. New Delhi Sterling Publishers.

Smits-Engelsman B. C. M, Niemeijer A.S, and van Galen G.P, (2001). *Fine motor deficiencies in children diagnosed as DCD based on poor grapho-motor ability*. Human Movement Science 20: 161–182.

Sovik, N., Arntzen, O., & Thygesen, R. (1987a). *Relation of spelling and writing in learning disabilities*. Perceptual and Motor Skills, 64(1), 219-236.

Sovik, N., Arntzen, O., & Thygesen, R. (1987b). Writing characteristics of normal, dyslexic and dysgraphic children. Journal of Human Movement Studies, 13(4), 171-187.

Shumway-Cook, A., & Woolacott, H. (1995). *Motor learning and recovery of function*. In *Motor control, theory and practical applications* (pp. 23-43). Baltimore, MD: Williams & Wilkins.

Stainthorp, R. (2006). *Handwriting: a skill for the 21st century or just a history lesson?* Literacy Today, 49(1), 22-23.

Stanovick, K. E., Cunningham, A.E & Freeman, D.J (1984). *Assessing Phonological Awareness in Kindergarten Children. Issues of the Task compatibility*; Journal of Experimental child psychology, 38. 175-190.

Supon, V. (2009). *Cursive writing: Are its last days approaching?* Journal of Instructional Psychology, 36(4), 357-359.

Sweller, J. (1988). *Cognitive load during problem solving: Effects on learning*. Cognitive Science, 12(2), 257-285.

Sweller, J., Ayres, P. L., & Kalyuga, S. (2011). *Cognitive load theory*. New York, NY: Springer.

Texas Education Agency (2009). *ELAR TEKS Vertical Alignment Grades K-English IV*.

Retrieved from http://www.esc20.net/users/gendocs/ELAR/ELAR_TEKS_K-12.pdf

- Torgesen, J. K. & Wagner, R. R. (1987). *The Nature of phonological Processing and its causal role in the Acquisition of reading and writing skills*. American psychology Association, 101,192-212.
- Tseng, M. H., & Cermak, S. (1993). *The influence of ergonomic factors and perceptual motor abilities on handwriting performance*. The American Journal of Occupational Therapy, 47, 919-926.
- Tseng, M. H., & Chow, S. M. K. (2000). *Perceptual-motor function of school-age children with slow handwriting speed*. American Journal of Occupational Therapy, 54, 83–88.
- M. H., & Murray, E. (1994). *Differences in perceptual motor measures in children with good and poor handwriting*. Occupational Therapy Journal of Research, 14, 19–36.
- Van, G. P. (1991). *Handwriting: Issues for a psychomotor theory*. Human Movement Science, 10, 165–191.
- United Nations Education Scientific Cooperation Organisation. (2006). *The 2006 Education for All (EFA)*. UNESCO Institute for Statistics (UIS) Data Centre and reports, UNESCO.
- Van Merriënboer, J. J., & Sweller, J. (2005). *Cognitive load theory and complex learning: Recent developments and future directions*. Educational Psychology Review, 17(2), 147-177.
- Volman, M. J. M., van Schendel, B. M., & Jongmans, M. J. (2006). *Handwriting difficulties in primary school children: A search for underlying mechanisms*. American Journal of Occupational Therapy, 60, 451–460.
- Wallace, R., & Schomer, J. (1994). *Simplifying handwriting instruction for the 21st century*. Education, 114(3), 413-418.
- Wedwell, N. (1973). *A cognitive process theory of writing, college composition and communication*. Vol 3 (33), 365- 387.
- Westwood, P. (2008). *What teacher need to know about reading and writing difficulties*. Australia:Acer Press.

Wolf, N. & Brower, K. (1993). *Instruction of Areas of Expanded Core Curriculum*. Taxes
Woodbine house, Inc.

Wolpert, D. M., Ghahramani, Z., & Flanagan, J. R. (2001). *Perspectives and
problems in motor learning*. Trends in cognitive sciences, 5(11), 487-494.

Woolley-Wade, L.W. & Geva, E. (2000). *Scientific Studies of Reading*. Lawrence Earlbaum
Associates.

Zivian, J. & Elkins, J (1984). *An Evaluation of Handwriting Performance: Education
Review*. Alabama: Oxford University press

Ziviani, J., & Elkins, J. (1986). *Effect of pencil grip on handwriting speed and legibility*.

Educational Review, 38(3), 247-257.

