IMPLEMENTATION OF SOUTHERN AFRICAN CONSORTIUM FOR MONITORING EDUCATION QUALITY RECOMMENDED STRATEGIES IN LITERACY AND NUMERACY IN FOUR SELECTED DISTRICTS IN KENYA

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A THESIS SUBMITTED IN FULFILLMENT OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN EDUCATION (CURRICULUM STUDIES), OF KENYATTA UNIVERSITY

MAY, 2016
DECLARATION

I declare that this thesis is my original work and has not been presented in any other University/institution for consideration of any certification. This thesis has been complemented by referenced sources duly acknowledged. Where text, data (including spoken words), graphics, pictures or tables have been borrowed from other sources, including the internet, these are specifically accredited and references cited using current APA system and in accordance with anti-plagiarism regulations.

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DEDICATION

In loving memory of my revered grandparents - Suter Kosiom Chemonyei and Maria Kobilo Chemonyei - who form the foundation of my inspiration.
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>TITLE PAGE</td>
</tr>
<tr>
<td>ii</td>
<td>DECLARATION</td>
</tr>
<tr>
<td>iii</td>
<td>DEDICATION</td>
</tr>
<tr>
<td>iv</td>
<td>ACKNOWLEDGEMENTS</td>
</tr>
<tr>
<td>x</td>
<td>LIST OF TABLES</td>
</tr>
<tr>
<td>xii</td>
<td>LIST OF FIGURES</td>
</tr>
<tr>
<td>xiv</td>
<td>ABBREVIATIONS AND ACRONYMS</td>
</tr>
<tr>
<td>xvi</td>
<td>ABSTRACT</td>
</tr>
<tr>
<td>1</td>
<td>CHAPTER ONE</td>
</tr>
<tr>
<td>1</td>
<td>INTRODUCTION AND BACKGROUND TO THE STUDY</td>
</tr>
<tr>
<td>1.1</td>
<td>Introduction</td>
</tr>
<tr>
<td>1.2</td>
<td>Background to the Study</td>
</tr>
<tr>
<td>1.3</td>
<td>Statement of the Problem</td>
</tr>
<tr>
<td>1.4</td>
<td>Purpose of Study</td>
</tr>
<tr>
<td>1.5</td>
<td>Objectives of the Study</td>
</tr>
<tr>
<td>1.6</td>
<td>Research Questions</td>
</tr>
<tr>
<td>1.7</td>
<td>Assumptions of the Study</td>
</tr>
<tr>
<td>1.7</td>
<td>Limitations of the Study</td>
</tr>
<tr>
<td>1.9</td>
<td>Delimitations of the Study</td>
</tr>
<tr>
<td>1.10</td>
<td>Significance of the Study</td>
</tr>
</tbody>
</table>
1.11 Theoretical Framework ................................................................. 13
1.12 Conceptual Framework ............................................................... 15
1.13 Operational Definition of Terms ................................................... 19

CHAPTER TWO .................................................................................. 20

REVIEW OF RELATED LITERATURE ................................................. 20
2.1 Introduction ................................................................................. 20
2.2. Teachers’ In-Service Training and Teaching and Learning Practices .... 20
2.3 Utilization of Instructional Materials during Teaching and Learning ....... 28
2.4 Studies on Literacy and Numeracy Skills ........................................ 32
  2.4.1 Literacy and Numeracy Skills Studies in Selected Countries .......... 32
  2.4.2 Selected International Studies on Literacy and Numeracy Skills ...... 35

CHAPTER THREE ............................................................................. 41

RESEARCH DESIGN AND METHODOLOGY .................................... 41
3.1 Introduction ................................................................................. 41
3.2 Research Design ......................................................................... 41
3.3 The Study Locale ......................................................................... 41
3.4 Target Population ......................................................................... 42
3.5 Sampling Techniques and Sample Size .......................................... 42
  3.5.1 Sampling of Public Primary Schools ......................................... 42
  3.5.2 Sampling of the Respondents ................................................... 43
3.6 Research Instruments .................................................................... 44
  3.6.1 Teachers’ Questionnaire ......................................................... 44
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6.2 Headteachers’ Interview Guide</td>
<td>45</td>
</tr>
<tr>
<td>3.6.3 Classroom Observation Guide</td>
<td>45</td>
</tr>
<tr>
<td>3.7 Piloting</td>
<td>46</td>
</tr>
<tr>
<td>3.7.1 Validity of Research Instruments</td>
<td>46</td>
</tr>
<tr>
<td>3.7.2 Reliability of Research Instruments</td>
<td>47</td>
</tr>
<tr>
<td>3.8. Data Collection Techniques</td>
<td>48</td>
</tr>
<tr>
<td>This section focuses on the process of actual data collection</td>
<td>48</td>
</tr>
<tr>
<td>3.8.1 Actual Data Collection</td>
<td>48</td>
</tr>
<tr>
<td>3.8.3 Data Analysis</td>
<td>49</td>
</tr>
<tr>
<td>3.9 Logistical and Ethical Considerations</td>
<td>50</td>
</tr>
</tbody>
</table>

**CHAPTER FOUR**

**FINDINGS AND DISCUSSION**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Introduction</td>
<td>51</td>
</tr>
<tr>
<td>4.2. General and Demographic Information Teachers’ and Headteachers’ Professional Qualifications and Teaching Experience</td>
<td>52</td>
</tr>
<tr>
<td>4.2.2 Teaching Experience</td>
<td>53</td>
</tr>
<tr>
<td>4.3. Teachers’ Views about In-Service Training as a Strategy in Improving Pupils’ Literacy and Numeracy Skills</td>
<td>54</td>
</tr>
<tr>
<td>4.3.1. The Year Teachers Attended In-Service Training</td>
<td>55</td>
</tr>
<tr>
<td>4.3.2 Teachers’ Attendance of In-Service Training by District</td>
<td>56</td>
</tr>
<tr>
<td>4.3.3. Ways In-Service Training was Conducted in the Scheduled Districts</td>
<td>59</td>
</tr>
<tr>
<td>4.3.4. Literacy and Numeracy Content Areas Focused on During In-Service Training</td>
<td>60</td>
</tr>
</tbody>
</table>
4.3.5. Teachers’ Views about In-Service Training as a Strategy in Improving Pupils’ Literacy and Numeracy Skills .......................................................... 61

4.4 Ways Teachers Utilized Instructional Materials to Improve Pupils’ Literacy and Numeracy Skills .......................................................... 76

4.4.1. Instructional Materials Purchased by Schools .................................. 77

4.4.2. Year Instructional Materials Were Purchased by Schools ................. 78

4.4.3. Class Three Pupils Textbook Average by District ............................ 80

4.4.4. Adequacy of Instructional Materials in Schools ............................... 87

4.4.5 Ways Teachers Utilized Instructional Materials to Improve Pupils’ Literacy and Numeracy Skills ......................................................... 91

4.5 Challenges Teachers Faced in Improving Lower Primary Pupils’ Literacy and Numeracy Skills in Sampled Schools .......................................... 96

4.6 Way Forward to Improve Lower Primary Pupils’ Literacy and Numeracy Skills ................................................................................. 109

CHAPTER FIVE .......................................................................................... 113

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS .................. 113

5.1 Introduction ......................................................................................... 113

5.2 Summary .............................................................................................. 113

5.2.1 Teachers Views about In-Service Training as a Strategy in Improving Pupils’ Literacy and Numeracy Skills ................................................. 114

5.2.2 Ways Teachers Utilized Instructional Materials to Improve Pupils’ Literacy and Numeracy Skills ........................................................ 115

5.2.3 Challenges Teachers face in Improving Lower Primary Pupils’ Literacy and Numeracy Skills in Selected Public Primary Schools ................. 116

5.2.4 Way Forward to Improve Lower Primary Pupils’ Literacy and Numeracy Skills ................................................................................. 116

5.3 Conclusions ......................................................................................... 117
5.4 Recommendations ................................................................. 118

5.4.2 Suggestions for Further Research ........................................ 122

REFERENCES .............................................................................. 123

Appendix I: Teachers’ Questionnaire ............................................ 131

Appendix II: Headteachers’ Interview Guide ............................... 133

Appendix III: Classroom Observation Guide ............................... 135

Appendix IV: Research Permit ..................................................... 136
LIST OF TABLES

3.1: Population and Sample and Sample size..................................................44
4.1: Teachers’ and Headteachers Professional Qualification............................52
4.2: Teachers and Headteachers Teaching Experience......................................54
4.3: Year Teachers Attended In-Service Training..............................................55
4.4: Teachers Attendance of In-Service Training by District.............................56
4.5: Ways In-Service Training was conducted in the Districts...........................59
4.6: Literacy and Numeracy Content areas focused on During In-Service Training...61
4.7: Teachers Views about In-Service Training as a Strategy in Improving Pupils’ Literacy and Numeracy Skills.............................................................62
4.8: Instructional Materials Purchased in Schools............................................77
4.9: Year Instructional Materials were purchased.............................................79
4.10: Class Three Pupils Textbook Average in Gatanga District.......................80
4.11: Class Three Pupils Textbook Average in Kitui District............................82
4.12: Class Three Pupils Textbook Average in Migori District..........................83
4.13: Class Three Pupils Textbook Average in Transmara District.....................85
4.14: Class Three Pupils Textbook Average in the Four Districts.......................86
4.15: Adequacies of Instructional Materials in Schools.....................................88
4.16: Teachers Views about Ways Teachers Utilize Instructional Materials to Improve Pupils’ Literacy and Numeracy Skills....................................................92
4.17: Challenges Identified by Teachers Face in Improving Lower Primary Pupils’ Literacy and Numeracy Skills in Selected Public Primary Schools…………………………………………………………………………………100

4.18: Way Forward To Improve Lower Primary Pupils’ Literacy and Numeracy Skills According to Teachers’……………………………………………………………………………110
LIST OF FIGURES

1.1: Conceptual Framework ................................................................. 16

4.1: Sample of pupils’ good work in English ........................................... 64

4.2: Sample of pupils’ good work in English ......................................... 64

4.3: Sample of pupils’ good work in English composition .......................... 65

4.4: Sample of pupils’ good work in mathematics ..................................... 65

4.5: Sample of pupils’ good work in mathematics ..................................... 65

4.6: Sample of pupil poor in English ..................................................... 66

4.7: Sample of pupil poor in English ..................................................... 66

4.8: Sample of pupil poor in English ..................................................... 67

4.9: Sample of pupils’ poor work in mathematics ..................................... 68

4.10: Pupils working out mathematics exercise on blackboard ..................... 70

4.11: Peer teaching during mathematics lesson ....................................... 71

4.12: Sample of classroom with over 40 pupils ....................................... 72

4.13: One English textbook in the classroom for English lesson .................... 90

4.14: Torn instructional materials stored in a carton box ............................ 91

4.15: Teacher marking pupils’ individual exercises done ............................. 94

4.16: Unmarked English and mathematics exercises .................................... 95

4.17: An example of an overcrowded classroom ...................................... 100

4.18: Teacher copying English exercises on blackboard ............................ 102
4.19: Sample of pupils English and mathematics assessment..........................104
4.20: KCPE poor performed English composition............................................108
## ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC</td>
<td>British Broadcasting Corporation</td>
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<tr>
<td>B-HEF</td>
<td>Business-Higher Education Forum</td>
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<tr>
<td>EFA</td>
<td>Education for All</td>
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<td>EGRA</td>
<td>Early Grade Reading Assessment</td>
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<td>FPE</td>
<td>Free Primary Education</td>
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<td>GCE</td>
<td>Global Campaign for Education</td>
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<td>GPE</td>
<td>Global Partnership Education</td>
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<td>IEA</td>
<td>International Evaluation of Achievement</td>
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<td>KICD</td>
<td>Kenya Institute of Curriculum Development</td>
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<td>KCPE</td>
<td>Kenya Certificate of Primary Education</td>
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<td>KCSE</td>
<td>Kenya Certificate of Secondary Education</td>
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<td>KNEC</td>
<td>Kenya National Examinations Council</td>
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<td>MDGs</td>
<td>Millennium Development Goals</td>
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<td>MLA</td>
<td>Monitoring Learner Achievement</td>
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<td>MOE</td>
<td>Ministry of Education</td>
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<td>NACOSTI</td>
<td>National Commission for Science, Technology and Innovation</td>
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<tr>
<td>NASMLA</td>
<td>National Assessment System for Monitoring Learner Achievement</td>
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<tr>
<td>NCST</td>
<td>National Council for Science and Technology</td>
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<tr>
<td>PASEC</td>
<td>Programme d’Analyse des Systemes Educatifs de la Conference (Programme for Analysis of the French Language Education System)</td>
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<td>P1</td>
<td>Primary One Teachers Certificate</td>
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<td>PISA</td>
<td>Programme for International Student Assessment</td>
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<tr>
<td>PTR</td>
<td>Pupil-Teacher Ratio</td>
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<td>SACMEQ</td>
<td>Southern Africa Consortium for Monitoring Education Quality</td>
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<tr>
<td>SMASSE</td>
<td>Strengthening of Mathematics and Science in Secondary Education</td>
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<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
</tr>
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<td>SSA</td>
<td>Sub Saharan Africa</td>
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<td>TIMSS</td>
<td>Trends in International Mathematics and Science Study</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
</tr>
<tr>
<td>UPE</td>
<td>Universal Primary Education</td>
</tr>
</tbody>
</table>
ABSTRACT

Education is recognized as one of the drivers of economic and social development. However, millions of children who attend school do not acquire essential knowledge and skills. Studies done on strategies to improve pupils’ literacy and numeracy skills vary due to diverse country conditions and differences in implementation. The purpose of this study was to investigate teachers’ views about in-service training and utilization of instructional materials in improving pupils’ literacy and numeracy skills. The study was carried out in four selected districts in Kenya: Kitui, Gatanga, Transmara and Migori. The population of the study was 574 public primary schools (254 in Kitui, 167 in Transmara, 102 in Migori and 51 in Gatanga), 574 headteachers and 574 teachers of class three. A sample of 68 primary schools was sampled using both stratified proportionate sampling and random sampling techniques. All 68 headteachers of the sampled schools became automatic respondents. Class three teachers in the 68 schools were sampled. In cases where there was more than one class three, simple random sampling technique was used to sample one class three teacher. Three instruments namely: Teachers’ questionnaire, headteachers’ interview guide and classroom observation guide were utilized. Validity of the instruments was ensured through content validity while the reliability was determined by using internal consistency method. All instruments were piloted before data collection. The qualitative data was analyzed thematically while the quantitative data was analyzed using descriptive statistics such as frequencies and percentages. The findings are presented in tables. It was found that teacher’s attended in-service training through workshops. The useful areas covered in the workshops included literacy and numeracy content, lesson preparation, teaching methods, improvisation of teaching resources and handling pupils’ diversity. The sampled schools had purchased instructional materials and teachers utilized them mainly as reference material, used for guiding pupils to copy literacy and numeracy exercises in their exercise books, writing work on the blackboard for pupils to do or copy, given to pupils to read and do simple arithmetic on their own, observing examples, given to pupils to do homework; and finally used as learning resources. Among the main challenges teachers faced in improving lower primary pupils’ literacy and numeracy skills were high pupil enrolment, inadequate instructional materials, lack of funds, absenteeism, presence of over-age pupils, long distance covered to school, non repetition of pupils, lack of feeding programme in schools and diversity of pupils. To improve lower primary pupils’ literacy and numeracy skills, the study recommends provision of adequate instructional materials. The government, through Ministry of Education should organize regular teachers’ in-service training. The study will be important to pupils’ literacy and numeracy skills firm foundation developed. Teachers can apply SACMEQ strategy in various curriculum areas because literacy and numeracy skills are integral in all learning areas and across all years of education level. Finally, community outcry over low pupils’ achievement will cease when pupils literacy and numeracy skills improve.
CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

This chapter presents the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, scope and limitations of the study, assumptions of the study, theoretical framework, conceptual framework and operational definitions of terms.

1.2 Background to the Study

Education is recognized as one of the drivers of economic and social national development; primary education being its foundation (Glennerster, Kremer, Mbiti and Takavarasha, 2011). The development of basic skills of literacy and numeracy which is undertaken in primary school is considered to be important for those who will go on with further learning and those who leave at the end of primary cycle (Lockheed and Verspoor, 1991). In addition, development of literacy and numeracy skills is considered to be important in achievement of Education For All (EFA), Millennium Development Goals (MDGs) and 21st century goals for learning (Talbot, 2015; UNESCO, 2014; World Bank, 2003). According to UNESCO (2014) primary school pupils should acquire fundamental skills of literacy and numeracy in the early classes in order to become successful learners.
In Kenya, basic education is from early childhood development to secondary level. Primary education consists of lower primary (classes One to Three) and upper primary (classes Four to Eight) (Republic of Kenya, 2012). Literacy and numeracy skills are learnt at the lower primary classes and further refined in upper primary classes (Republic of Kenya, 2012). Indeed, the purpose of primary education is to produce literate and numerate population. This is possible through providing pupils with opportunities to acquire literacy and numeracy skills.

