

**A COMPARATIVE ANALYSIS OF TEACHER
COMPETENCE AND ITS EFFECT ON PUPIL
PERFORMANCE IN UPPER PRIMARY SCHOOLS IN
MOZAMBIQUE AND OTHER SACMEQ COUNTRIES**

By Ana Filipe José Passos

Submitted in fulfilment of the requirements for the degree of

PHD: Policy Studies

In the Department of Education Management and Policy Studies

Faculty of Education

University of Pretoria

Pretoria

Supervisor: Prof. Sarah Howie

University of Pretoria

July 2009

This thesis is dedicated to:

My dearest and lovely granddaughter Thandi Isabel

My husband, Fernando Songane

**My lovely daughter, adorable son and son-in-law,
Cláudia Isabel, Mário Jorge and Alper José**

My dear mother, Isabel Jamba,

My brothers and sister

The memory of my father, Filipe José Passos,

My brothers and sister

and

Sister Maria Isabel Oliveira

and

The Congregation of Mary Presentation

TABLE OF CONTENTS

| | |
|---|--------------|
| DEDICATION | i |
| TABLE OF CONTENTS | ii |
| LIST OF TABLES | vi |
| LIST OF FIGURES | x |
| LIST OF APPENDICES | xiii |
| LIST OF ACRONYMS | xviii |
| ABSTRACT | xx |
| ACKNOWLEDGEMENTS | xxii |
| CHAPTER 1 –INTRODUCTION | 1 |
| 1.1 THE CONTEXT OF THE STUDY | 2 |
| 1.2 STATEMENT OF THE PROBLEM | 3 |
| 1.3 MOTIVATION FOR THE STUDY | 6 |
| 1.4 SIGNIFICANCE OF THE STUDY | 7 |
| 1.5 RESEARCH APPROACH AND DESIGN | 8 |
| 1.6 THE LIMITATIONS OF THE STUDY | 9 |
| 1.7 STRUCTURE OF THE THESIS | 9 |
| CHAPTER 2 – THE SCHOOLING SYSTEM IN MOZAMBIQUE | 12 |
| INTRODUCTION | 12 |
| 2.1 THE MOZAMBIKAN CONTEXT | 12 |
| 2.2 MOZAMBIQUE’S SCHOOL SYSTEM AND REFORMS | 14 |
| 2.2.1 General Education | 18 |
| 2.2.2 Teacher Training | 19 |
| 2.2.3 Technical and Vocational Training | 19 |
| 2.2.4 Educational Policy and Policy Reforms since 1995 | 19 |
| 2.2.5 The Administration of School Education | 20 |
| 2.2.6 The Financing of Education | 22 |
| 2.2.7 The Gross Domestic Product (GDP) | 22 |
| 2.2.8 The Main Policy concerns of the Ministry of Education and Culture | 23 |
| 2.3 PUPIL’S AND TEACHERS’ PROFILES IN SCHOOLS IN 2000 | 25 |
| 2.3.1 Grade 6 Pupil Enrolments | 25 |
| 2.3.2 Grade 6 Pupil Performance | 26 |
| 2.3.3 Grade 6 Pupil Performance in Reading and Mathematics | 28 |
| 2.3.4 The Profile of the Cohort of Teachers in Mozambique in 2000 | 29 |
| 2.4 TEACHER TRAINING POLICIES AND PRACTICES IN MOZAMBIQUE | 33 |
| 2.4.1 Teacher Training Policies | 33 |
| 2.4.2 Teacher Training Practice in Mozambique | 35 |
| 2.5 SUMMARY | 36 |
| CHAPTER 3 – LITERATURE REVIEW | 38 |
| INTRODUCTION | 38 |
| 3.1 UNDERSTANDING COMPETENCE | 38 |
| 3.2 TEACHERS AND ISSUES OF COMPETENCE | 41 |
| 3.3 THE IMPORTANCE OF TEACHER TRAINING IN DEVELOPING PROFESSIONAL COMPETENCE | 43 |
| 3.4 COMPETENCE RELATED TO TEACHER EFFECTIVENESS | 46 |