<https://www.tandfonline.com/doi/abs/10.1080/0013191860380305>

Ziviani, J., & Watson-Will, A. (1998). *Writing speed and legibility of 7-14- year- old
school*

students using modern cursive script. Australian Occupational Therapy Journal, 45(2),

59- 64.<http://dx.doi.org/10.1111/j.1440-1630.1998.tb00783.x>

APPENDICES

APPENDIX I: APPROVAL LETTER FOR THE STUDY



THE UNIVERSITY OF ZAMBIA DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Great East Road Campus | P.O. Box 32379 | Lusaka10101 | Tel: +260-211-290 258/291 777 Fax: (+260)-211-290 258/253 952 | E-mail: director.drgs@unza.zm | Website: www.unza.zm

APPROVAL OF STUDY

IORG No. 0005376

HSSREC IRB No. 00006464

21st June, 2023,

Ms. Kampamba Sishwashwa,
University of Zambia,
School of Education,
Lusaka.

REF NUMBER: 2023 - JUN- 008

Dear, Ms. Sishwashwa,

RE: "AN ANALYSIS OF THE QUALITY OF HANDWRITING AMONG GRADE FIVE LEARNERS IN THE SELECTED PRIMARY SCHOOLS OF MONGU"

Reference is made to your submission of the protocol captioned above. The HSSREC resolved to approve this study and your participation as Principal Investigator for a period of one year.

REVIEW TYPE	ORDINARY REVIEW	APPROVAL NO. HSSREC:-2023-JUN- 008
Approval and Expiry Date	Approval Date: 21 st June 2023	Expiry Date: 20 th June, 2024

Protocol Version and Date	Version - Nil.	20 th June, 2024
Information Sheet, Consent Forms and Dates	<input type="checkbox"/> English.	To be provided
Consent form ID and Date	Version - Nil	To be provided
Recruitment Materials	Nil	Nil
Other Study Documents	Questionnaire.	
Number of Participants Approved for Study		

Specific conditions will apply to this approval. As Principal Investigator it is your responsibility to ensure that the contents of this letter are adhered to. If these are not adhered to, the approval may be suspended. Should the study be suspended, study sponsors and other regulatory authorities will be informed.

CONDITIONS OF APPROVAL

- No participant may be involved in any study procedure prior to the study approval or after the expiration date.
- All unanticipated or Serious Adverse Events (SAEs) must be reported to HSSREC within 5 days.
- All protocol modifications must be approved by HSSREC prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address.
- All protocol deviations must be reported to HSSREC within 5 working days.
- All recruitment materials must be approved by HSSREC prior to being used.
- Principal investigators are responsible for initiating Continuing Review proceedings. HSSREC will only approve a study for a period of 12 months.
- It is the responsibility of the PI to renew his/her ethics approval through a renewal application to HSSREC.
- Where the PI desires to extend the study after expiry of the study period, documents for study extension must be received by HSSREC at least 30 days before the expiry date. This is for the purpose of facilitating the review process. Documents received within 30 days after expiry will be labelled "late submissions" and will incur a penalty fee of K500.00. No study shall be renewed whose documents are submitted for renewal 30 days after expiry of the certificate.

- Every 6 (six) months a progress report form supplied by The University of Zambia Humanities and Social Sciences Research Ethics Committee as an IRB must be filled in and submitted to us. There is a penalty of K500.00 for failure to submit the report.
- When closing a project, the PI is responsible for notifying, in writing or using the Research Ethics and Management Online (REMO), both HSSREC and the National Health Research Authority (NHRA) when ethics certification is no longer required for a project.
- In order to close an approved study, a Closing Report must be submitted in writing or through the REMO system. A Closing Report should be filed when data collection has ended and the study team will no longer be using human participants or animals or secondary data or have any direct or indirect contact with the research participants or animals for the study.
- Filing a closing report (rather than just letting your approval lapse) is important as it assists HSSREC in efficiently tracking and reporting on projects. Note that some funding agencies and sponsors require a notice of closure from the IRB which had approved the study and can only be generated after the Closing Report has been filed.
- A reprint of this letter shall be done at a fee.
- All protocol modifications must be approved by HSSREC by way of an application for an amendment prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address or methodology and methods. Many modifications entail minimal risk adjustments to a protocol and/or consent form and can be made on an Expedited basis (via the IRB Chair). Some examples are: format changes, correcting spelling errors, adding key personnel, minor changes to questionnaires, recruiting and changes, and so forth. Other, more substantive changes, especially those that may alter the risk-benefit ratio, may require Full Board review. In all cases, except where noted above regarding subject safety, any changes to any protocol document or procedure must first be approved by HSSREC before they can be implemented.

Should you have any questions regarding anything indicated in this letter, please do not hesitate to get in touch with us at the above indicated address.