In pursuit of attaining Universal Primary Education (UPE) by 2010 and EFA and MDGs by 2015, primary school enrolment increased globally with Sub Saharan Africa (SSA) primary school enrolment increasing by 59 percent between 1999 to 2009 (UNESCO, 2011). In Kenya, Free Primary Education (FPE) was introduced in 2003. This has improved enrolment in public primary schools from 5.99 million in 2002 to 10.0 million in 2015 (Republic of Kenya, 2012; Republic of Kenya, 2003). Equally, the number of primary schools has increased to 29,460 in 2014 up from 18,901 in 2002 (Republic of Kenya, 2015; 2002).

However, despite notable efforts by countries to achieve MDGs goal 2 of achieving Universal Primary Education by 2015, “where children everywhere, boys and girls alike, will be able to complete a full course of primary schooling”, and further, achieving EFA goal 6, which focuses on “improving all aspects of quality education so that recognized and measureable learning outcomes in literacy and numeracy skills”, millions of children
satisfying the attendance requirement, do not acquire essential knowledge and skills (UNESCO, 2005; Bennet, 1993).

Globally, the development of pupils’ basic skills as contained in national curricula have not been achieved since 40 percent of primary school leavers cannot read (Provost, 2014; Ohanyido, 2012; Leyendecker, 2008; World Bank, 2003; Colclough Al-Samarrai, Rose, and Tembon, 2003). According to UNESCO (2014), an estimated 250 million children are not learning the basics in reading and mathematics. Further, UNESCO (2014) points out that many pupils’ are often several grades behind the planned curriculum and struggle to understand the literacy and numeracy skills taught.

According to Global Campaign for Education (GCE) (2015), the problem could be worse. The GCE, United States Chapter points out that the full scale of the learning crisis is most likely under-estimated since access to education is only part of what counts, yet what is learnt is important (GCE, 2015). In fact, UNESCO/UNICEF (2013) supports the GCE and emphasize that what works for pupils enrolled in school is more important than gaining access to school.

Therefore, even efforts by the Global Partnership Education (GPE) objective 3 that focuses on increasing the number of children learning and demonstrating mastery of basic literacy and numeracy skills by class three may still remain an illusion if the low pupils’ literacy and numeracy gaps are not curbed (UNESCO, 2014).
Development of pupils’ literacy and numeracy skills has a link with what happens in the classroom in regard to instructional practices implemented because learning is an interaction between the teacher and pupils. According to Masters (2009), teachers teaching reading should have knowledge of how pupils learn to read, know how to assess reading ability and how to apply appropriate strategies in the classroom. On the other hand, instructional materials have remained significantly important in enhancing learning, yet little is known about how teachers utilize instructional materials to help pupils acquire and develop desired skills (Jeanne, 1994).

Research shows strategies that have been implemented to improve pupils’ low literacy and numeracy skills. In California, strategies that were implemented such as reading aloud, use of charts, vocabulary instruction, writing to learn and reciprocal teaching in reading and writing had a positive impact on student learning and achievement that had been lowest in the country (Fisher, Frey and Williams, 2002). Though the strategies implemented in California impacted positively on pupils’ learning, conditions similar to those in California may not prevail in other countries, Kenya included.

In Mexico, an increase in education funds, learning materials and teacher support were implemented in areas marked by consistent under-performance in mathematics. This narrowed the gap in primary mathematics achievement (UNESCO, 2010). In Nepal, an increase in education budgetary allocation, adoption of new curriculum, provision of textbooks, establishment of teacher centres and teacher training centres improved class
three achievements in mathematics and Nepal language in 2001 (Greaney and Kellaghan, 2008).

In Africa, analysis of Programme d’ Analyse des Systemes Educatifs de la Conference (PASEC) for class two and five showed that teachers’ in-service training, availability of textbooks, use of voluntary teachers and adoption of small class sizes had a positive effect on pupils’ learning (Greaney and Kellaghan, 2008; Riddle, 2008). Monitoring Learning Assessment (MLA) study recommended teacher training and provisions of adequate teaching resources to be implemented when it found that about 50 percent of class five learners had not acquired the knowledge and skills specified in their curriculum (Verspoor, 2005; Chinapah, 2003).

Early Grade Reading Assessment (EGRA) in Mali, Ethiopia and Uganda showed most pupils had not acquired basic reading by the end of class two and a large proportion were unable to read at all (USAID.n.d). Results from several successful interventions in Africa indicate that reading and learning outcomes can be improved if teachers are trained to teach key foundational reading skills and have the necessary materials to do so (USAID n.d). However, no information is revealed in regard to teachers’ classroom practices and ways in which instructional materials can be utilized to improve pupils’ learning.

In Kenya, surveys by UWEZO, National Assessment System for Monitoring Learner Achievement (NASMLA) and Southern Africa Consortium for Monitoring Education
Quality (SACMEQ) II assessment revealed pupils’ low literacy and numeracy skills at primary level (UWEZO, 2010: 2011; KNEC, 2010; Postlethwaite, 2004; UNESCO/IIEP, 2001).

SACMEQ II recommended strategies in the districts that had produced very low reading scores. This was aimed at closing pupils’ literacy gaps. The strategies recommended included teachers’ in-service training and provision of sufficient instructional materials (UNESCO/IIEP, 2001).

The government of Kenya, through the Ministry of Education (MOE), adopted SACMEQ II recommendations in 2001 and put in place strategies aimed at improving literacy and numeracy skills in the districts with very low reading scores. The SACMEQ II recommendations adopted by MOE were implemented in 2007, 2008 and 2009 in Gatanga, Kitui, Migori and Transmara district respectively (MOE;2007;2008;2009).

It is against this background that this study sought to investigate implementation of southern African consortium for monitoring education quality recommended strategies in literacy and numeracy in four selected districts, in Kenya.
1.3 Statement of the Problem

Acquisition of literacy and numeracy skills is important for learners whose class eight and secondary education is terminal. The skills will enable them to contribute economically to the society. Further, the skills are vital for further learning and are also a requirement of EFA, MDGs and 21st century goals for learning. Further, literacy and numeracy gaps faced by pupils at primary levels are often magnified at secondary school level where majority of the students do not reach desirable levels of learning.

When pupils fail to acquire literacy and numeracy skills during the initial years of primary school, their chances of acquiring other skills in later classes are slim. On the other hand, pupils will remain several classes behind the planned curriculum and struggle to understand more advanced topics, leading to dropping out of school. High level skills cannot be developed without foundational skills being acquired. Further, the consequences of such low levels of literacy and numeracy skills will make many youth in future to be consigned to poorly, insecure and risky occupations depriving the country the skills that drive economic growth.

Studies done on strategies to improve pupils’ literacy and numeracy skills vary in results due to diverse country conditions and between and within country differences in implementation. Information in regard to teachers’ classroom practices and ways instructional materials can be utilized to improve pupils’ learning is not revealed in
research done. Also, the problems faced in implementing the strategies have not been adequately investigated.

This study, therefore, investigated teachers’ views about in-service training as a strategy for improving teaching and learning of literacy and numeracy, and utilization of instructional materials in improving pupils’ literacy and numeracy skills in public lower primary schools in four selected districts of Kitui, Gatanga, Transmara and Migori.

1.4 Purpose of Study

The purpose of this study was to investigate implementation of southern African consortium for monitoring education quality recommended strategies in literacy and numeracy in four selected districts, Kenya. The implemented SACMEQ II strategies are: teachers’ views about in-service training as a strategy for improving teaching and learning of literacy and numeracy, and utilization of instructional materials in improving literacy and numeracy skills among public lower primary pupils in order to fill gaps in literacy and numeracy skills.

1.5 Objectives of the Study

The study was guided by the following objectives:

i. To investigate teachers’ views about in-service training as a strategy in improving pupils’ literacy and numeracy skills;
ii. To establish ways teachers’ utilize instructional materials to improve pupils’ literacy and numeracy skills;

iii. To find out challenges teachers’ face in improving lower primary pupils’ literacy and numeracy skills; and

iv. To investigate headteachers’ and teachers’ view regarding the way forward to improve lower primary pupils’ literacy and numeracy skills.

1.6 Research Questions

The study was guided by the following research questions:

i. What are the teachers’ views about in-service training as a strategy in improving pupils’ literacy and numeracy skills?

ii. How do teachers’ utilize instructional materials to improve pupils’ literacy and numeracy skills?

iii. What challenges do teachers’ face in improving lower primary pupils’ literacy and numeracy skills?

iv. What is the way forward to improve lower primary pupils’ literacy and numeracy skills?

1.7 Assumptions of the Study

The study assumptions were:

i. All the selected public lower primary schools were faced with low literacy and numeracy achievement;
ii. SACMEQ II strategies if well implemented, can improve pupils’ literacy and numeracy skills;

iii. Teachers are capable of developing pupils’ literacy and numeracy skills; and

iv. All the selected public lower primary schools had instructional materials.

1.7 Limitations of the Study

The limitations of the study were:

i. Out of the 574 public primary schools in the four districts, only 68 public primary schools in which MOE adopted SACMEQ II strategies to close pupils’ literacy and numeracy gaps in the year 2007, 2008 and 2009 were covered due to financial constraints.

ii. Similar, the findings of this will apply to the lower public primary schools in the four districts identified during SACMEQ study as performing very low in literacy and numeracy skills and

iii. Though parents, and other education stakeholders have a strong influence on pupils’ literacy and numeracy skills, this study did not seek their views directly due to logistical issues in reaching them.

1.9 Delimitations of the Study

The delimitations of the study were:
i. The study was carried out in four selected districts of Kitui, Gatanga, Transmara and Migori. Only sampled public lower primary schools in the four districts were covered;

ii. The study covered class three teachers and headteachers of sampled schools to elicit data because of their key role during teaching and learning process; and

iii. The study investigated implementation of SACMEQ II strategies on teacher’s views about in-service training and utilization of instructional materials.

iv. The study was undertaken within one month, during the official public primary school days.

1.10 Significance of the Study

The study investigated implementation of SACMEQ II strategies in improving pupils’ literacy and numeracy skills. Successful implementation of SACMEQ II strategies is of significance to pupils, teachers, headteachers, the community, policy makers, planners and curriculum developers in varied ways.

The class three pupils are the first beneficiaries of this study. This is because when SACMEQ II strategies are implemented successfully, it will have far-reaching effects on pupils’ acquisition of literacy and numeracy skills at primary and subsequent education level. Improvement in pupils’ literacy and numeracy skills will lay a firm foundation for pupils’ further learning and practical skills necessary for economic development in Kenya.
The teachers who are key in implementation will have their learning practices enhanced when SACMEQ II strategies are implemented successfully. The successful implementation of SACMEQ II strategies will be an indication that teachers can understand interventions that are important in improving pupils’ literacy and numeracy skills during teaching and learning process. Further, successful implementation of the literacy and numeracy learning practices may be immediately applied by teachers in various curriculum areas because literacy and numeracy skills are integral in all learning areas and across all years of education level. On the other hand, areas that have challenges can be identified and a way forward provided to enhance the teaching and learning process.

The community outcry over low pupils’ achievement in literacy and numeracy will cease when the pupils improve. Consequently, the community will give more support to pupils and teachers in improving literacy and numeracy skills and other subject areas across the curriculum.

When pupils’ low literacy and numeracy skills are curbed, education inefficiencies will reduce and projections for future learning and opportunities can be projected easily by policy makers and planners. Successful implementation of SACMEQ II strategies will provide insights to curriculum developers to review learning practices that will improve
pupils’ teaching and learning process, particularly in the utilization of instructional materials.

The Ministry of Education will further gain understanding on in-service training modalities that will make teachers remain relevant in teaching and learning process, thereby improving education quality through curriculum implementation.

1.11 Theoretical Framework

The study was guided by two theories. The theories are Social Learning Theory and Facilitation Learning Theory. The two theories are necessary because Social Learning Theory by Bandura focuses on learning while facilitation learning theory by Laird focuses mainly on teacher as a facilitator in developing pupils’ literacy and numeracy skills.

According to Bandura’s (1971) Social Learning Theory, learning occurs within a social context. The teachers’ role is to organize the classroom so as to facilitate pupils’ active learning (UNESCO, 2004). The teachers’ mastery of subject content and preparation, teaching methods, presentation, use of teaching resources and assessment skills are important during the learning process. The pupils' active interaction involves the teacher having their attention and using various assessment skills to determine their acquisition and development of skills developed (UNESCO, 2004). According to Holt (2010),
literacy and numeracy learning and teaching is characterized by use of direct and interactive teaching, planned activities and planning content adequately.

In this study, teachers’ views about in-service training determine their understanding of the subject matter, preparation, presentation, use of assessment skills and ways of teaching methods to improve pupils’ literacy and numeracy skills during the learning process. The teacher also utilizes instructional materials to understand and prepare subject matter with ease and to make it understandable to the pupils. On the other hand the teacher guides pupils to interact with instructional materials and thus enabling them to practice and acquire the skills and concepts learned.

The second theory is facilitation learning theory by Laird (1985). The theory focuses on the teachers’ and the learners. Laird notes that the teacher’s acts as a facilitator during teaching and the learning process entail mastery and preparation of content, utilizing teaching methods and assessment skills to determine pupils’ acquisition of skills developed. This theory was preferred in this study because according to Laird, learning will occur when the teacher’s acts as a facilitator, for instance establishing the atmosphere in which learners’ can acquire skills developed.

Teachers’ views about in-service training determines their roles as facilitators in understanding and preparing content, presentation, teaching methods and assessment skills used to gauge pupils’ understanding of content taught. The instructional materials
enable the teachers, as facilitators, to prepare up-to-date content, provide examples and engage pupils to interact with the instructional materials actively and repeatedly to improve skills developed. On the other hand, pupils; access to the instructional materials helps them to interact freely hence practicing concepts learned, thereby enhancing their skills. The outcomes of the two theories result to improvement in pupils’ literacy and numeracy skills.

1.12 Conceptual Framework

This study was based on Social Learning Theory by Bandura (1971) and Facilitation Learning Theory by Laird (1985) which focuses on the teachers and the pupils during the learning process. The conceptual framework is presented in Figure 1.1. The conceptual framework demonstrates the relationship between implementation of SACMEQ II strategies and improvement of the pupils’ literacy and numeracy skills.
Figure 1.1: Conceptual Framework

Independent Variables

Teachers’ views about In-service training

Teachers’ utilization of instructional materials

Dependent Variables

**Improved pupils Literacy Skills**
- Matching words/ pictures & their meaning
- Spell words correctly
- Read familiar words & comprehend
- Complete sentence correctly
- Read & answer questions correctly
- Name shapes
- Write numbers in words

**Improved pupils Numeracy Skills**
- Identify place value
- Use patterns in subtraction
- Subtract/add numbers not exceeding 99
- Differentiate multiplication & division
- Divide up to two digit numbers
- Work out additions involving conversions
- Divide in currency/litres
- Identify different shapes
The teachers’ views about in-service training and how instructional materials are utilized during teaching and learning process is important. Teachers need to organize a conducive learning environment that encourages pupils’ active learning.

Teachers’ views about in-service training determine their mastery and preparation of content, teaching methods, presentation and use of assessment skills to determine pupils’ acquisition and development of skills taught. Thorough understanding of content enables the teacher to prepare adequately to present the content using varied teaching methods that enhance pupils’ development of the skills taught in this study literacy and numeracy skill.

When content is presented appropriately, pupils’ acquire the skills being developed and the teachers can be able to use appropriate assessment skills to determine their understanding of the skills taught, thus improving their literacy and numeracy skills. According to World Bank (2003), ongoing assessment has greatest effect in promoting development and understanding of conceptual skills. The feedback received from the pupils can be used to improve further on understanding and preparation of content, presentation, teaching methods and assessment skills to improve on pupils’ development of literacy and numeracy skills.

On the other hand the teacher’s utilization of instructional materials helps mainly the teacher to prepare for the content to be taught. Teachers also utilize instructional
materials to assess pupils’ understanding of content taught throughout the learning process to determine pupils’ acquisition of the skills developed. The teachers can guide pupils to interact with instructional materials to practice concepts taught improving further the skills developed.

If SACMEQ II strategies are implemented appropriately, this will lead to acquisition and improvement of the pupils’ literacy and numeracy skills. This can be noted when pupils show improvement in the various literacy and numeracy skills.
1.13 Operational Definition of Terms

Basic Skills: The pupils’ ability to read, write and speak English and application of mathematics at a particularly primary education level to function effectively.