| | | |
|--|--|------------|
| 3.4.1 | Medley's Model of Teacher Effectiveness | 47 |
| 3.4.2 | Cheng and Tsui's Models of Levels of Teacher Effectiveness | 49 |
| 3.5 | ASSESSMENT OF TEACHER COMPETENCE | 54 |
| 3.6 | THE RELATIONSHIP BETWEEN TEACHER COMPETENCE AND PUPIL PERFORMANCE | 58 |
| 3.7 | PUPIL PERFORMANCE IN READING AND MATHEMATICS IN CROSS-NATIONAL STUDIES | 60 |
| 3.7.1 | The Acquisition of Reading Skills | 60 |
| 3.7.2 | Methods of Teaching Reading Skills | 61 |
| 3.7.3 | Pupil Performance in Reading in Cross-national Studies | 63 |
| 3.7.4 | Gender Differences in Reading Performance | 65 |
| 3.7.5 | Prerequisites for Acquisition of Mathematical Skills | 66 |
| 3.8 | SUMMARY | 78 |
| CHAPTER 4 – SACMEQ IN MOZAMBIQUE | | 80 |
| INTRODUCTION | | 80 |
| 4.1 | CROSS-NATIONAL STUDIES | 80 |
| 4.2 | SACMEQ IN MOZAMBIQUE | 83 |
| 4.2.1 | Overview of the SACMEQ Study in Mozambique | 83 |
| 4.2.2 | Planning of the SACMEQ II Study | 84 |
| 4.2.3 | Instrument Construction | 86 |
| 4.2.4 | The Mozambican Sample | 90 |
| 4.2.5 | Data Collection | 92 |
| 4.2.6 | Data Entry and Data Cleaning | 93 |
| 4.2.7 | The Calculation of Scale Scores (Rasch) | 93 |
| 4.2.8 | The Identification of 'Derived' Skill Level | 95 |
| 4.3 | SUMMARY | 98 |
| CHAPTER 5 – THE CONCEPTUAL FRAMEWORK, RESEARCH DESIGN AND METHODS | | 99 |
| INTRODUCTION | | 99 |
| 5.1 | THE PURPOSE OF THE RESEARCH | 99 |
| 5.2 | CONCEPTUAL FRAMEWORK | 100 |
| 5.3 | ADAPTED MODEL OF TOTAL TEACHER EFFECTIVENESS | 101 |
| 5.3.1 | The Integration of Bloom's Taxonomy | 105 |
| 5.4 | RESEARCH QUESTIONS | 107 |
| 5.4.1 | The Research Questions | 107 |
| 5.4.2 | Phase 1 and 2 Research Questions | 108 |
| 5.5 | SOME DESIGN ISSUES | 112 |
| 5.5.1 | Design Origins | 113 |
| 5.5.2 | Reasons for Sample Focus | 113 |
| 5.5.3 | Desired, Excluded and Defined Target Populations | 113 |
| 5.5.4 | The Numbers of Schools and Pupils required for the SACMEQ II Study | 114 |
| 5.5.5 | Sample | 115 |
| 5.5.6 | Instruments | 117 |
| 5.5.7 | Procedures | 117 |
| 5.6 | SUMMARY | 123 |
| CHAPTER 6 – TEACHER AND PUPIL CHARACTERISTICS IN MOZAMBIQUE AND IN OTHER SACMEQ COUNTRIES | | 124 |
| INTRODUCTION | | 124 |
| 6.1 | TEACHERS' CHARACTERISTICS IN MOZAMBIQUE AND IN SACMEQ COUNTRIES | 124 |
| 6.1.1 | Teacher Characteristics in Mozambique | 125 |

| | | |
|--------|---|-----|
| 6.1.2 | Teacher Characteristics in SACMEQ Countries | 130 |
| 6.1.3 | Teachers' Qualification and Experience in Mozambique | 139 |
| 6.1.4 | Teachers' Qualifications and Experience in SACMEQ Countries | 142 |
| 6.1.5 | Teachers' Academic and Professional Qualification in Reading in Mozambique | 147 |
| 6.1.6 | Teachers' academic and professional qualification in reading in SACMEQ countries | 148 |
| 6.1.7 | Percentage of Teachers' Academic and Professional Qualification in Reading in each SACMEQ country | 149 |
| 6.1.8 | Teachers' Academic and Professional Qualification in Mathematics in Mozambique | 152 |
| 6.1.9 | Teachers' Academic and Professional Qualification in Mathematics in SACMEQ countries | 153 |
| 6.1.10 | Teachers' Academic and Professional Qualification in Mathematics in each SACMEQ country | 155 |
| 6.2 | PUPIL CHARACTERISTICS AND BACKGROUND | 157 |
| 6.2.1 | Characteristics and Problems of Pupils in Mozambique | 157 |
| 6.2.2 | Characteristics and Problems of Pupils in SACMEQ Countries | 165 |
| 6.3 | SUMMARY | 172 |

CHAPTER 7 – TEACHING CONTEXTS IN MOZAMBIQUE AND SACMEQ

COUNTRIES 175

INTRODUCTION 175

| | | |
|-------|---|-----|
| 7.1 | THE INTERNAL TEACHING CONTEXT IN MOZAMBIQUE | 175 |
| 7.1.1 | Availability of Classroom Resources | 175 |
| 7.2 | THE INTERNAL TEACHING CONTEXT IN SACMEQ COUNTRIES | 181 |
| 7.2.1 | Availability of Classroom Furniture | 181 |
| 7.3 | EXTERNAL TEACHING CONTEXT IN MOZAMBIQUE | 186 |
| 7.3.1 | School Resources | 186 |
| 7.3.2 | Tuition | 189 |
| 7.3.3 | Leadership | 190 |
| 7.4 | EXTERNAL TEACHING CONTEXT IN SACMEQ COUNTRIES | 191 |
| 7.4.1 | School Resources | 191 |
| 7.4.2 | Tuition | 193 |
| 7.4.3 | Leadership | 194 |
| 7.5 | SUMMARY | 197 |