On behalf of HSSREC, we would like to wish you all the success as you carry out your study.

Yours faithfully,



Dr. J. I. Ziwa

DR. J. I. Ziwa

ACTING CHAIRPERSON

**THE UNIVERSITY OF ZAMBIA HUMANITIES AND
SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE - IRB**

CC: Director, Directorate of Research and Graduate Studies
Assistant Director (Research), Directorate of Research and Graduate Studies
Assistant Registrar (Research), Directorate of Research and Graduate Studies

APPENDIX II: PARTICIPANT INFORMATION SHEET.



HSSREC FORM 1B

THE UNIVERSITY OF ZAMBIA

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE

Telephone: +260-211-290258/353080

P O Box 32379

Fax: +260-211-290258/293937

Lusaka,

Zambia.

E-mail director.drgs@unza.zm

PARTICIPANT INFORMATION SHEET

(This template is for research interventions that use questionnaires, in-depth interviews or focus group discussions)

Informed Consent Form for Teachers

This informed consent form is for grade 5 teachers in a selected primary school in Mongu district in the year 2023 and who I am inviting to participate in research project titled “An Analysis of the Quality of Handwriting among Grade 5 Learners in the Selected Primary Schools of Mongu District.”

Name of Principle Investigator: Kapamba Sishwashwa

Name of Organization: The University of Zambia

Name of Sponsor: Nil

This Informed Consent Form has two parts:

- **Information Sheet (to share information about the study with you)**
- **Certificate of Consent (for signatures if you choose to participate)**

You will be given a copy of the full Informed Consent Form



HSSREC FORM 1B

THE UNIVERSITY OF ZAMBIA

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE

Telephone: +260-211-290258/353080

P O Box 32379

Fax: +260-211-290258/293937
Zambia

Lusaka,

E-mail director.drgs@unza.zm

PARTICIPANT INFORMATION SHEET

(This template is for research interventions that use questionnaires, in-depth interviews or focus group discussions)

Informed Consent Form for Learners

This informed consent form is for grade 5 learners in a selected primary school in Mongu district in the year 2023 and who I am inviting to participate in research project titled "An Analysis of the Quality of Handwriting among Grade 5 Learners in the Selected Primary Schools of Mongu District."

Name of Principle Investigator: Kapamba Sishwashwa

Name of Organization: The University of Zambia

Name of Sponsor: Nil

This Informed Consent Form has two parts:

- **Information Sheet (to share information about the study with you)**
- **Certificate of Consent (for signatures if you choose to participate)**

You will be given a copy of the full Informed Consent Form

Part I: Information Sheet

Introduction

I am a post graduate student at the University of Zambia pursuing a Master of Education degree in Literacy, Language and Applied Linguistics. I am conducting a research on the analysis of the quality of handwriting among grade five learners in selected primary schools of Mongu district in Western Province of Zambia. I am going to give you information and invite you to be part of this research. You do not have to decide today whether or not you will participate in the research. Before you decide you can talk to anyone you feel comfortable about the research.

This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you are free to ask them or of any research.

Purpose of the research

Handwriting is an important skill that people use in everyday life. So its legibility makes one to communicate information clearly. Therefore, I want to know how good the grade 5 learners' handwriting is in Mongu district and at this school. I believe that you can help me by telling me how ease is the grade 5 handwriting can be read, things that make the handwriting good or bad generally. I want to learn what things teachers and learners know that cause grade 5 learners' handwriting to be good or bad. I want also to learn about what administrators, teachers, learners and parents at this school do to ensure that grade 5 learners' handwriting is easily read. This knowledge will help me to learn how to better teach and learn handwriting at grade five level in a primary school.

Type of Research Intervention

This Research will involve your participation in a group discussion that will take about an hour and half an hour for interviews. The lesson observation will be for forty minutes

Participant Selection

You are being invited to take part in this research because I feel that your experiences as a teacher/learner can contribute much to my understanding and knowledge of the quality of grade 5 handwriting.

- **Example of question to elucidate understanding:** *Do you know why we are asking you to take part in this study? Do you know what the study is about?*

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate all the services you receive at this Centre will continue and nothing will change.

Examples of question to elucidate understanding: *If you decide not to take part in this research study, do you know what your options are? Do you know that you do not have to take part in this research study, if you do not wish to? Do you have any questions?*

Procedures

A. brief introduction to the format of the research study.

I am asking you to help me learn more about handwriting at your school. I am inviting you to take part in this research project. If you accept, you will be asked to sign the consent form...

B. Explanation of the type questions that the participants are likely to be asked in the interviews;

For interviews

Participate in an interview will be with myself.