Literacy skills: Refers to pupils’ ability to read, write and use written language at particularly primary education level appropriately.

Lower Primary: It comprises classes one, two and three in the primary school level in education in Kenya.

Numeracy skills: Refers to pupils’ effective application of mathematics at a given education level to function well.

Implementation: Refers to the actual classroom interaction between the teacher and pupils’ during teaching and learning process to enable them acquire knowledge and skills.

Strategies: Refers to interventions that have been implemented to enhance pupils’ acquisition of specified skill required.
CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The study reviewed literature based on selected SACMEQ II strategies as follows:

i. Teachers’ in-service training and classroom practices

ii. Utilization of instructional materials

iii. Studies on literacy and numeracy skills.

2.2. Teachers’ In-Service Training and Teaching and Learning Practices

Teachers play a vital role in the development of pupils’ basic skills. According to Major and Tiro (2012), teachers should be well trained to develop pupils’ holistically. This is particularly crucial at primary education level which lays the pupils’ basic foundation for other levels of education. However, ways in which teachers can influence learning through in-service training to enhance pupils’ learning positively in regard to literacy and numeracy skills have not been established.

Improvement in instructional learning requires teachers’ improvement in content knowledge and teaching methods through in-service training (Bottia, Moller, Roslyn, Son and Stearn, 2014). New techniques, materials and challenges continually faced make education in-service absolutely necessary for teachers to be updated (Smith, Hardman, Wall and Mroz, 2004). Therefore, the quality of teachers depends on quality of in-service training to implement learning practices accordingly. Although having subject
knowledge does not translate into improved teaching (UNESCO, 2011), attention should be focused on teachers’ learning practices implemented to ensure pupils’ development of literacy and numeracy skills are improved.

It is also noted that in-service evolves due to possible instructional changes and weaknesses during the training to enhance teachers’ competence (Smith, et al., 2004). Further, in order to bring changes in the way teachers interact with pupils’, in-service training is important as it gives teachers opportunity to think through new ideas and to implement new classroom practices (Smith, et al., 2004). Though opportunities of in-service training are important to pupils’ learning, teachers’ views about in-service training to improve pupils’ literacy and numeracy skills are not yet established in Kenya.

According to UNESCO (2011), teaching of literacy requires emphasis on teachers’ understanding of the process by which early reading is acquired and how reading skills are subsequently developed and strategies that support writing development such as handwriting, spelling and punctuations. In-service training opportunities enable teachers to familiarize with the various strategies, approaches, methodologies and interventions that can be used to teach literacy and numeracy areas across curriculum (UNESCO, 2011). The teaching methods include direct: instruction, individualized learning and group work. The teacher understanding of content, knowledge of teaching methods and interventions are vital during the pupils’ learning process, which this study sought to investigate.
Research has established the importance of teachers’ in-service training. In the United Kingdom, a daily literacy reading hour for in-service teachers improved pupils’ achievement in English, while in some countries where centers’ had been set for teachers in-service training, pupils’ were able to read, write and develop advanced reading skills beyond memorization (UNESCO, 2012). In Ghana, trained teachers’ were able to engage pupils actively in the development of skills, varied teaching resources and teaching approaches (UNESCO, 2012). In Uganda, trained teachers in mathematics improved class three and six pupils’ literacy and numeracy skills (UNESCO, 2008).

In addition, research has shown that teachers’ in-service training has a positive impact on pupil learning (Duflo, Dupas, Kremer, 2009; Vaatstra and De Vries, 2007; Cirino, Pollord-Durodola, Foorman, Carlson and Francis, 2007). According to Good and Grouws (1987), teachers’ in- service training is associated with pupils’ gains in mathematics and teachers placing more emphasis on the development of their lessons.

Teachers’ opinions on the importance of in-service training in Kenya Certificate of Primary Education (KCPE) performance in public primary schools confirmed that in-service training is relevant to enhancing pupils’ centred teaching methods, understanding the syllabus and using group work (Wachira, 2011). Therefore, in-service training for teachers can be relevant in improving pupils’ literacy and numeracy skills particularly in
Sub Saharan Africa (SSA) which is focusing on modernizing teaching methods in the classroom, away from teacher dominance. Further, World Bank (2003) points out that teachers’ emphasis on learner-centered approach and mastery of knowledge content improve learning in mathematics and language.

In addition, according to Bottia et al. (2014) teaching methods that involve pupils to a larger degree lead to positive learning. They add that there is no single ideal approach to teaching mathematics. Pupils’ mathematics goals, teacher’s knowledge and instructional context all matter. Teaching methods entail considering individual pupil difference, allowing pupils’ to practice and apply what has been learned and monitoring pupils’ understanding (Lockheed and Verspoor, 1991).

According to Bunyi, Wangia, Magoma and Limboro (2013) provision of continuing professional development can make substantial difference to pupils’ learning if it focuses on developing the teacher’s conceptual understanding of content and pedagogy. Koellner and Jacobs (2014) points out that in-service training provides teachers with opportunity to collaboratively do mathematics, plan lessons and collectively reflect on aspects of instructional practices. While Desimone (2009) adds that teachers’ in-service trainings are critical to increasing teachers’ knowledge and skills and improving their practice, which holds promise for increasing pupils’ learning.
Similarly, Holt (2010) concurs with UNESCO (2011) that professional development provides opportunities to teachers to reflect on their own practice, explore strategies that help pupils to gain fundamental skills, reflect on current level of knowledge, expertise, approaches, find out emerging classroom practices, plan and implement subject matter that promote pupils’ acquisition of basic skills. In addition, Major and Tiro (2012) points out that the teachers’ education is important for teachers to learn learner-centered ways that require intensive assessment and planning to adapt pupils’ needs. Despite many opportunities related to professional development revealed, specific learning practices teachers adopt and challenges faced during instructional learning to improve pupils’ literacy skills are not yet established.

Consistent with Bottia, et al. (2013) and Lockheed and Verspoor (1991), Van driell and Berry (2012), emphasize that knowledge of enhancing pupils’ learning goes beyond acquisition of instructional strategies and techniques only, to include understanding of how pupils develop skills in specific subject matter. Similarly, Masters (2009) adds that teaching depends on teachers knowing how pupils understand subject developed how to engage pupils’ and sequence subject matter and how to teach the subject. Therefore though a teacher understanding of how pupils develop skills is important, efforts that aim to improve pupils’ skills, pupils’ different diversities may require more insights for teachers to address.
Similarly, according to English, Hargreaves and Hislam (2010) interactive teaching is where the teacher is confident, encourages pupils’ contributions and there is well-paced learning. However, Kambera (2013) points out that large class sizes hinders teachers’ interactive teaching method while teacher-centred teaching methods make pupils to be omitted to their capacity of understanding and in big classes it becomes more difficult to recognize pupils’ individual differences.

Introduction of Strengthening of Mathematics and Science in Secondary Education (SMASSE) in-service training in African countries provided meaningful teaching activities focused on pupils’ learning mainly practical and resource improvisation. Its evaluation revealed that pupils of teachers who underwent SMASSE achieved better in science and mathematics than pupils’ of other teachers (Hoppers, Afeti, Jacob, Kabiru, Hans, Stevens, Richard, 2008). Although opportunity of SMASSE can assist teachers with knowledge of utilizing teaching resources; other instructional practices that make content understandable to pupils are important to be investigated.

In contrast to use of learner centred teaching methods, studies have revealed that implementation of learner-centered teaching methods as a challenge (Bunyi et al., 2013; Republic of Kenya, 2004; Leyendecker, 2008). In contrast to Wachira (2011) analysis of KCPE revealed use of teacher-centered teaching methods affecting pupils’ learning negatively (World Bank-UNICEF, 2009). Therefore, despite the benefits of in-service
training revealed, different contexts require different approaches to improve pupils’ literacy and numeracy skills.

Another study found that pupils’ under teachers who underwent in-service training had greater reading comprehension than of pupils’ with teachers who did not receive in-service training (Smith et al. 2004). A survey conducted as part of national assessment of mathematics and English reading in 2009 found that up to a third of the pupils were taught by teachers who had not participated in in-service training in English and mathematics (UNESCO, 2011). The presence of teachers who have not participated in in-service training may not be a new phenomenon in Kenya and particularly in the locale where this study was carried out despite efforts to improve pupils’ low literacy and numeracy skills.

Further, provision of in-service teachers in Bangladesh revealed that teachers do not fully apply what they have learned in their training to make mathematics classes effective and understandable to pupils (Mohsin, 2006). In addition, (UNESCO, 2012) points out that teachers who have received training are not always well prepared to teach in early grades. In the British government, teachers’ training institutions were somewhat superficial in the early stages of implementing national literacy and numeracy strategies (Earl, Fullan, Leithwood, Watson, Jantzi, Levin and Torrance, 2000). It was also noted that in-service courses were of insufficient duration to adequately enable teachers develop skills required to teach or progress their pupils’ literacy and numeracy skills or support
integration of the teaching literacy and numeracy across the curriculum (UNESCO, 2011). Teachers’ preparation can differ hence the need to investigate the teachers in regard to views on in-service training in improving pupils’ literacy and numeracy skills.

Research has shown that most teacher education programs overemphasize theory at the expense of classroom practice, yet mastery of theories does not guarantee the application of the theories in the classroom setting (Major and Tiro, 2012). In Botswana, student teachers were taught too much theory at the expense of teaching practice (Major and Tiro, 2012). When it comes to classroom instruction being implemented, teachers faced with such a situation are handicapped in developing pupils’ literacy and numeracy skills as required.

Consistent with Major and Trio’s (2012) study, research has also shown in Kenya that literacy development is not given adequate attention in teacher training programmes. According to Bunyi et al. (2013), primary teacher education emphasizes on theoretical knowledge in reading and mathematics curriculum at the expense of pedagogy; hence making newly qualified teachers to have only theoretical knowledge of teaching mathematics in the lower primary and leaving many to display inadequate understanding of pedagogical knowledge. The implication of inadequate understanding of teaching methods may impact negatively on classroom practices.

Additionally, Bunyi (2006) observed that FPE has compounded the quality issues with large classes and increasing pupils’ diversity, an indication that pupils’ development of
literacy and numeracy skills may be hampered more if the teachers’ instructional learning is not improved to help the teachers implement instructional practices that can improve pupils’ development of literacy and numeracy skills.

Masters (2009), supports UNESCO (2011) and Bunyi et al. (2013) observations that in-service teachers lack literacy skills required to develop pupils’ reading. Consistent with this finding also, research has indicated that having subject knowledge does not translate into effective teaching (UNESCO, 2011). Therefore, there is need to ensure that teachers do not only understand subject knowledge, but all aspects of teaching for meaningful learning to occur.

### 2.3 Utilization of Instructional Materials during Teaching and Learning

Instructional materials have remained significantly important in enhancing quality education and are associated with students’ learning (Verspoor and Wu, 1990; Jamieson and Byrne, 2008; Jeanne, 1994). Instructional materials have impact on what is taught and how it is taught (Republic of Namibia, 2008). Yet little is known about how teachers utilize the instructional materials to help pupils learn.

Adequate textbooks are determinants of effective learning (World Bank-UNICEF, 2009). Availability of textbooks is a factor that impacts on education quality (UNESCO, 2012). Instructional materials in developed countries are abundant while in developing countries they are scarce (Lockheed and Verspoor, 1991). Inadequate instructional materials

A study found that teachers engaged pupils frequently in collaborating work in well resourced schools than in poorly resourced schools (Siraj-Bhatccford, Shepherd, Melhuish, Taggart, Sammons and Sylva, 2011). However, use of dialogic teaching may be a hindrance in large classrooms and poorly resourced schools which are a common phenomenon experienced in many schools which may impede efforts of improving pupils’ literacy and numeracy skills.

Further, instructional materials in developing countries fail to reach or be used and this has a negative impact on efforts to improve pupils’ basic skills (World Bank, 1990). According to Glewwe, Kremer and Moulin (1995) mismatch of instructional materials indicates that pupils will not acquire skills necessary to move to another level. He also observed that 60 percent of pupils worldwide gain skills to move to the next level, but in SSA only 25 percent of pupils gain basic skills to move to the next level.

In contrast, in Burkina Faso, Guinea, Mali and Rwanda, there are enough reading and mathematics books for every pupil, though this hides sub national disparities (UNESCO, 2012). In Nigeria, 30 percent of classes four and six pupils lacked English textbooks and 50 percent mathematics textbooks. Under such circumstances, teachers spend time writing lessons and problems on blackboard while pupils copy in their exercise books
In this study, as Colclough et al. (2003) and UNESCO (2012) observed that classes in the early years of classes one to three schooling are typically larger than in classes four to eight although Wamukuru, Kamau and Ochola (2005) contrast that class size affects the teachers’ efforts in upper classes than lower classes. This means that the teachers’ efforts may be strained in utilizing textbook materials to improve pupils’ literacy and numeracy skills to have strong education foundation.
In Niragua and Brazil, pupils who received textbooks scored higher on mathematics achievement test than pupils in classes with no textbooks. While in Philippines, comparison of classes one and two pupils who had a textbook ratio of 1:1, 1:2 and 1:10, found the performance of pupils with textbook ratio of 1:1 and 1:2 to be higher than that of pupils with textbook ratio of 1:10 in mathematics (Lockheed and Verspoor, 1991). Evaluation of Ghana’s basic education found improvement in mathematics and English test partly due to increased availability of textbooks (UNESCO, 2010). In Uganda, pupils in classes three and six improved in literacy and numeracy due to increased supply of textbooks (UNESCO, 2008). A study in Virginia, found teachers to be relying on instructional materials in planning activities in mathematics and reading and use to prompt answers, though other teachers not using instructional materials pointed to its insufficiency (Jeanne, 1994).

In Kenya, pupils’ textbook ratio for lower primary is 1:3. The rationale for investing in instructional materials was to: provide textbooks to pupils and teachers as key tools for attaining of quality education; to enable teachers to deliver curriculum using appropriate reference books; and to enable pupils to study on their own and to do homework at home using textbooks (Republic of Kenya, 2005). All the same, no research has been done to investigate how instructional materials are utilized to improve pupils’ literacy and numeracy skills.
2.4 Studies on Literacy and Numeracy Skills

2.4.1 Literacy and Numeracy Skills Studies in Selected Countries

In Kenya, the general objective for mathematics requires pupils to acquire an understanding of numbers, numeration and perform the four basic operations. The specific objectives for mathematics in various content areas for class three require mainly a pupil to count, read and write. The lower primary objectives for languages in general require a pupil to acquire a sufficient command of vocabulary in English as a medium of instruction in upper primary. The specific objectives for languages in various content areas for class three require a pupil to acquire listening, speaking, reading, and writing skills (Republic of Kenya, 2002). This study did not investigate pupils’ literacy in listening, speaking and reading skills. Despite the instructional objectives developed, ways in which teachers implement the curriculum in the classroom so as to improve pupils’ literacy and numeracy skills have not been investigated.

According to Business-Higher Education Forum (B-HEF) (1999), college graduates in America were reported to be lacking key attributes necessary for today’s high performance jobs such as problem-solving and basic communication skills (listening, speaking, reading and writing). The graduate’s application for employment found that four out of ten applicants tested for basic skills lacked the necessary reading, writing and mathematics skills to do the jobs required (B-HEF, 1999). The situation faced by the graduates could have developed due to lack of pupils’ improvement in development of
basic skills. The focus of this study was to determine teachers’ views about in-service training to improve literacy and numeracy at lower primary schools to enable pupils have command in using the basic skills.

In England, education inspectors reported through the British Broadcasting Corporation (BBC) news that improvement in standards in primary and secondary schools were marred by poor level of literacy and numeracy skills (Provost, 2014). Pupils’ were not getting enough help in reading, writing and mathematics and primary schools focusing attention on older children in class five and six level of education at the expense of developing basic skills at early age in class three and four. About 20 percent of pupils who left primary school lacked basic skills in reading, writing and mathematics. Although research has indicated pupils’ literacy and numeracy achievement being low, in Kenya at primary level, teachers’ understanding of ways to help pupils’ acquire literacy and numeracy skills early enough was investigated.

A study by Gathumbi (2006) on classes three and six pupils on attainment of English literacy skills in Kenya found large proportions of pupils fail to reach desirable literacy levels in the assessed skills. She notes that failure to attain desired level of proficiency implies that an acceptably high proportion of pupils would have difficulties in accessing the curricula in the rest of the primary cycle, at secondary level and beyond. In another study of students’ competencies and proficiency in English listening comprehension in selected secondary schools in Kenya, it was found that performance was poorest on skills
that tested competence in listening, dialogue and drawing inferences of unfamiliar words (Bwire, 2007).

Further, Kenya Certificate of Secondary Education (KCSE) revealed that performance in composition and examination items which require application and problem solving was poor in year 2010 (Siringi, 2012). Although class eight is the highest primary level where all pupils are required to have mastered all literacy and numeracy skills in the curriculum this indicates that ways in which teachers implement learning practices to improve pupils’ literacy and numeracy need to be investigated to curb literacy and numeracy gaps.

In Uruguay, pupils’ low mathematics and reading skills were attributed to household, school, community and teacher factors, while in Nepal, low achievement in mathematics for class three in 2001 was attributed to lack of supervision, untrained teachers, ineffective classroom instruction and inadequate home support (Greaney and Kellaghan, 2008). In India, low achievement in language and mathematics was attributed to absenteeism, while in South Africa pupils’ low learning was attributed to difficult written language, home language, unqualified teachers and incomplete curriculum coverage (Greaney and Kellaghan, 2008).

The Trends in International Mathematics and Science Study (TIMSS) and Programme for International Student Assessment (PISA) assessments in various countries found low
achievement attributed to incomplete coverage of curriculum, untrained teachers, pupils’ low self-confidence and interest, inadequate home education resources, inadequate time for homework and low socio-economic status of schools (Greaney and Kellaghan, 2008; UNESCO, 2006; Postlethwaite, 2004; Simmons, 1980). Low pupils’ achievement in PASEC was linked to teacher absenteeism while low pupils’ achievement in PILRLS was attributed to low socio-economic status and the parental low level of education (Greaney and Kellaghan, 2008; UNESCO, 2005).

In Seychelles, Malawi, Zambia, Namibia and Kenya, pupils’ low learning was attributed to age of the pupils, household income, inadequate resources, gender, regional disparities, internal inefficiencies, absenteeism of the pupils and teachers, pupils’ lateness in school, pupils’ dropout and poor teaching environments (Greaney and Kellaghan, 2008; UNESCO, 2010; 2005).

In Kenya, according to the UWEZO report of 2010 and 2011, low literacy and numeracy assessment was attributed to high pupil-teacher ratio, shortage of teachers, inadequate classroom furniture, pupils’ absenteeism, inadequate textbooks and inconsistency in receiving FPE funds (UWEZO, 2010; 2011).

2.4.2 Selected International Studies on Literacy and Numeracy Skills

International, regional and national studies reveal varied pupils’ achievement though no country in SSA, Kenya included, have attained the Dakar objectives on pupils’ literacy
and numeracy skills (Verspoor, 2005). Studies by Trends in International Mathematics and Science Study (TIMSS) in 2007 among class eight pupils found that low income countries lag far behind developed countries in learning achievement (UNESCO, 2010). The study found average pupils in developing countries performing below poorest students in countries such as Japan and Republic of Korea (UNESCO, 2010).

Another study in 2003, found that 20 percent to 29 percent of class eight pupils in low and middle income countries did not reach the lowest benchmark level (UNESCO, 2008). While another study in three SSA countries for class eight pupils in mathematics and science found pupils’ achievement to be below the international average (Leyendecker, 2008). The pupils’ low achievement, particularly at class eight is worrying and it requires attention for improvement of pupils’ basic skills at this lower level.

In India, TIMSS study found 12 percent, 30 percent and 47 percent of pupils in class three could divide, multiply and write respectively, while in class four 28 percent, 40 percent and 47 percent could divide, multiply and write respectively, and in class five, 41 percent, 54 percent and 61 percent could divide, multiply and subtract respectively (UNESCO, 2009). Another assessment in India found 45 percent of the children in class three could not read a text designed for class one. This shows that pupils progressed to another level without acquiring required skills (UNESCO, 2009).
TIMSS study in India in 2008 found 28 percent of class three pupils could subtract two digit numbers and only a third could tell time, a clear indication that pupils’ basic skills need to be improved (UNESCO, 2010). The low learning standards in SSA below world standards according to World Bank (2003) require developing countries, Kenya included, to use their meager resources to improve the teacher’s quality so as to improve pupils’ literacy and numeracy skills.

A study found less than 30 percent of class 6 pupils meeting specified minimum literacy standards in Namibia and Zambia; while another study found 25 percent class six pupils reaching desirable level of reading literacy in Botswana, Kenya, South Africa and Swaziland and fewer than 10 percent in Lesotho, Malawi, Mozambique, Namibia, Uganda and Zambia (UNESCO, 2009). In Ethiopia, class three pupils could not read a single word in their local language (UNESCO, 2010). The pupils’ low levels in literacy as revealed by UNESCO (2009; 2010), if not addressed early through improved classroom practices, may affect pupils’ other levels of education.

Assessment by Programme d’ Analyse des Systemes Educatifs de la Conference (PASEC) and Monitoring Learner Achievement (MLA) programme found that out of 74 percent pupils’ who reached class five, 50 percent had not acquired the knowledge and skills specified in their curriculum, and 25 percent performed below acceptable minimum
(Verspoor, 2005). The existence of pupils reaching class five without acquiring knowledge and skills specified in the curriculum raises the concern on what teachers ought to do to ensure that pupils’ acquire basic skills particularly at class three, at the lower primary level before moving to upper primary.

Studies by the International Evaluation Achievement (IEA) found that students in low income and middle income countries learn much less of their national curriculum than expected, resulting in weak reading comprehensions with majority of the pupils completing primary education without mastering skills targeted in the curriculum (Verspoor, 1989). Studies by IEA on mathematics found that lower, middle income countries and particularly SSA countries performed poorly than in developing countries (Verspoor, 1989; World Bank, 1988). Ways in which opportunities for in-service training and how teachers utilize instructional materials to enhance pupils’ development of literacy and numeracy skills were the focus of this study.

Studies in Programme for International Student Assessment (PISA) (2003) found that 34 percent to 63 percent of 15 years-old students who performed below proficiency levels in reading were in low and middle income countries (UNESCO, 2008). PISA (2003) reading assessment found 20 percent or more of 15 years- old pupils’ in Austria, Germany, Greece, Portugal and Spain performed below the lowest proficiency level concurs with UNESCO (2009) statement that income is not the only factor determining achievement but contradicts observation that learning achievement does rise with
increase in income (UNESCO, 2008). Though pupils’ low proficiency is still experienced even in higher level of learning, problem arises on whether the teacher’s mastery of content, knowledge of teaching methods, presentation and assessment during in-service training can improve pupils’ learning at the lower level, to gain command and use of literacy at lower primary school level.

Assessment by MLA in Botswana, Madagascar, Malawi, Mali, Morocco, Mauritania, Niger, Senegal, Tunisia, Uganda and Zambia, according to Verspoor (2005), found that only four of these countries had met the Jomtiem learning target. Learning assessment in Mauritania found average primary pupils able to answer correctly 30 percent assessment items in Arabics, French and mathematics. In Guinea, similarly, pupils who graduated from class 6 were able to achieve 34 percent in French language and only 25 percent in writing performance which was below official achievement of 75 percent.

A similar assessment in Uganda found class six pupils scoring 24 percent in English reading and writing against an intended average standard of 75 percent, only 15 percent graduates, one in every seven was able to achieve or exceed the required standard (Verspoor, 2005). Pupils’ low levels in literacy and numeracy skills necessitated the study to investigate teachers’ views about in-service training and utilization of instructional materials to improve pupils’ literacy and numeracy in public lower primary schools.
The following are the main research gaps that necessitated this study. Other gaps were identified in the main text.

1. Though opportunities to in-service training improve teachers’ instructional practices, different contexts may require different instructional practices to improve pupils’ literacy and numeracy skills;

2. Despite many opportunities related to in-service training revealed, specific learning practices teachers adopt and challenges faced during instructional learning to improve pupils’ literacy skills are not established; and

3. Studies have revealed the importance of instructional materials in pupils’ learning. However, ways in which teachers utilize instructional materials to improve pupils’ acquisition hence improvement in literacy and numeracy skills are not known.
CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter focuses on the research design, study locale, target population, sampling design, research instruments, validity and reliability, piloting, data collection procedure and data analysis.

3.2 Research Design

This study used the descriptive survey design. This is because according to Fraenkel and Wallen (2008) and Kothari (2004), the design is appropriate when describing conditions as they exist or existed, opinions that are held, processes that are going on as well as in collecting facts and figures without manipulation of variables which in this case are teachers’ views about in-service training and ways instructional materials are utilized to improve pupils’ literacy and numeracy skills.

3.3 The Study Locale

The study was carried out in four selected districts of Kitui (former Kitui District before the current administrative boundaries were adopted), Gatanga, Transmara, and Migori. According to the information given to the researcher by officers at the MOE headquarters in Nairobi, the MOE had put in place strategies aimed at improving literacy and
numeracy skills in these four districts since the districts had produced very low reading scores during SACMEQ II study.

3.4 Target Population

The target population for this study consisted of 574 public primary schools (254 in Kitui, 167 in Transmara, 102 in Migori and 51 in Gatanga), 574 headteachers and 574 class three teachers.

3.5 Sampling Techniques and Sample Size

This section focuses on Sampling Techniques and Sample Size for the public primary schools and the study respondents.

3.5.1 Sampling of Public Primary Schools

In this study, out of the 574 public primary schools in the four districts, 68 schools (12%) were sampled. According to Gay (1992), a sample of 10 percent is considered minimum for descriptive survey research. This study used 12 percent which is slightly higher and less than 20 percent required for smaller populations. The schools were sampled using stratified proportionate sampling and simple random sampling techniques.

To obtain a sample of 30 out of 254 schools in Kitui District, the researcher divided the districts into four divisions. Two divisions had 16 schools more than the other two divisions with 14 schools. Therefore in the two divisions with 16 schools, the researcher
randomly sampled 8 schools from each, while from the two divisions with 14 schools the researcher randomly sampled 7 schools from each. To obtain a sample of 20 schools out of 167 schools in Transmara District, the researcher divided the district into two divisions and then sampled 10 primary schools from each division randomly because the divisions had equal number of schools. To obtain a sample of 12 schools out of 102 schools in Migori District, the researcher divided the district into two divisions then randomly sampled 6 primary schools from each division because the divisions had equal number of schools. To obtain a sample of six schools out of 51 schools in Gatanga District, the researcher divided the district into two divisions and then randomly sampled 3 primary schools from each division because the divisions had equal number of schools.

3.5.2 Sampling of the Respondents

The respondents for this study were headteachers and teachers. All 68 headteachers of the sampled schools became automatic respondents of the study and so did class three teachers in 68 schools. In the four districts, there were eighteen schools, where there was more than one class three, purposive sampling technique was used to sample one class three teacher.
A summary of the population size and sample size are presented in Table 3.1.

Table 3.1: Population and Sample Size

<table>
<thead>
<tr>
<th>Districts</th>
<th>No. of Primary school</th>
<th>Sample %</th>
<th>No. of Head teachers population</th>
<th>Sample %</th>
<th>No. of Teachers population</th>
<th>Sample %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitui</td>
<td>254</td>
<td>30</td>
<td>254</td>
<td>30</td>
<td>254</td>
<td>30</td>
</tr>
<tr>
<td>Transmara</td>
<td>167</td>
<td>20</td>
<td>167</td>
<td>20</td>
<td>167</td>
<td>20</td>
</tr>
<tr>
<td>Gatanga</td>
<td>51</td>
<td>6</td>
<td>51</td>
<td>6</td>
<td>51</td>
<td>6</td>
</tr>
<tr>
<td>Migori</td>
<td>102</td>
<td>12</td>
<td>102</td>
<td>12</td>
<td>102</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>574</td>
<td>68</td>
<td>574</td>
<td>68</td>
<td>574</td>
<td>68</td>
</tr>
</tbody>
</table>

3.6 Research Instruments

The instruments for this study were: questionnaires for class three teachers, interview guide for headteachers and classroom observation guide.

3.6.1 Teachers’ Questionnaire

The researcher developed the questionnaire for the teachers. The instrument was preferred because according to Nkpa (1997) it can be administered to large groups to ascertain facts. The questionnaire sought data on teachers’ views about in-service training, status and utilization of instructional materials, challenges faced and way forward in improving pupils’ literacy and numeracy skills during the learning and teaching process.
3.6.2 Headteachers’ Interview Guide

The researcher developed an interview guide for the headteachers. This study used an interview guide because when well conducted, interviews produce in-depth data that is not possible to get with a questionnaire (Orodho, 2009; Mugenda and Mugenda, 1989). The headteachers’ interview guide sought information on headteachers’ views about teachers’ in-service training, status and utilization of instructional materials, challenges and way forward in improving pupils’ literacy and numeracy skills during the teaching and learning process.

3.6.3 Classroom Observation Guide

The researcher developed a classroom observation guide to supplement data obtained from the teachers’ questionnaire and headteachers’ interview guide. Classroom observation was used because according to Fraenkel and Wallen (2008) some research questions which cannot be answered through questionnaires and interview guides can be answered through observation. The classroom observation was also preferred by the researcher in order to collect in-depth and accurate information.

Classroom observation guide was adopted to observe teaching and learning activities during the English and mathematics lessons. The classroom observation guide sought data on how English and mathematics instructional materials were utilized, activities pupils’ engaged in during English and mathematics lessons, pupils’ English and
mathematics previous exercises, teaching methods used during English and mathematics lessons, pupils’ textbook average and utilization of teaching aids available.

3.7 Piloting

One primary school in Kitui District not included in the actual study, was used to pre-test the study instruments. The piloting of the research instruments was meant to determine the comprehensiveness and adequacy of the teachers’ questionnaire; headteachers’ interview guide and classroom observation guide. The piloting process was further meant to determine whether the study subjects understood the items and whether they were able to respond accordingly to the questions in order to make appropriate adjustments.

3.7.1 Validity of Research Instruments

**Questionnaire**: Content validity of teachers’ questionnaire was established by giving the questionnaire to my supervisors who are experts in literacy and numeracy to verify and confirm that the items were appropriate, comprehensive, adequate and representative of all literacy and numeracy content to be studied.

**Interview guide**: Content validity of headteachers’ interview guide was established by giving to my supervisors who are experts in literacy and numeracy to verify and confirm that the items were appropriate, comprehensive, adequate and representative of all literacy and numeracy content to be studied.
Classroom observation: Content validity of classroom observation was established by giving to my supervisors who are experts in literacy and numeracy to verify and confirm that they were appropriate, comprehensive, adequate is representative of all literacy and numeracy content to be studied.

3.7.2 Reliability of Research Instruments

Reliability of all the research instruments was determined in order to obtain reliability coefficient. Reliability coefficient of instruments for this study was computed using internal consistency method because according to Fraenkel and Wallen (2008) it estimates reliability through single administration of the items of each instrument. The internal consistency method was computed using Kuder-Richardson 21 formula (KR21). Kuder-Richardson 21 formula was used in this study because it only requires the number of items for questionnaire, interview guide and classroom observation, the mean and the standard deviation. The formula for KR21 is as follows:

KR21 reliability coefficient \( = \frac{K}{K-1}[1-\frac{M}{K} (K-M) / K (SD^2)] \)

Where \( K \) = number of items on the test

\( M \) = mean of the set of scores

\( SD \) = standard deviation of the set of the test scores.

KR21 reliability coefficients for this study was obtained by administering the questionnaire to class three teachers and interview guide to headteachers and the researcher using the classroom observation once, then use total items for each instrument
to compute the mean and standard deviation to get the reliability coefficient using KR21 formulae. The reliability coefficient was obtained as follows: the questionnaire reliability coefficient was 0.88, the interview guide had a reliability coefficient of 0.91 and classroom observation reliability was 0.97. All the instruments with 0.85 reliability coefficients were used during the study.

3.8. Data Collection Techniques

This section focuses on the process of actual data collection.

3.8.1 Actual Data Collection

The researcher made prior arrangements with the headteachers and the class three teachers on the appropriate day time to administer the interview guide, questionnaire as well as to conduct classroom observation. Lastly, the researcher administered all the research instruments during school official working hours. The exercise of data collection took one month.

Questionnaires: Teachers questionnaire was administered to the teachers after the headteachers’ interview had been conducted. The teachers were left with the questionnaires for a period of two weeks to fill before the researcher collected them back.

Interview schedule: On arrival at the school, the researcher visited the headteachers’ office for the interview. Once the headteacher was ready, one-on-one interview with the headteacher was conducted by the researcher. The researcher asked questions and at the
same time probed accordingly. After the interview, the researcher requested for permission to proceed to the classrooms to conduct classroom observations.