During the interview, I will sit down with you in a comfortable place in the office. If it is better for you, the interview can take place in your classroom or outside under the tree. If you do not wish to answer any of the questions during the interview, you may say so and I will move on to the next question. No one else but myself will be present unless you would like someone else to be there. The information recorded is confidential, and no one else except authorized staff from the University of Zambia staff will access to the information documented during your interview. The entire interview will be tape-recorded, but no-one will be identified by name on the tape. The tape will be kept in a safe place where it will not be accessed by anyone. The information recorded is confidential, and no one else except University of Zambia staff will have access to the tapes. The tapes will be destroyed after 12 weeks.

Duration

The research takes place in one month only. During that time, I will visit you in two days; day one will be for lesson observation lasting for forty minutes and document analysis of learners' books for one hour. Group discussion and interviews will be held on day two and only once. The discussion will last for one hour while the interviews will last for about half an hour.

- **Examples of question to elucidate understanding:** *If you decide to take part in the study, do you know how much time will the interview take? Where will it take place? Do you know that we will be sending you transport to pick you up from your home? Do you know how much time will the discussion with other people take? If you agree to take part, do you know if you can stop participating? Do you know that you may not respond to the questions that you do not wish to respond to? Etc. Do you have any more questions?*

Uses of information

The information I shall get from you will be used to help make decisions by your school administrators, district Education office and the ministry of education at large on how best we could improve grade five learners' handwriting at school and district level.

Risks

No risks of any kind are expected during the interview or group discussion.

Benefits

There is direct benefit to you, because your participation is likely to help us find out more about how to teach handwriting, prevent bad handwriting and improve the quality of handwriting among the grade five learners in primary school. This is because good legible handwriting contribute to success in academic life in terms of written language to communicate clearly.

Reimbursements

You will not be provided with any incentive to take part in the research. However, I will provide snacks for the time you will be with me.

- **Examples of question to elucidate understanding:** *Can you tell me if you have understood correctly the benefits that you will have if you take part in the study? Do you know if the study will pay for your travel costs and time lost, and do you know how much you will be reimbursed? Do you have any other questions?*

Confidentiality

The research being done in the school may draw attention and if you participate you may be asked questions by other people in the school. I will not be sharing information about you to anyone outside of the research team. The information that I collect from this research project will be kept private. Any information about you will have a number on it instead of your name. Only the researcher will know what your number is and I will lock that information up with a lock and key. It will not be shared with or given to anyone except UNZA Senate and its authorized Staff involved in supervising the research.

Sharing the Results

Nothing that you tell me today will be shared with anybody outside the research team, and nothing will be attributed to you by name. The knowledge that we get from this research will not be shared with you and the school will not receive a summary of the results.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so, and choosing to participate will not affect your job or job-related evaluations in any way. You may stop participating in the [interview] at any time that you wish without your job being affected. I will give you an opportunity at the end of the interview/discussion to review your remarks, and you can ask to modify or remove portions of those, if you do not agree with my notes or if I did not understand you correctly.

Question to elucidate understanding: This question will be posed to the participant.

Do you know that you do not have to take part in this study if you do not wish to? You can say No if you wish to? Do you know that you can ask me questions later, if you wish to? Do you know that I have given the contact details of the person who can give you more information about the study? You can ask me any more questions about any part of the research study, if you wish to. Do you have any questions?

Who to Contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact any of the following: [name, address/telephone number/e-mail]

Principal Investigator: Kapamba Sishwashwa

Phone number: 0978 872 361

Email address: marykapamba@gmail.com

This proposal or protocol has been reviewed and approved by HSSREC which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find out more about the IRB, contact:

Chairperson, Humanities and Social Sciences, Research Ethics Committee,

University of Zambia

P O Box 32379

LUSAKA

OR

Director, Directorate of Research and Graduate Studies

University of Zambia

P O Box 32379

LUSAKA.

"Approval to conduct this research has been provided by the University of Zambia, in accordance with its ethics review and approval procedures. Any person considering participation in this research project, or agreeing to participate, may raise any questions or issues with the researcher at any time.

In addition, if you are/ or any person is not satisfied with the response of researcher may raise ethics issues or concerns, and may make any complaints about this research project by contacting the HSSREC on the address stated above.

All research participants are entitled to retain a copy of any Participant Information Form and/or Participant Consent Form relating to this research project."

Part II: Certificate of Informed Consent

I have been invited to participate in research about the quality of handwriting among the grade five learners.