**Classroom observation:** The classroom observation was utilized during English and Mathematics lessons by the researcher to observe how teachers and pupils carried out the teaching and learning process to enable pupils acquire and develop literacy and numeracy skills. A total of 68 lessons were observed, 34 in English and 34 in mathematics, one lesson in either English or mathematics in each school. The researcher observed how instructional materials were utilized, which activities pupils were engaged in during English and mathematics lessons, teaching methods utilized and teaching aids available and how teachers utilized them.

### 3.8.3 Data Analysis

The data collected from the teachers’ questionnaire, headteachers’ interview guide and classroom observations yielded qualitative and quantitative data. Qualitative data were analyzed thematically as per the objectives of the study.

The quantitative data was analyzed using SPSS. The descriptive statistics including frequencies and percentage were used to present quantitative data.
3.9 Logistical and Ethical Considerations

A research permit from the National Commission for Science, Technology and Innovation (NACOSTI) formerly National Council for Science and Technology (NCST) (Appendix IV was obtained before commencing the fieldwork). Thereafter, the researcher visited District Education offices in the study locations to seek permission to visit the sampled primary schools to administer the research instruments. Regarding permission to analyze pupils’ previous exercises from their exercise books and to take their photographs during the teaching and learning process; and to use the pictures in the report, consent was obtained from the headteachers and teachers of the sampled schools. This is because the researcher could not reach out to the pupils’ parents. Also the researcher obtained consent from the teachers to take various photographs during the teaching and learning process. The respondents were assured that information got would be kept confidential and used only for the purpose of the research.
CHAPTER FOUR
FINDINGS AND DISCUSSION

4.1 Introduction

The purpose of this study was to investigate teachers’ views about in-service training as a strategy for improving teaching and learning of literacy and numeracy, and ways instructional materials are utilized to improve literacy and numeracy skills among public lower primary pupils.

First, the biographical data of the respondents is presented and then the results of the study are presented organized under the following thematic areas which are in tandem with the study objectives.

i. Teachers’ views about in-service training as a strategy in improving pupils’ literacy and numeracy skills;

ii. Ways teachers utilize instructional materials to improve pupils’ literacy and numeracy skills;

iii. Challenges teachers face in improving lower primary pupils’ literacy and numeracy skills;

iv. Headteachers’ and teachers’ view regarding the way forward to improve lower primary pupils’ literacy and numeracy skills.
4.2. General and Demographic Information Teachers’ and Headteachers’
Professional Qualifications and Teaching Experience

The researcher sought information with regard to teachers’ and headteachers’ professional qualifications and teaching experience. Data were collected using teachers’ questionnaire and headteachers’ interview guide.

4.2.1 Teachers’ and Headteachers’ Professional Qualifications

The responses from the teachers and headteachers on their professional qualification are presented in Table 4.1.

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Teachers</th>
<th></th>
<th>Qualifications</th>
<th>Headteachers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Untrained</td>
<td>5</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1 Certificate</td>
<td>14</td>
<td>21</td>
<td>P1 Certificate</td>
<td>27</td>
<td>40</td>
</tr>
<tr>
<td>Diploma holders</td>
<td>21</td>
<td>31</td>
<td>Diploma holders</td>
<td>20</td>
<td>29</td>
</tr>
<tr>
<td>Approved graduates</td>
<td>21</td>
<td>31</td>
<td>Approved graduates</td>
<td>18</td>
<td>27</td>
</tr>
<tr>
<td>Bachelor of Education</td>
<td>7</td>
<td>10</td>
<td>Bachelor of Education</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>100</td>
<td></td>
<td>68</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 4.1 shows that out of 68, 27 (40%) of the headteachers were P1 Certificate holders. Approved Graduate Teachers and Diploma holders constituted 21 (31%) of the teachers, while 14 (21%) of the teachers were P1 Certificate holders. It is also revealed that seven (10%) of the teachers and three (4%) of the headteachers since all of them had PI and above had Bachelor of Education, which is beyond the requisite qualification to teach in primary level in Kenya. Therefore, 56 out of 68 (83%) of the teachers and 65 out of 68 (96%) of the headteachers had requisite professional qualifications to teach in Kenyan public primary schools.

On the contrary, existence of five (7%) untrained teachers was revealed implementing literacy and numeracy teaching and learning process in public lower primary is worrying. Since only 7% did not have PI and above. This is because untrained teachers lack the learning skills required during teaching and learning process.

### 4.2.2 Teaching Experience

Besides establishing teachers’ and headteachers’ professional qualifications, the researcher also sought information on teachers’ and headteachers’ teaching experience. The headteachers were required to indicate the number of years they had been in service, not necessarily teaching English and mathematics. The class three teachers were requested to indicate the number of years that they had been in service teaching English and mathematics. The teachers’ and headteachers’ responses on teaching experience are presented in Table 4.2.
Table 4.2: Population of Teachers’ and Headteachers’ by Teaching Experiences

<table>
<thead>
<tr>
<th>Teaching experience Years</th>
<th>Teachers n</th>
<th>%</th>
<th>Head teachers n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>35</td>
<td>51</td>
<td>29</td>
<td>43</td>
</tr>
<tr>
<td>11-20</td>
<td>19</td>
<td>29</td>
<td>18</td>
<td>27</td>
</tr>
<tr>
<td>21-30</td>
<td>12</td>
<td>17</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>Above 31</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>100</td>
<td>68</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.2 shows that 35 (51%) of the teachers and 29 (43 %) of headteachers had teaching experience of between one and ten years. On the other hand, only two out of 68 (3%) teachers and five out of 68 (7%) headteachers had long teaching experience of above 31 years. With the exception of untrained teachers, all teachers and headteachers had adequate teaching experience. Also revealed is the fact that more teachers than headteachers had teaching experience of one and ten years.

4.3. Teachers’ Views about In-Service Training as a Strategy in Improving Pupils’ Literacy and Numeracy Skills

The first objective sought teachers’ views about in-service training as a strategy in improving pupils’ literacy and numeracy skills. However, the researcher first counted data on the respondents’ experience of in-service training.
4.3.1. The Year Teachers Attended In-Service Training

The researcher sought information on the year teachers attended in-service training using teachers’ questionnaire and headteachers’ interview guide. The results of the year teachers attended in-service training are presented in Table 4.3.

<table>
<thead>
<tr>
<th>Year</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>24</td>
<td>35</td>
</tr>
<tr>
<td>2008</td>
<td>19</td>
<td>28</td>
</tr>
<tr>
<td>2009</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>2010</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Not yet</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>68</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 4.3 shows that about 55 (81%) of the teachers attended in-service training between the year 2007 and 2009. The finding on the teachers who attended in-service training between the years 2007 and 2009 can be attributed to the MOE’s efforts to improve pupils’ low literacy and numeracy skills in Gatanga, Kitui, Migori and Transmara districts following the SACMEQ II recommendation. However, 11 (16%) of the teachers had not attended the in-service training.

The finding on the year teachers attended in-service training from the teachers’ questionnaire was similar to information obtained from headteachers interviewed. The headteachers pointed out that it was compulsory for the qualified teachers to attend the in-service training organized by the MOE to improve pupils’ literacy and numeracy
skills. The headteachers reiterated that each school was required to nominate language and mathematics teachers to attend the MOE in-service training in 2007, 2008 and 2009 in Gatanga, Kitui, Migori and Transmara districts.

4.3.2 Teachers’ Attendance of In-Service Training by District

In order to obtain in-depth teachers’ views about in-service training as a strategy in improving pupils’ literacy and numeracy skills, the researcher sought information on the teachers’ attendance of in-service training by sampled district- Kitui, Gatanga, Transmara and Migori in 2007, 2008 and 2009 respectively. The MOE’s in-service training was meant to enhance teachers’ teaching practices to improve pupils’ literacy and numeracy skills. The data were collected using teachers’ questionnaire. The results of the teachers’ attendance of in-service training by district are presented in Table 4.4.

<table>
<thead>
<tr>
<th>District</th>
<th>Attended</th>
<th>Not Attended</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INSET</td>
<td>INSET</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Gatanga</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Kitui</td>
<td>30</td>
<td>90</td>
</tr>
<tr>
<td>Migori</td>
<td>12</td>
<td>75</td>
</tr>
<tr>
<td>Transmara</td>
<td>20</td>
<td>74</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>84</td>
</tr>
</tbody>
</table>
Overall, Table 4.4 shows that 57 out of 68 (83%) of the sampled teachers attended the in-service training that the MOE had organized to enhance teachers’ teaching and learning practices to improve pupils’ literacy and numeracy skills. However, 11 out of 68 (16%) of the teachers sampled did not attend the in-service training.

The teachers’ attendance of in-service training by district varied. All the six (100%) of the teachers in Gatanga District attended the in-service training, while only 26 (90%), 9 (75%) and 14 (74%) of the teachers in Kitui, Migori and Transmara districts respectively attended the in-service training organized by the MOE to improve pupils’ low literacy and numeracy skills in the four districts. Teachers’ attendance of in-service training was best in Gatanga district and worst in Transmara district.

Similarly, three (10%), three (25%) and five (26%) teachers from Kitui, Migori and Transmara District respectively indicated that they had not attended the in-service training organized by the MOE to improve pupils’ literacy and numeracy skills.

The finding of the teachers’ attendance of the in-service training also agreed with the headteachers’ interviewed by the researcher. Headteachers interviewed pointed out that teachers in their respective schools had attended in-service training organized by the MOE with the aim of improving pupils’ low literacy and numeracy skills. On further probing, the headteachers indicated that attendance of in-service training was mandatory for all qualified teachers. Headteachers pointed out that English and mathematics teachers
were nominated from each school to attend the in-service training for them to be updated on classroom practices so as to enhance teaching and learning, thereby improving pupils’ literacy and numeracy skills.

The finding on teachers’ attendance of the in-service training also supports the literature reviewed. KNEC’s (2011) study revealed that teachers who attended in-service training indicated that the training was useful in teaching Mathematics and English for class three. Further, teachers’ opinions on the importance of in-service training attended in KCPE performance in public primary schools confirmed that in-service training is relevant to enhancing learner-centred teaching methods and understanding the syllabus (Wachira, 2011). Teachers who participated in professional development pointed out that it impacted on their mathematics knowledge, instructional practices and pupils’ achievement (Koellner and Jacobs, 2015).

On the other hand, the finding of teachers’ non attendance of in-service training in the study concurs with Bottia, Moller, Roslyn, Son and Stearn (2014) that found teachers who had not attended any in-service training engaged in teaching and learning process. Also, UNESCO (2011) found that a third of pupils were taught by teachers who had not participated in in-service training in either English or Mathematics. In this study, the 11 teachers, though cannot compare to a third of pupils taught by teachers who had not participated in in-service training in the study by UNESCO, may not influence positively pupils’ literacy and numeracy skills during teaching and learning process.
4.3.3. Ways In-Service Training was Conducted in the Scheduled Districts

The researcher sought information on ways teachers’ in-service was conducted in the selected districts. The in-service training for the teachers was conducted by the MOE in the districts of Kitui, Gatanga, Transmara and Migori that had pupils with low literacy and numeracy skills in 2007, 2008, 2008 and 2009 respectively.

The data were collected using teachers’ questionnaire and headteachers’ interview guide. The results on ways in-service training was conducted in the districts are presented in Table 4.5.

Table 4.5: Ways In-Service Training was Conducted in the Districts

<table>
<thead>
<tr>
<th>District</th>
<th>MOE Workshop</th>
<th></th>
<th>SMASSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Gatanga</td>
<td>6</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Kitui</td>
<td>30</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>Migori</td>
<td>12</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Transmara</td>
<td>20</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>55</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 4.5 indicates that 55 out of 68 (80%) and 2 out of 68 (3%) of the teachers were able to receive in-service training through workshops and through SMASSE programme.
Specifically, only 55 out of 68 (80%) of the teachers were able to receive in-service training through workshops organized by the MOE, whereas two (3%) of the teachers received in-service training through SMASSE programme. The SMASSE in-service training programme focused on training teachers in meaningful teaching activities to enhance pupils’ learning of Mathematics and science through practical activities and improvisation of teaching-learning resources.

It emerged from all the 68 headteachers interviewed by the researcher that workshops were the main way through which teachers’ in-service training was conducted in the four districts. No headteacher pointed out about the in-service training through SMASSE.

4.3.4. Literacy and Numeracy Content Areas Focused on During In-Service Training

The researcher further sought information on literacy and numeracy content areas focused on during the teachers’ in-service training. This is because the MOE’s in-service training organized for the teachers had targeted languages and mathematics teachers. The data was collected using teachers’ questionnaire. The results of the literacy and numeracy content areas focused on during the in-service training are presented in Table 4.6.
Table 4.6: Literacy and Numeracy Content Areas Focused on During In-Service Training

<table>
<thead>
<tr>
<th>Literacy and numeracy content</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number-work, symbols and patterns</td>
<td>33</td>
<td>58</td>
</tr>
<tr>
<td>Reading and writing given sentences</td>
<td>24</td>
<td>42</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>57</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 4.6 shows that 33 (58%) of the teachers pointed out that number-work, symbols and patterns were focused on during teachers’ in-service training. This is an indication that more numeracy content areas were focused on during the teachers’ in-service training. On the other hand, 24 (42%) of teachers pointed out that reading and writing given sentences was focused during the in-service training. The different time allocated to the literacy and numeracy content areas during the teachers’ in-service training, yet both English and mathematics are basic subjects, may impact negatively on the teaching and learning process.

4.3.5. Teachers’ Views about In-Service Training as a Strategy in Improving Pupils’ Literacy and Numeracy Skills

In order to address this sub area, the researcher used the teachers’ questionnaire and headteachers’ interview guide to collect data. Teachers’ views about in-service training as a strategy in improving pupils’ literacy and numeracy skills are presented in Table 4.7
Table 4.7: Teachers’ Views about In-Service Training as a Strategy in Improving Pupils’ Literacy and Numeracy Skills

<table>
<thead>
<tr>
<th>Teachers’ views</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-service training helps teachers to improve in mastery of literacy and numeracy content.</td>
<td>22</td>
<td>40</td>
</tr>
<tr>
<td>In-service training helps teachers to improve in lesson preparation.</td>
<td>14</td>
<td>25</td>
</tr>
<tr>
<td>In-service training helps teachers to improve in teaching methods.</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>In-service training helps teachers to improve in lesson presentation.</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>In-service training helps teachers to improve in assessment skills.</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>In-service training helps teachers to improve in improvising teaching materials.</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>In-service training helps teachers to improve in handling pupils’ diversity.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.7 shows teachers’ views on the areas that they found useful in the in-service training organized by the MOE. In particular, 22 (40%) out of 55 of the teachers pointed out that in-service training improved their mastery of literacy and numeracy content. The teachers’ views that in-service training helps in mastery of literacy and numeracy content was held by headteachers interviewed. The 68 headteachers pointed out that the teachers
who had attended the MOE in-service training had valued the literacy and numeracy content.

About 14 out of 55 (25%) of the teachers pointed out that in-service training improved their literacy and numeracy lesson preparation. A total of 10 (15%) out of 68 headteachers interviewed also expressed the same opinion with regard to teachers’ improvement in lesson preparation. The headteachers pointed out that they had received comprehensive schemes of work that entailed SMART objectives, variety of activities and resources, references and remarks for approval from 10 out of 68 teachers after the in-service training. Similarly, headteachers pointed out that comprehensive comments on records of work had been indicated by the same teachers. Twelve out of 68 (17%) headteachers also said that they had received requests from the teachers to purchase a variety of teachers’ guides, written by specific authors to enhance their lesson preparation.

Further, the finding on teachers’ improvement in literacy and numeracy lesson preparation was the same with what emerged from classroom observation. In order to establish how teachers had impacted on pupils’ literacy and numeracy skills, after attending the MOE in-service training, the researcher utilized classroom observation. The researcher randomly scrutinized pupils’ previous literacy and numeracy exercises. The aim of scrutinizing the pupils’ previous literacy and numeracy exercises was to determine their improvement in acquiring and developing desired skills by establish
spacing, legibility, organization, neatness, spelling and nature of the teacher’s comments given about exercises done by the pupils.

The researcher found that pupils had done English exercises on adjectives, conjunctions and plurals. This was a clear indication that the pupils had acquired literacy skills. Mathematics exercises on multiplication had been done correctly. Further, this was an indication that teachers guided the pupils in working out numeracy exercises. The pupils’ work is shown in (Figures 4.1, 4.2, 4.3, 4.4 and 4.5).

Figure 4.1: Sample of Pupils’ Good Work in English

Figure 4.2: Sample of Pupils’ Good Work in English
Pupils had also managed to produce good work in composition writing.