(This section is mandatory)

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant: _____

Signature of Participant: _____

Date: _____

CONTACTS FOR QUESTIONS (Names, addresses and phone numbers of the following):

1. Principal Investigator (Must be a local person and a Zambian).

Names: Kapamba Sishwashwa

Phone: 0978 872 361

Email: marykapamba@gmail.co

Physical address: The University of Zambia

School of Education

P.O Box 32379, Lusaka

Part II: Certificate of Informed Consent

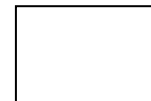
*If illiterate*¹

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness: _____

Thumb print of participant

Signature of witness: _____



Date: _____

Day/month/year

If vulnerable or incapacitated like pregnant women, children, people with mental illness, people with disabilities, prisoners and minority groups for instance, the investigator must ensure that there is a well-educated and motivated surrogate or proxy decision maker. When comprehension is an issue the research plan should include means of testing the participants' understanding of the important information prior to enrollment.

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands.

¹ A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team). Participants who are illiterate should include their thumb print as well.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent _____

Signature of Researcher /person taking the consent _____

Date _____

Day/month/year

CONTACTS FOR QUESTIONS (Names, addresses and phone numbers of the following):

2. Principal Investigator (Must be a local person and a Zambian).

Names: Kapamba Sishwashwa

Phone: 0978 872 361

E mail: marykapamba@gmail.com

Physical address: The University of Zambia

School of Education

P.O Box 32379,

Lusaka.

APPENDIX III: TEACHER INTERVIEW SCHEDULE

Kindly introduce yourself and remember this interview will be recorded.

1. What is handwriting?
2. How important is handwriting to the learners?
3. Is handwriting taught in Grade five? (Tick the response). Yes [] No []
If a. Yes How is it taught?
b. No.....Why is it not taught?
4. How good is the handwriting of grade five learners at this school?
5. What are the causes of:
 - i. Good handwriting among the learners with good handwriting?
 - ii. Bad handwriting among the learners with bad handwriting?
6. What measures should be put in place in order to improve grade 5 learners' handwriting?

THANK YOU FOR YOUR TIME.

APPENDIX IV: DOCUMENT ANALYSIS CHECKLIST GUIDE

In this document I provide examples of the nature of document analysis guide I propose to develop for use during analysis of learners' quality of handwriting. Below are the types of questions I want to answer through the analysis of the learners' handwriting.

Name of School: **Pupil #:**..... **Sex:**

District:..... **Location:**..... **Date:**.....

HANDWRITING ASPECTS	FREQUENCIES	COMMENTS
Type of Handwriting Is it manuscript, tailed or cursive?		
Form How are different letters formed?		
Direction and movement Are letters starting from the correct points? Is the movement correct in to forming letters?		
Shape and Size (height differentials) Are the letter shapes and sizes equal in head, body and tail? How is the proportion of letters?		
Slanting Are the letters slanting? Are they slanting forward or backwards? Are they		

<p>upward and perpendicular? Or is there a mix up of slanting and upright?</p>		
<p>Spacing Are there spaces between lines, words and sentences? Are spaces/distances the same throughout the page?</p>		
<p>Uppercase and lower case letters. How are learners using the upper and lower case letters? Are they mixing them in word and sentence writing? Or used are they used correctly?</p>		
<p>Mirror Image Reversals How is the production of letters b, d, p and q? Are learners perceiving these letters in a reverse way?</p>		

APPENDIX V: TEACHER CONSENT LETTER FOR INTERVIEW

Teacher:

School:

Date:

Dear Mr. / Ms/Mrs..... [*Individual names will be inserted into all teacher letters*]

I write to ask for your consent to be interviewed by myself about the legibility of Handwriting among the grade 5 learners. If you consent to be interviewed by myself about the legibility of Handwriting, please show by signing below. I **Consent/Do not consent** to be interviewed by **Kapamba Sishwashwa** on quality of Handwriting among the fifth graders.

Signed

Date

Name

My contact details are shown below:

Kapamba Sishwashwa,

The University of Zambia, School of Education.

Email: marykapamba@gmail.com

Contact line: 0978872361

APPENDIX VI: TEACHER CONSENT LETTER FOR AUDIO RECORDING OF INTERVIEW

Teacher:

School:

Date:

Dear Mr. / Ms/Mrs..... [Individual names will be inserted into all teacher letters]

I write to ask for your consent to be recorded during the interview that I will conduct with you. If you consent to be recorded by myself during the interview, please show by signing.

I Consent / Do not consent to be interviewed by Kapamba Sishwashwa on the quality of handwriting.

Signed

Date

Name

My contact details are shown below:

Kapamba Sishwashwa,

The University of Zambia: School of Education.

Email: marykapamba@gmail.com

Contact: 0978872361