Figure 4.3: Sample of Pupils’ Good Work in English Composition

Figure 4.4: Sample of Pupils’ Good Work in Mathematics

Figure 4.5: Sample of Pupils’ Good Work in Mathematics
However, other pupils’ exercises revealed very low learning achievement. For instance, some pupils’ English previous exercises was not easy to comprehend what the sub content was all about and the sentences were written in a zigzag manner. The teacher had requested the pupils to do corrections. However, subsequent exercises showed that no corrections had been done and further exercises done had been continued to be performed poorly (Figures 4.6, 4.7 and 4.8).

Figure 4.6: Sample of Pupil’s Poor in English

Figure 4.7: Sample of Pupil’s Poor in English
Other pupils’ mathematics exercises on addition were disorganized and done poorly’ and subsequent exercises were on a different content and no corrections had been done to enable pupils to acquire necessary skills (Figure 4.9).
In addition to reporting that in-service training was helpful in lesson preparation, eight teachers, 8 (15\%) reported that in-service training improved their teaching methods. The researcher obtained a similar finding on the teachers’ improvement in teaching methods from the headteachers interviewed. The headteachers interviewed were in agreement with the teachers with regard to improvement in teaching methods. However, on probing...
further, on ways teachers had improved in their teaching methods, only five (7%) of the headteachers pointed out that teachers put efforts to varying between teacher-centred and learner-centred teaching methods. Sixty three (93%) of the headteachers said that despite teachers’ attendance of the in-service training, they dominated classroom teaching due to large class sizes.

Further, the researcher found a similar finding of teacher improvement in teaching methods using the classroom observation. Out of the 68 lessons observed in English and mathematics, 65 lessons were dominated by teacher-centred teaching methods. However, in three out of 68 lessons, the researcher observed teachers varying teaching methods as follows: First, in a Mathematics lesson, the teacher used teacher-centred teaching method to demonstrate various examples of mathematics addition on the chalkboard. After a short while, the teacher utilized learner-centered teaching method by pointing on individual pupils to work out exercises on the blackboard. The pupils’ active involvement in working out exercises on the blackboard is an indication of learner-centred teaching method. Indeed the pupils were seen using their fingers as counters in trying to get the right answers (Figure, 4.10).
Figure 4.10: Pupils Working Out Mathematics Exercise on the Blackboard
Teachers were also observed alternating between teacher-centred and peer teaching methods. In several cases, the teacher demonstrated how to solve mathematical problems using teacher-centered teaching method and later on the teacher gave room for peer teaching (Photograph 4.11). The teacher then gave pupils exercises to do.

![Figure 4.11: Peer Teaching During Mathematics Lesson](image)

Finally, in an English lesson, teacher-centred teaching methods and learner-centred teaching methods were used despite these being more than 40 pupils in the classroom (Photograph 4.12). The existence of more than 40 pupils indicates clearly the conditions under which teaching learning process in public lower primary schools is carried out.
Only 2 (4%) teachers reported that in-service training had helped them acquire skills in improvising teaching materials. The researcher also found a similar finding with the headteachers interviewed. The headteachers pointed out that they had observed two teachers improvise a variety of teaching materials from the local environment to enhance their teaching and learning process. The headteachers also added that the two teachers had placed the improvised teaching materials in their classroom for pupils to refer to.
This finding on teachers improvising teaching resources agrees with what the researcher obtained during the classroom observation. The researcher also observed teachers using teaching resources in their lessons. In one English lesson, a pupil was asked to point out the opposite of the word ‘wet’ in one of the diagrams the teacher had displayed. The pupil was able to point out on the word ‘dry’ and even to read it correctly. Several other pupils were able to demonstrate the same. The literacy content were clear, appropriate and within class three syllabuses.

In another instance, during a mathematics lesson, a teacher demonstrated the lesson using varying resources. First, a wall clock was displayed and the teacher wrote the time on the blackboard. It was followed by variety of diagrams and pictures that were displayed for the pupils to read the time. Later, the pupils were allowed to read pictures on time in the mathematics textbook before being given exercises to do. The fact that this improvement was being done by two teachers is worrying in regard to pupils’ improvement in literacy and numeracy skills.

Further, only one (2%) teacher pointed out that in-service training helped to improve in handling pupils’ diversity. Similar finding on pupils’ diversity was obtained from the classroom observation. The researcher found pupils responding teacher’s questions in English, Kiswahili and mother tongue during teaching and learning process. Equally, teachers in the 68 schools used both Kiswahili and English during the teaching and learning process, particularly when emphasizing some points or giving examples.
The finding on teachers’ improvement in literacy and numeracy content from the teachers, headteachers and the classroom observation is also consistent with what Duflo et al. (2009) and UNESCO (2008) who found that in-service training improved pupils’ learning in literacy. However, according to Mohsin (2006) teachers do not fully apply what they have learned in their in-service training to make mathematics classes understandable. The same scenario could be faced in this study due to poor pupils’ literacy and numeracy revealed by this study.

The finding on teachers improving in lesson preparation is consistent with Good and Grouws (1987) that found that teachers in service training enabled teachers to place more emphasis on the development of their lessons for teaching and learning. Further, the finding on teachers’ improvement in teaching methods agrees with UNESCO (2011) that found in-service training helped teachers to improve in their teaching methods. This is also in line with reports from Ghana, where teachers who attended in-service training were reported to have improved in their teaching (UNESCO, 2012; World Bank-Unicef, 2009).

On the other hand, although only in three instances, teachers were able to vary teacher-centred and learner-centred teaching methods, agrees with Wachira’s (2011) study that found in-service training to be relevant mainly in enhancing use of teacher-centred and learner-centred teaching methods. The proportion of teachers using both teacher-centred and learner-centred teaching methods was small. This contradicts with Bunyi (2006)
who pointed out that use of teacher-centred teaching methods as opposed to learner-centred methods is adopted by teachers who had attended in-service training to enhance teaching and learning.

In addition, the teachers, headteachers and the classroom observation finding that in-service training improved teachers’ teaching methods concurs with strategies implemented on teacher quality to improve pupils’ literacy and numeracy skills (Republic of Kenya, 2010; UNESCO, 2005; Postlethwaite, 2004; Verspoor, 2005; Greaney and Kellaghan, 2008 and Wolff, 1984). The TIMSS strategy in Iceland, Norway and United States that focused on teacher in-service training and implemented in Zambia and Guinea can improve teachers teaching methods as revealed in this study (Greaney and Kellaghan, 2008).

The finding on teachers’ improvement in improvising teaching materials after in-service training contradicts the finding by Bunyi, et al. (2013) which found newly qualified teachers to have shallow understanding of teaching learning materials. However, in this study, teachers’ ability to improvise teaching methods can be attributed to their long teaching experience as opposed to the newly qualified teachers as was established during the study by Bunyi, et al.

However, the study’s finding from the classroom observation that revealed pupils’ poor literacy and numeracy is indeed consistent with the literature reviewed from UWEZO and
KNEC reports that found pupils to have poor literacy and numeracy performance (UWEZO, 2010; 2011; KNEC, 2010). Therefore, the revelation of pupils’ poor previous literacy and numeracy exercises is an indication that implementation of SACMEQ II strategies in enhancing pupils’ acquisition and development of basic skills still remain an illusion.

4.4 Ways Teachers Utilized Instructional Materials to Improve Pupils’ Literacy and Numeracy Skills

During SACMEQ II study in 2001, it was revealed that pupils’ literacy and numeracy skills at primary level were low. The SACMEQ II study also found that there was deficiency in provision of instructional materials in schools and recommended to the Ministry of Education to ensure that instructional materials are availed to schools. Among the SACMEQ II recommended strategies in the districts that had produced very low reading scores included provision of adequate instructional materials. The government of Kenya, through MOE when FPE education was introduced, focused on enhancing quality education through provision of textbooks to enable teachers deliver the curriculum using appropriate textbooks. Under the FPE programme, primary schools receive grants from the government for the purchase of instructional materials.

The second objective of this study sought to investigate ways teachers utilized instructional materials to improve pupils’ literacy and numeracy skills in selected public
primary schools. Therefore, in order to address this objective in depth, the researcher focused first on instructional materials purchased by schools, year instructional materials were purchased, pupil textbook average and adequacy of instructional materials in schools.

4.4.1. Instructional Materials Purchased by Schools

The researcher sought information on instructional materials purchased by schools. The instructional materials in this study are English and Mathematics textbooks. The study did not focus on supplementary materials used in primary schools. The data was collected using the teachers’ questionnaire; headteachers’ interview guide and through classroom observation. The instructional materials purchased by public primary schools are presented in Table 4.8

Table 4.8: Instructional Materials Purchased by Schools

<table>
<thead>
<tr>
<th>Responses on Purchase of Instructional Materials</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional materials purchased</td>
<td>62</td>
<td>91</td>
</tr>
<tr>
<td>Instructional materials not purchased</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>68</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

From Table 4.8, 62 out of 68 (91%) of teachers pointed out that instructional materials for English and mathematics had been purchased by their schools. The finding on
Instructional materials purchased by schools also agrees with the headteachers interviewed. All the 68 (100%) of headteachers pointed out that instructional materials had been purchased by their schools.

Similar findings on instructional materials purchased by schools were also obtained through the classroom observation utilized by the researcher. In order do to this, the researcher randomly scrutinized the English and mathematics textbooks that were available in the classroom for teaching and learning process. The researcher found that English and mathematics textbooks approved by the Kenya Institute of Curriculum Development (KICD) for class three were available and that both teachers and pupils utilized them.

4.4.2. Year Instructional Materials Were Purchased by Schools

The researcher also sought information on the year instructional materials were purchased by schools. Establishing the year instructional materials were purchased was important to determine the trend in which schools have been making their purchases over the years. The data was collected using the teachers’ questionnaire and headteachers’ interview guide. The years instructional materials were purchased are presented in Table 4.9.
Table 4.9: Year Instructional Materials were Purchased

<table>
<thead>
<tr>
<th>Year</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2002</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2003</td>
<td>30</td>
<td>44</td>
</tr>
<tr>
<td>2004</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td>2006</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>2007</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>2008</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2010</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>68</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 4.9 shows that purchase of instructional materials in the school was there even before implementation of FPE in 2003. About 30 (44%) of teachers reported that their schools purchased instructional materials in the year 2003 when FPE commenced. It can also be observed from Table 4.9 that the process of purchasing instructional materials is continuous and is not a one-off programme.

In Transmara district, instructional materials were purchased in one school in 1998; an indication that access to instructional materials have been important in improving pupils’ literacy and numeracy skills during teaching and learning process. Although instructional materials have been purchased continuously, it seems more purchases were done when FPE education was introduced in 2003; and later in 2004. Reduction in purchase of instructional materials, particularly in the year 2007 onwards can affect pupils’ achievement in literacy and numeracy skills.
Similar finding on the year instructional materials were purchased was consistent with the headteachers interviewed. Headteachers agreed that the purchase of instructional materials has been continuous, though occasionally they experience delays in the process.

4.4.3. Class Three Pupils Textbook Average by District

The researcher further sought information of class three pupils textbook average per school per district. The data was collected using the teachers’ questionnaire and headteachers’ interview guide. The researcher also utilized classroom observation to obtain accurate data that could not be revealed from the teachers’ questionnaire and headteachers’ interview schedule. Class three English and Mathematics average results are presented on Tables 4.10 to 4.14

Table 4.10: Class Three Pupils’ Textbook Average in Gatanga District

<table>
<thead>
<tr>
<th>Primary school</th>
<th>English textbook</th>
<th>Mathematics textbook</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1:2</td>
<td>1:2</td>
</tr>
<tr>
<td>B</td>
<td>1:2</td>
<td>1:2</td>
</tr>
<tr>
<td>C</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>D</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>E</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>F</td>
<td>1:3</td>
<td>1:3</td>
</tr>
</tbody>
</table>

Table 4.10 shows varying class three pupils’ textbooks average. The pupils’ textbook average of 1:3 and 1:2 in Gatanga district indicate adequacy of literacy and numeracy
textbooks based on the standard pupil textbook average for lower primary schools in Kenya (Republic of Kenya, 2002).

The finding on class three pupils textbook average in Gatanga district of 1:2 and 1:3 indicates that Gatanga’s pupil textbook average is as per the FPE stipulation. All the headteachers in Gatanga district pointed out that they had put efforts to match pupils’ average and instructional materials in their schools. A similar finding on class three pupils’ textbook average was also obtained by the researcher through the classroom observation that revealed all the school in Gatanga district had pupil textbook average of mainly 1:3 and 1:2 in English and mathematics respectively.

The finding on class three pupils textbook average in Gatanga district of 1:2 and 1:3 supports the literature reviewed that indicates that pupil textbook average of 1:3 is the standard ratio accepted for lower public primary schools in Kenya (Republic of Kenya, 2002). The pupils’ textbooks average of 1:3 and 1:2 reflects that pupils’ had easy access to textbooks in Gatanga; hence this was likely to enhance improvement in literacy and numeracy skills.
Table 4.11: Class Three Pupils’ Textbook Average in Kitui District

<table>
<thead>
<tr>
<th>Primary school</th>
<th>English textbook average</th>
<th>Mathematics textbook average</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>B1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>C1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>D1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>E1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>F1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>G1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>H1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>I1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>J1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>K1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>L1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>M1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>N1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>O1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>P1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>Q1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>R1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>S1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>T1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>U1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>V1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>W1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>Z1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>Y1</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>Z1</td>
<td>1:4</td>
<td>1:4</td>
</tr>
<tr>
<td>A2</td>
<td>1:4</td>
<td>1:4</td>
</tr>
<tr>
<td>B2</td>
<td>1:5</td>
<td>1:5</td>
</tr>
<tr>
<td>C2</td>
<td>1:8</td>
<td>1:5</td>
</tr>
<tr>
<td>D2</td>
<td>1:9</td>
<td>1:6</td>
</tr>
</tbody>
</table>

Table 4.11 shows varying class three pupils’ textbooks average. The pupils’ textbooks average of 1:3 in Kitui districts indicates adequacy of literacy and numeracy textbooks. However, the pupils’ textbook average of 1:4, 1:5, 1:8 and 1:9 is an indication of
inadequate instructional materials in some of the schools, which could impair the teaching and learning process.

The finding on varying pupils textbook average in Kitui was similar with the opinion given by the headteachers interviewed. The headteachers were aware that their schools had pupil textbook average above 1:3, though they did not specify the exact pupil textbook average.

The same finding on varying pupils’ textbook average in Kitui was revealed through the classroom observation by the researcher. Out of 30 schools in Kitui, 22 schools had 1:3 pupil textbook average, while 8 schools had pupil textbook ratio of 1:4, 1:8 and 1:9. The inadequacy of instructional materials, though in a few schools could deny teachers an opportunity to utilize the instructional materials during the teaching and learning process to improve pupils’ literacy and numeracy skills.

Table 4.12: Class Three Pupils’ Textbook Average in Migori District

<table>
<thead>
<tr>
<th>Primary school</th>
<th>English textbook average</th>
<th>Mathematics textbook average</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1:3</td>
<td>1:2</td>
</tr>
<tr>
<td>B</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>C</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>D</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>E</td>
<td>1:3</td>
<td>1:3</td>
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<td>F</td>
<td>1:3</td>
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<tr>
<td>G</td>
<td>1:3</td>
<td>1:3</td>
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<tr>
<td>H</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>I</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>J</td>
<td>1:3</td>
<td>1:4</td>
</tr>
<tr>
<td>K</td>
<td>1:4</td>
<td>1:4</td>
</tr>
<tr>
<td>L</td>
<td>1:6</td>
<td>1:7</td>
</tr>
</tbody>
</table>
Table 4.12 shows varying class three pupils’ textbooks average. The pupils textbooks average of 1:3 in Migori district indicate adequacy of literacy and numeracy textbooks. The pupils textbooks average of above 1:3 in Migori, though in two schools indicates inadequacy of the textbooks available for the teaching and learning process in those schools.

The finding on varying class three pupils textbooks average in Migori district also agreed with headteachers interviewed, who pointed out that their schools had a pupil textbook average of above 1:3. The classroom observation also supports the finding on varying class three pupils’ textbooks average. The classroom observation revealed class three pupils textbook average of 1:6 and 1:7 in Migori district.
Table 4.13: Class Three Pupils’ Textbook Average in Transmara District

<table>
<thead>
<tr>
<th>Primary school</th>
<th>English textbook average</th>
<th>Mathematics textbook average</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>B</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>C</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>D</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>E</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>F</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>G</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>H</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>I</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>J</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>K</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>L</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>M</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>N</td>
<td>1:3</td>
<td>1:3</td>
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<tr>
<td>O</td>
<td>1:3</td>
<td>1:4</td>
</tr>
<tr>
<td>P</td>
<td>1:4</td>
<td>1:4</td>
</tr>
<tr>
<td>Q</td>
<td>1:4</td>
<td>1:5</td>
</tr>
<tr>
<td>R</td>
<td>1:6</td>
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<tr>
<td>S</td>
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<td>1:9</td>
</tr>
<tr>
<td>T</td>
<td>1:20</td>
<td>1:10</td>
</tr>
</tbody>
</table>

Table 4.13 shows varying class three pupils’ textbooks average. The pupils’ textbooks average of 1:3 in Transmara district indicates adequacy of literacy and numeracy textbooks. The pupils textbook average of above 1:3 in Transmara, though in five schools indicates inadequacy of the textbooks. Indeed, Transmara district is the worst hit by inadequacy of instructional materials than in Kitui and Migori district.

The finding on varying class three pupils’ textbooks average in Transmara district was consistent with the headteachers interviewed. The headteachers agreed that there was mismatch between pupils and textbooks in their schools. They pointed out that they were
aware of pupil text book average of above 1:3 and were putting more efforts to have the standard ratio of 1:3. The same finding on varying class three pupils’ textbooks average in Transmara was revealed through the classroom observation. The classroom observation revealed pupil textbook average of 1:3, 1:4 and 1:10 in the schools respectively.

Table 4.14: Class Three Pupils’ Textbook Average in the Four Districts

<table>
<thead>
<tr>
<th>District</th>
<th>English textbook average</th>
<th>Mathematics textbook average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gatanga</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>Kitui</td>
<td>1:3</td>
<td>1:3</td>
</tr>
<tr>
<td>Migori</td>
<td>1:4</td>
<td>1:4</td>
</tr>
<tr>
<td>Transmara</td>
<td>1:4</td>
<td>1:4</td>
</tr>
</tbody>
</table>

In Table 4.14, pupils literacy and numeracy textbooks ratio varies between 1:2 and 1:3. However, the pupils’ textbook ratio revealed hides disparities among schools and districts. Similar finding on varying pupils and textbook average between 1:2 and 1:3 was obtained from the headteachers interviewed. Headteachers, except those from Gatanga district, pointed out that pupils’ textbook ratio was above 1:3. In support to the headteachers and teachers finding on varying pupils and textbook average the classroom observation revealed varying average from 1:3, 1:4, 1:5, 1:6, 1:8, 1:9, 1:10 and 1:20 in Kitui, Migori and Transmara district. In Kitui, Migori and Transmara districts with pupils’ textbooks average above 1:3 indicates that demand for English and mathematics textbooks are still wanting.
The finding on varying pupils and textbook average of above 1:3 was consistent with the literature reviewed that found instructional materials in developing countries to be limited and thus detrimental to learning (UNESCO, 2005; Lockheed and Verspoor, 1991; World Bank, 1988). In fact, World Bank (1990) found that instructional materials in developing countries fail to reach schools and this could be the case in schools that are faced with inadequate instructional materials. Worse still, in Kenya, the textbooks ratio of 1:4 to 1:20 is far from meeting pupils’ demand that requires lower pupils’ to have textbooks ratio of 1:3 to utilize the textbooks appropriately (Republic of Kenya, 2002; 2005).

According to Glewwe, et al. (1995), the few schools that have inadequate instructional materials may have fewer pupils’ acquiring literacy and numeracy skills due to mismatch of instructional materials and pupils. The mismatch of instructional materials will result to a few pupils acquiring desired skills to move to the next level, worsening the situation in SSA (Glewwe et al., 1995). Therefore, the pupils’ textbook average of above 1:3 indicates that pupils’ access to instructional materials is minimal (UNESCO, 2005; Glewwe, et al., 1995; Lockheed; Verspoor, 1991; World Bank, 1988).

4.4.4. Adequacy of Instructional Materials in Schools

Apart from seeking information on pupils textbook average, the researcher further went ahead to gather information about the adequacy of instructional materials in schools. The data was collected using the teachers’ questionnaire; headteachers’ interview guide and
classroom observation. The results of adequacy of instructional materials in schools are presented in Table 4.15.

Table 4.15: Adequacy of Instructional Materials in Schools

<table>
<thead>
<tr>
<th>Teachers Responses on Adequacy of Instructional Materials</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional materials are adequate</td>
<td>46</td>
<td>68</td>
</tr>
<tr>
<td>Instructional materials are not adequate</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.15 shows that more than half 46 (68%) of the teachers said that the instructional materials were adequate while less than half 22 (32%) of the teachers pointed out that literacy and numeracy instructional materials were not adequate.

The finding on adequacy of instructional materials in schools contradicted comments obtained from the headteachers interviewed. Less than half 31 (46%) of the headteachers pointed out that instructional materials were adequate, while more than half 36 (54%) of the headteachers pointed out that the instructional materials were inadequate. On probing further, the reason headteachers gave different responses with regard to adequacy of instructional materials, half of the headteachers pointed out that the inadequacy of the instructional materials was partly due to delays in replacement of torn instructional
materials and also delay of funds for making the purchase. Therefore, it emerged that some schools had adequate textbooks while other had severe shortage of textbooks.

The finding on adequacy of instructional materials in schools contradicted the finding obtained from the classroom observation. In order to obtain the data, the researcher randomly counted the number of copies utilized during English and mathematics lessons against the number of pupils’ in class. In one school only one English textbook was available for the entire class (Figure 4.13).
It was also established that 12 out of 68 schools (17%) had over forty pupils against ten or less English and mathematics textbooks. Further, the researcher found that torn instructional materials had been kept in a carton box waiting to be repaired, which contributed to inadequacy of instructional materials available for teaching and learning (Figure 4.14).
The finding on inadequacy of instructional materials revealed in the current study is consistent with the literature reviewed, that indicated the reading and mathematics textbooks for pupils in public primary schools in most African countries, Kenya included are not sufficient (UNESCO, 2012). Therefore, inadequacy of instructional materials can impede education quality through curriculum implementation, where teachers play a key role in improving pupils’ acquisition of skills in literacy and numeracy.

4.4.5 Ways Teachers Utilized Instructional Materials to Improve Pupils’ Literacy and Numeracy Skills

The researcher collected data on ways teachers utilized English and mathematics textbooks to improve pupils’ literacy and numeracy skills using the teachers’ questionnaire, headteachers’ interview guide and classroom observation. The result on
ways teachers utilized instructional materials to improve pupils’ literacy and numeracy skills are presented in Table 4.16.

Table 4.16: Teachers Views about the Ways Teachers Utilized Instructional Materials to Improve Pupils’ Literacy and Numeracy Skills

<table>
<thead>
<tr>
<th>Ways Teachers’ Utilized Instructional Materials</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used as reference material</td>
<td>27</td>
<td>47</td>
</tr>
<tr>
<td>Used for guiding pupils to copy literacy and numeracy exercises on their exercise books</td>
<td>15</td>
<td>26</td>
</tr>
<tr>
<td>Used for writing work on the blackboard for pupils to do or copy</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Given to pupils to read and do simple arithmetic on their own</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Used for observing examples</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Given to pupils to do homework</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Used as learning resources</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>57</td>
<td>100</td>
</tr>
</tbody>
</table>
As shown in Table 4.16, almost half 27 (47%) of the teachers’ pointed out that instructional materials were used as reference material. This finding also agreed with the headteachers interviewed. Headteachers pointed out that teachers utilized instructional materials as reference materials to prepare English and Mathematics content for teaching and learning process. The headteachers emphasized that teachers used instructional materials from the time of preparing schemes of work to when they were preparing for daily lessons to select content and examples that could be used to illustrate ideas for pupils’ easy understanding. The headteachers also pointed out that the instructional materials were key tools for the teachers during the teaching and learning process.

Some seven (12%) of the teachers utilized instructional materials to write work on the blackboard for pupils to do or copy. This finding was consistent with the classroom observation. In a mathematics lesson, a teacher demonstrated a few examples of addition with carrying on the blackboard and later copied exercises on the blackboard for pupils to copy in their exercise books. Later the teacher moved around the class to mark the work (Figure 4.15).
However, there were cases of pupils’ unmarked mathematics and English exercises. This is because improvement in pupil literacy and numeracy skills can be determined through acquisition of actual content implemented before the teacher proceeds. Further, the existence of pupils unmarked exercise could reflect what is happens in the teaching and learning process (Figure 4.16).
Two (4%) of the teachers used instructional materials for observing examples. The finding in which teachers used instructional materials to observe examples was consistent with classroom observation. In one instance, during an English lesson, a teacher engaged pupils in observing pictures, naming and doing individual exercises. Afterwards, the teacher gave some work to be done using the English textbook.

The finding in which teachers’ utilized instructional materials as reference material was consistent with the literature reviewed. In Kenya, the rationale for investing in
instructional materials is to provide textbooks for teachers as key tools for the attainment of quality education and more so to enable teachers to deliver the curriculum using appropriate reference books (Republic of Kenya, 2005).

Further, the finding in which teachers utilized instructional materials to enable pupils read and do simple arithmetic on their own is in tandem with Mungai’s (1992) finding that found teachers giving pupils exercises to do in their exercise books. Furthermore, Lockheed and Verspoor (1991) found availability of instructional materials as having positive effects on pupils’ learning. However, Verspoor (2005) argues that essential inputs are necessary but not a sufficient condition for learning. Therefore, ways teachers utilize instructional materials may require other inputs to be in place in order to enhance pupils’ improvement in literacy and numeracy skills.

4.5 Challenges Teachers Faced in Improving Lower Primary Pupils’ Literacy and Numeracy Skills in Sampled Schools

The third objective of this study sought to identify the challenges teachers face in improving lower primary pupils’ literacy and numeracy skills in the sampled schools. The data was collected using the teachers’ questionnaire, headteachers’ interview guide and classroom observation.
Literature review indicates that improvement in literacy and numeracy skills has been a challenge in many countries. Some of the broad challenges that cut across many countries include: pupils’ related factors; school-based and system factors; and home factors (UNESCO, 2009; Greaney and Kellaghan, 2008). Therefore, there was need to identify key challenges that still face teachers in improving pupils’ literacy and numeracy skills in the selected schools.

The challenges teachers face in improving lower primary pupils’ literacy and numeracy skills in the sampled schools are presented in Table 4.17.
Table 4.17: Challenges Identified by Teachers Faced in Improving Lower Primary Pupils’ Literacy and Numeracy Skills in Selected Public Primary Schools

<table>
<thead>
<tr>
<th>Challenge Teachers Faced</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>High pupils enrolment</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td>Inadequate instructional materials</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>Lack of funds</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Pupils absenteeism</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Over age pupils</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Long distance to school</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Non repetition</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Lack of feeding programme</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Diversity of students</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Lack of proper parental guidance</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Frequent assessments</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Lack of permanent classroom</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Mother tongue interference</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Frequent pupils transferring</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>57</td>
<td>100</td>
</tr>
</tbody>
</table>
From Table 4.17, about 16 (28%) of the teachers pointed out at high pupils’ enrolment as the main challenge. Similar finding of high pupils’ enrolment was obtained from the headteachers interviewed. All the 68 headteachers pointed out that high pupils’ enrolment witnessed since FPE has been a big challenge encountered in efforts to improve pupils’ learning. The finding of high pupils’ enrolment was also similar with the classroom observation. In order to obtain the data on high pupils’ enrolment, the researcher took headcount of pupils’ present during the teaching and learning process. In 51 out of 68 schools, there were over 40 pupils in the classroom. In one of the classes the total number of pupils’ present was 61, which is far above the stipulated 40 pupils per class in Kenya (Figure 4.17).
Figure 4.17: An Example of an Overcrowded Classroom

Thirteen (22%) of the teachers pointed out that inadequate instructional materials was another challenge. The finding on inadequate instructional materials as a challenge was consistent with what headteachers interviewed said, except in Gatanga district. The headteachers from Kitui, Migori and Transmara districts pointed out that English and mathematics textbooks purchased in their schools were still inadequate from the recommended standard of 1:3. Indeed, Transmara district was the worst hit by inadequate
instructional materials. Headteachers reiterated that high pupils’ enrolment had overstretched the available instructional materials available. Headteachers emphasized that instructional materials purchased had not matched with the number of pupils’ enrolled in the school.

About 10 out of 68 headteachers pointed out that the inadequacy of the instructional materials was due to the presence of torn instructional materials which has not been replaced or repaired. Also, delay of funds for making the purchase was attributed to inadequate instructional materials. The same finding on inadequate instructional materials was supported by the classroom observation. The researcher observed pupils’ sharing one literacy textbook during the teaching process in an English lesson (Figure 4.13).

Further, inadequacy of instructional materials was also observed during English lessons. The teachers wrote exercises on the blackboard for pupils to copy and do in their exercise books (Figure 4.18).
Five (8%) of the teachers also noted that pupils’ absenteeism was a challenge. The finding on pupils’ absenteeism was also the same with the headteachers interviewed. The challenge of pupils’ absenteeism was mainly reported by three headteachers in Migori district and two headteachers from Transmara district.

Only one (2%) teacher further pointed that pupil diversity and mother tongue interference was a challenge respectively. The findings on pupils’ diversity and mother tongue interference as challenges were similar with the one obtained from the headteachers interviewed. The headteachers echoed teachers’ responses and added that pupils’ from diverse backgrounds had hindered teachers’ efforts to improve pupils’ literacy and
numeracy skills. The finding from the classroom observation supported the teachers and headteachers’ finding on pupils’ diversity as a challenge. The researcher was able to have access to a few pupils’ previous literacy and numeracy continuous assessment test in one of the sampled schools. The researcher noted that pupils had given responses in mother tongue, sheng and Kiswahili. Other responses could not be comprehended at all. However, the worst response was that the class three pupils could not write which class he/she was (Figure 4.19).
The findings on high pupils’ enrolment as a challenge teacher’s face in improving pupils’ literacy and numeracy skills were also consistent with the literature reviewed. Wamukuru, Kamau and Ochola (2005) pointed out that teachers’ efforts were constrained when FPE was implemented due to high pupils’ enrolments. According to Bunyi (2006),
FPE had compounded the quality issues due to large classes. Thus pupils’ development of literacy and numeracy skills was affected. Further, Immonje (1990) found high pupils’ enrolment discouraging teachers’ teaching in public schools.

According to Kambuga (2013), large class sizes hinders the teachers’ interactive teaching methods while teacher-centred teaching methods make pupils’ to be omitted to their capacity of understanding. The finding on pupils’ high enrolment as a challenge also agrees with UWEZO (2011) that found large class sizes of over 60 pupils in lower primary schools. The continued large classes experienced are an indication that nothing has been done to curb this challenge. This is because SACMEQ II study had found overall Pupil Teacher Ratio (PTR) to be 79.5 percent and recommended to the Ministry of Education to apply appropriate intervention measures in such schools. The standard PTR in Kenya is 1:40 (Republic of Kenya, 1980).

Further, the finding on inadequate instructional materials also concurs with UWEZO (2011) and UNESCO (2010) that attributed pupils’ low learning to inadequate textbooks in schools. Further, UWEZO (2010) study found inadequate instructional materials in Nyanza; Rift Valley and Eastern Region these areas were part of this study. UWEZO (2011) also noted that schools that had received grants in 2011 were 91.7 percent, an indication that some schools which had not received the grants had inadequate instructional materials. Inadequacy of instructional materials reflect the common

The finding on pupils’ absenteeism as a challenge that teachers face in improving pupils’ literacy and numeracy skills also concurs with UWEZO (2011) and KNEC (2010) reports that found rampant pupils’ absenteeism which constrains teachers’ efforts to develop pupils’ literacy and numeracy skills consistently. Pupils being in school on and off miss out acquiring prerequisite concepts hence their improvement of literacy and numeracy lags behind. Further, UWEZO studies in (2010 and 2011), revealed high incidences of pupil absenteeism in parts of Eastern and Nyanza regions where part of the study was carried out. Also KNEC study in 2010 found similar findings of pupils’ absenteeism. Finally, UNESCO (2010) found that pupils in developing countries, Kenya included were not consistent in school attendance.

The finding on pupils’ diversity and mother tongue interference as a challenge also concurred with the literature reviewed. According to UNESCO (2012) and Smith, et al. (2004) weaknesses in in-service training was attributed to the teachers inability to meet pupils’ diverse needs. Further, UNESCO (2012) attributed teachers’ unpreparedness to
teach in early classes, like in this study, to challenges of handling pupils’ diversity. The challenge of pupils’ diversity also supports Bottia, et al. (2014), Lockheed and Verspoor (1991), Van Driel and Berry (2012) that pointed out that teachers’ understanding of pupils is important in the teaching and learning process.

According to Kambuga (2013), large class sizes make it more difficult for teachers to recognize pupils’ individual differences. Further, Earl, et al. (2000) found, in the British government, that teachers, training institutions were somewhat superficial in the early stages of implementing national literacy and numeracy strategies to improve the teaching and learning process. Similarly, in-service courses were of insufficient duration to adequately enable teachers develop skills required to teach or progress their pupils’ literacy and numeracy skills (UNESCO, 2011).

Research has also found teacher education program to be overemphasizing theory at the expense of classroom practice, yet mastery of theories does not guarantee the application of theories in the classroom setting (Major and Tiro, 2012). According to Bunyi, et al. (2013), primary teacher education emphasizes on theoretical knowledge in reading and mathematics curriculum at the expense of pedagogy, which denies teachers skills to deal with pupils’ diversity during the teaching and learning process.

The teachers’ inability to assist pupils in literacy skills due to pupil diversity could have resulted to poor pupils’ English composition during KCPE examination (Figure 4.20).
Worse still is that only one teacher reported the challenge of pupils’ diversity, in efforts to improve pupils literacy and numeracy skills.

Further, the challenge of mother tongue interference may be due to teachers’ lacking understanding of how mother tongue is beneficial in learning to read in a second language as stipulated in primary school syllabus (Bunyi et al., 2013). The teachers teaching pupils’ reading skills without having adequate knowledge of instruction may be an impediment in developing pupils’ literacy skills as TIMSSS study attributed pupils’ low achievement to home language (UNESCO, 2009; Greaney and Kellaghan, 2008). Therefore, mother tongue influence can be an impediment to pupils who do not get adequate assistance on time to have confidence in use and command of literacy, knowledge and skills.
4.6 Way Forward to Improve Lower Primary Pupils’ Literacy and Numeracy Skills

The fourth objective of this study sought to find out way forward to improve lower primary pupils’ literacy and numeracy skills. The researcher sought to establish what could be done to improve on pupils’ low literacy and numeracy skills. The data was collected using the teachers’ questionnaire and headteachers’ interview guide. The way forward to the challenges teachers face in improving pupils’ literacy and numeracy skills are presented in Table 4.18.
Table 4.18: Way Forward to Improve Lower Primary Pupils’ Literacy and Numeracy Skills According to Teachers

<table>
<thead>
<tr>
<th>Way forward</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing adequate instructional materials</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>Organizing regular teachers in-service courses</td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>Grouping pupils where there is high class size</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Providing adequate funds</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Ensuring every pupil attend school</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Remedial lessons to be provided</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Giving pupils adequate time to practice reading</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Parents to supervise pupils homework</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Involving all education stakeholders in learning</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Rewarding learners after assessment</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Meeting the diverse needs of pupils</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Implementing feeding programmes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Involving pupils in co curriculum activities</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Sensitize parents on importance of education</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>57</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.18 shows that 13 out of 57 (22%) of the teachers said that adequate instructional materials should be provided as a solution for the teachers to improve pupils’ literacy and numeracy skills. The finding on provision of adequate instructional materials was also
obtained from headteachers interviewed. The headteachers pointed out that provision of adequate instructional materials will enable each pupil to have access to and practice often the skills acquired during the teaching and learning process.

Another solution pointed out by 11 (19%) of the teachers is about provision of regular in-service training. A similar finding on provision of regular in-service training agreed with the headteachers interviewed. All the 68 headteachers emphasized that organization of regular teachers in-service courses will enable teachers to be updated on classroom practices, hence influence pupils’ teaching and learning positively. Headteachers emphasised that MOE should organize annual in-depth in-service training to enable teachers to be updated on wider scope on teaching and learning practices.

Only 4 and one (7% and 2%) of the teachers pointed on the need to ensuring every pupil attends school and parents to supervise pupils’ homework respectively. Pupils’ regular attendance to school would enable them to acquire literacy and numeracy skills consistently.

The finding on provision of regular in-service training was also consistent with the literature reviewed. The teachers’ desire for MOE to organize regular in-service training concurs with the Republic of Kenya’s (2005) policy that articulates for the need of continuous improvement of teachers skills. This is because improvement in the teaching and learning processes requires teachers to be up dated on classroom practices.
Lastly, the finding on pupils’ attendance to school, supports the government’s efforts of implementing the Bill of Rights to make learning compulsory (Muindi, 2012), hence enabling teachers to develop pupils’ literacy and numeracy skills consistently. The implementation of the Bill of Rights to make learning compulsory is an impetus on strategies aimed at improving pupils’ mastery of literacy and numeracy skills. According to UWEZO (2011), parents had shown interest in supporting their pupils’ homework. Therefore, parents should be empowered further to boost the process of enhancing development of literacy and numeracy skills.
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusions and recommendations.

5.2 Summary

Education is recognized as one of the drivers of economic and social national development; primary education being its foundation. However, millions of children who attend school do not acquire essential knowledge and skills. Studies done on strategies to improve pupils’ literacy and numeracy skills vary due to diverse country conditions and differences in implementation. The purpose of this study was to investigate teacher’s views about in-service training and ways teachers utilized instructional materials to improve pupils’ literacy and numeracy skills. The study used descriptive survey design. The study was carried out in four selected districts in Kenya: Kitui, Gatanga, Transmara and Migori. The population of the study was 574 public primary schools (254 in Kitui, 167 in Transmara, 102 in Migori and 51 in Gatanga), 574 headteachers and 574 teachers of class Three. The qualitative data was analyzed thematically while the quantitative data was tabulated and coded and analyzed using SPSS.

This section presents a summary of the study findings.
5.2.1 Teachers Views about In-Service Training as a Strategy in Improving Pupils’ Literacy and Numeracy Skills

The study found that majority of the teachers sampled in the study attended the in-service training organized by MOE. The teacher’s attendance of in-service training by district varied, though few teachers did not attend.

A substantial number of the teachers were able to receive in-service training through workshop organized by MOE in the four districts that had been identified during SACMEQ II study.

The content areas focused on during in-service training are number work, symbols and patterns in numeracy and reading and writing given sentence in literacy.

Majority of the teachers attended in-service training between the year 2007 and 2009.

Teachers thought that in-service training was useful for different reasons. The areas teachers felt useful in attending the in-service training includes improving in mastery of literacy and numeracy content, improving in their literacy and numeracy lesson preparation, improving their teaching methods, improving in improvising teaching materials and finally improving in handling pupils diversity.
5.2.2 Ways Teachers Utilized Instructional Materials to Improve Pupils’ Literacy and Numeracy Skills

All schools had purchased instructional materials for English and mathematics in their schools. The purchase of instructional materials was a continuous process, though many purchases of instructional materials were done between the year 2003 and 2004. Teacher’s opinion with regard to adequacy of instructional materials varied. Further, varying class three pupils’ textbooks average in all the schools was varied except schools in Gatanga district.

In regard to ways teachers utilized instructional materials to improve pupils’ literacy and numeracy skills, teachers reported that instructional materials are used as reference material, other teachers reported that instructional materials are used for guiding pupils to copy literacy and numeracy exercises on their exercise books while other teachers pointed out that instructional materials are used for writing work on the blackboard for pupils’ to do or copy. Further other teachers also pointed that instructional materials are given to pupils to read and do simple arithmetic on their own, other teachers use for observing examples, while other teachers give to pupils to do homework and finally other teachers use instructional materials are as learning resources.
5.2.3 Challenges Teachers face in Improving Lower Primary Pupils’ Literacy and Numeracy Skills in Selected Public Primary Schools.

The main challenges teachers faced in improving lower primary pupils’ literacy and numeracy skills in sampled schools were high pupils’ enrolment, inadequate instructional materials, lack of funds, absenteeism and presence of over age pupils.

5.2.4 Way Forward to Improve Lower Primary Pupils’ Literacy and Numeracy Skills.

The study found that in order to improve lower primary pupils’ literacy and numeracy skills, there was need to provide adequate instructional materials for teaching and learning process, organize regular teachers in-service courses to be updated on classroom practices, group pupils’ where there is high class size, provide adequate funds for purchase of instructional materials and repairs, ensure every pupil attend school consistency, offering remedial lessons, giving pupils adequate time to practice reading, involving parents in pupils homework and involving all education stakeholders in learning process.
5.3 Conclusions

The conclusions are based on the objectives of the study.

i. The first objective sought teacher’s views about in-service training as a strategy for improving pupils’ literacy and numeracy skills. From the study findings it can be concluded that teachers thought that in-service training was useful for different reasons: majority of teachers who attended the in-service training benefited in mastery of literacy and numeracy content, improved their lesson preparation, and improved their teaching methods and improvisation of teaching materials.

ii. The second objective on ways teachers utilized instructional materials to improve pupils’ literacy and numeracy skills, from this objective it can be concluded that most schools had purchased instructional materials for English and mathematics. Teachers found utilization of instructional materials improving pupils’ literacy and numeracy skills in varied ways: This is for instance teachers used instructional materials as reference material, to guiding pupils to copy literacy and numeracy exercises on their exercise books, for writing work on the blackboard for pupils to do or copy and finally given to pupils to read and do simple arithmetic on their own.

iii. The third objective that sought information on challenges teachers faced in improving pupils’ literacy and numeracy skills, it can be concluded that teachers faced various challenges in improving pupils’ literacy and numeracy skills:
teachers found mainly that high pupils’ enrolment witnessed since FPE introduction has been a challenge encountered in efforts to improve pupils’ learning in literacy and numeracy skills coupled with inadequate instructional materials.

iv. The fourth objective sought to find out way forward to improve lower primary pupils’ literacy and numeracy skills, teachers suggested various way forward to improve pupils literacy and numeracy skills: Teachers found mainly that adequate instructional materials should be provided to enhance teaching and learning processes and provision of regular in-service training need to be organized to enable teachers to be up dated on teaching and learning process.

5.4 Recommendations

Based on the findings of the study, the following recommendations are made as per the objectives of the study: The first objective that sought teacher’s views about in-service training as a strategy in improving pupils’ literacy and numeracy skills found the following issues:

a. There are untrained teachers engaged in teaching and learning process. There are also teachers with bachelor of education teaching in primary schools.
b. There are teachers who have not attended any in-service training.

c. Despite teachers attending in-service training, there still exist pupils performing poorly in literacy and numeracy skills.

d. Majority of teachers still use teacher-centred teaching methods.

e. There are a few teachers who had learnt to improvise teaching materials.

Based on the issues above, the study recommends the following:

i. That untrained teachers should be encouraged to acquire requisite qualification to teach at primary level as one way of enhancing pupils teaching and learning process. This is because quality teaching and learning depends on well trained teaching force.

ii. Teachers with qualification above P1 certificate should be vetted to establish whether they are qualified to teach in primary schools or not.

iii. Regular in-service training should be organized by MOE and be made compulsory for all teachers to attend. This is because; teachers will be updated on teaching and learning process that is crucial in improving pupils’ literacy and numeracy skills. The MOE should institutionalize in-service training that target all teachers to avoid non attendance by teachers to improve teaching and learning process.

iv. In regard with majority of teachers using teacher centred teaching methods and few teachers being able to improvise teaching methods, more in-service training should be organized by MOE to help teachers to acquire skills of using learner
centred teaching methods and of improvising teaching and learning materials to enrich learning resources.

The second objective is the ways teachers utilized instructional materials to improve pupils’ literacy and numeracy skills. Some of the issues that emerged are:

a. Adequacy of textbooks in schools varies. Some schools have adequate textbooks while some have severe shortage of textbooks

b. There exist also old and torn instructional materials that are not utilized.

Based on the issues above, the study recommends the following:

i. The study recommends the need for adequate provision of instructional materials to be utilized by teachers and pupils’ accordingly during teaching and learning process.

ii. The government should provide adequate funds for FPE and harmonise FPE capitation to meet projected pupil enrolment demand for instructional materials.

iii. There is need to investigate cases of severe shortage of textbooks since schools receive the same amount of funding for purchase of textbooks.

iv. There is need to have extra funds that will cater for replacing and repairing instructional materials. The torn instructional materials should be replaced immediately to ease cases of inadequacy on instructional materials, thereby enabling pupils and teachers utilize.
The third objective that sought information on challenges teachers face in improving pupils’ literacy and numeracy skills found the following issues:

a. Overcrowded classes.

b. Cases of pupils absenteeism is still witnessed in some schools

c. Cases of pupils’ diversity.

Based on the issues above, the study recommends the following:

i. The government should ensure that more teachers are recruited to ease large class size experienced. Similarly, more classrooms should be established or renovated where possible.

ii. The bill of rights implemented to make learning compulsory should be adhered to curb pupils’ absenteeism. Proper interventions should be utilized where possible to reduce pupils’ absenteeism. Parents need to be sensitized on the importance of pupils’ regular attendance to school.

iii. There is need to organize in-service training for teachers to handle teaching and learning in a diversified environment. Specific in-service training that help teachers to address cases of pupils diversity should be organized by the relevant departments for all teachers who work in an inclusive environment.
5.4.2 Suggestions for Further Research

The study recommends the following areas for further research:

i. The study should be replicated after sometime to find out teachers’ views about in-service training and utilization of instructional materials in improving pupils’ literacy and numeracy skills.

ii. A study on how parents can contribute to the development of pupils’ literacy and numeracy skills should be done in districts that pupil performance in literacy and numeracy is low.
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APPENDICES

Appendix I: Teachers’ Questionnaire

1. a. Name of the primary school
   District

   b. What is your professional status: untrained teacher/approved graduate/diploma
   holder/bachelor of education?

   c. What is your teaching experience?

2. a. What are your views on in-service training in improving pupils’ literacy and
   numeracy skills in selected public primary schools?

   b. Have you received in-service training?

   c. If yes, when did you attend In-service training? Tick appropriate period.

   2000-2004

   2005-2008

   2008-2011

   2010-To date

   d. How was the in-service training organized?

   e. Was the literacy content adequately covered?

   f. If yes, explain in detail the main content covered?

   g. Was the numeracy content adequately covered?

   h. If yes, explain in detail the main content covered?

   i. Explain any other relevant teaching and learning practices covered.

3. a. What are your views on utilization of instructional materials in improving pupils’
   b. When did your school started purchasing instructional materials?
c. What is the level of instructional materials purchased in your school for improving pupils’ literacy and numeracy skills?

d. What is the pupil’s literacy and numeracy textbook ratio?

e. When were instructional materials purchased?

4. a. What are the challenges faced in improving lower primary pupils’ literacy and numeracy skills in selected public primary schools?

b. Briefly explain each challenge.

5. a. What should be the way forward to improve lower primary pupils’ literacy and numeracy skills in selected public primary schools?

b. Briefly explain each way forward.
Appendix II: Headteachers’ Interview Guide

1. a. Name of the primary school
   b. What is the professional status of class three teachers’: untrained teacher/approved graduate/diploma holder/bachelor of education?
   c. What is the teacher’s experience?

2. a. What are your views on teachers’ in-service training in improving pupils’ literacy and numeracy skills in selected public primary schools?
   b. Have all teachers received in-service training?
   c. If yes, when did teachers’ attend In-service training?
   d. How was the in-service training organized?

3. a. What are your views on teacher’s utilization of instructional materials in improving pupils’ literacy and numeracy skills in selected public primary schools?
   b. Has instructional materials been purchased in your school?
   c. What is the level of instructional materials purchased in your school for improving pupils’ literacy and numeracy skills?
   d. What is the pupil’s literacy and numeracy textbook ratio?
   e. When were instructional materials purchased?

4. a. What are the challenges teachers’ face in improving lower primary pupils’ literacy and numeracy skills in selected public primary schools?
   b. Briefly explain each challenge.
5. a. What should be the way forward to improve lower primary pupils’ literacy and numeracy skills in selected public primary schools?

b. Briefly explain each way forward.
Appendix III: Classroom Observation Guide

Name of the primary school

1. How are the following utilized?
   i. Literacy instructional materials
   ii. Numeracy instructional materials

2. Which activities are pupils’ engaged during English lessons?

3. Which activities are pupils’ engaged during mathematics lessons?

4. How are pupils English and mathematics previous exercises?

5. Which teaching methods are utilized during English and mathematics lesson?

6. a. Are teaching aids available utilized?

7. What is the pupils’ textbook average?
   i. English textbooks
   ii. Mathematics textbooks
Appendix IV: Research Permit

THIS IS TO CERTIFY THAT:
Prof./Dr./Mr./Mrs./Miss/Institution
Elizabeth Jarog Katani
of (Address) Kenyatta University
P.O.Box 43844-00100, Nairobi
has been permitted to conduct research in

Location
Kitui, Narok, Muranga, 
And Migori

District

Counties

on the topic: Effectiveness of SACMEQ
Strategies in enhancing literacy and
numeracy skills among public lower
primary pupils: A case of four selected
Counties.


Research Permit No. NCST/RCD/14/612/293
Date of issue
29th March 2012

Fee received
KSH 2,000

Applicant’s Signature

Secretary
National Council for Science &Technology