CHAPTER 8 – TEACHER AND PUPIL PERFORMANCE IN READING AND IN

MATHEMATICS IN MOZAMBIQUE AND IN SACMEQ COUNTRIES 200

INTRODUCTION 200

| | | |
|-------|---|-----|
| 8.1 | TEACHER AND PUPIL PERFORMANCE IN READING IN SACMEQ II TESTS IN MOZAMBIQUE AND IN SACMEQ COUNTRIES | 200 |
| 8.1.1 | Teacher Performance in Mozambique and in SACMEQ countries | 201 |
| 8.1.2 | Pupil Performance in Reading in Mozambique | 206 |
| 8.1.3 | Pupil Performance in Reading in SACMEQ Countries | 209 |
| 8.1.4 | Teacher and Pupil Performance in Reading in Mozambique and in SACMEQ Countries | 212 |
| 8.2 | TEACHER AND PUPIL PERFORMANCE IN MATHEMATICS IN SACMEQ II TESTS IN MOZAMBIQUE AND IN SACMEQ COUNTRIES | 230 |
| 8.2.1 | Teacher and Pupil Performance in Mathematics in Mozambique and in SACMEQ Countries | 230 |
| 8.2.2 | Teacher and Pupil Performances in Mathematics in Mozambique and in SACMEQ Countries | 239 |
| 8.2.3 | Pupil Performance in Mathematics by Gender, Socio-economic Status and School Location in Mozambique and in SACMEQ Countries | 244 |
| 8.2.4 | Variation in Mathematics Performance in the SACMEQ Countries between Schools and within Schools | 257 |

| | | |
|---|--|------------|
| 8.3 | SUMMARY | 258 |
| CHAPTER 9 – PREDICTORS OF MOZAMBICAN AND SACMEQ PUPIL PERFORMANCE IN READING AND MATHEMATICS IN RELATION TO TEACHER COMPETENCE | | |
| COMPETENCE | | 262 |
| INTRODUCTION | | 262 |
| 9.1 | EXPLORING RELATIONSHIPS BETWEEN TEACHER COMPETENCE AND PUPIL PERFORMANCE IN MOZAMBIQUE AND IN OTHER SACMEQ COUNTRIES | 264 |
| 9.1.1 | An Overview of Mozambique and SACMEQ Countries as a whole | 264 |
| 9.1.2 | An Overview of the Correlations between Pupil Performance in Reading and Mathematics in Mozambique and in other SACMEQ Countries | 271 |
| 9.1.3 | The Relationship between Teacher Competence and Pupil Performance in Reading and Mathematics and the Domain and Constructs of Teacher Competence Model within Mozambique and in SACMEQ Countries | 281 |
| 9.2 | PREDICTING PUPIL PERFORMANCE BY TEACHER COMPETENCE FACTORS IN MOZAMBIQUE AND IN SACMEQ COUNTRIES | 308 |
| 9.2.1 | An Overview of Mozambique and SACMEQ Countries as a whole | 308 |
| 9.2.2 | Predicting Pupil Performance in Reading by Teacher Competence Factors in Mozambique and in SACMEQ Countries | 312 |
| 9.3 | SUMMARY | 332 |
| CHAPTER 10 – CONCLUSIONS AND RECOMMENDATIONS | | 335 |
| 10.1 | CONTEXT, SUMMARY OF RESEARCH QUESTIONS AND FINDINGS | 335 |
| 10.1.1 | Summary of Research Questions and Results | 337 |
| 10.2 | DISCUSSION AND REFLECTION | 352 |
| 10.2.1 | Reflection on the Methodology | 353 |
| 10.2.2 | Reflection on Conceptual Framework and the Results | 354 |
| 10.3 | CONCLUSIONS AND RECOMMENDATIONS REGARDING POLICY AND PRACTICE | 367 |
| 10.4 | CONCLUSIONS AND RECOMMENDATIONS REGARDING THE RESEARCH AND FURTHER STUDIES | 382 |
| 10.5 | CONCLUSION | 384 |
| REFERENCES | | 386 |

LIST OF TABLES

| | | |
|------------|--|-----|
| Table 2.1 | Number of Mozambican pupils in Grade 6 at the beginning and end of the year, dropout and failure rate in 2000 | 26 |
| Table 2.2 | Number and percentage of Mozambican pupils who passed the Grade 6 school year | 27 |
| Table 2.3 | Achievement of Mozambican pupils in Grade 6 in Portuguese and mathematics in 2000 | 28 |
| Table 2.4 | The profile of teachers in 2000 in Mozambique | 30 |
| Table 4.1 | Summary of International Comparative Studies of Education | 81 |
| Table 4.2 | Number of schools and pupils in the planned and achieved samples | 91 |
| Table 4.3 | Sample validity in Mozambique | 92 |
| Table 4.4 | The final skill levels for the SACMEQ reading and mathematics tests | 96 |
| Table 5.1 | Sampling in the SACMEQ countries | 116 |
| Table 6.1 | Mean, percentages, and sampling errors for age, gender, and socio-economic status of reading and mathematics teachers | 126 |
| Table 6.2 | Percentages and sampling errors for teacher ratings of reasons for job satisfaction in Mozambique | 130 |
| Table 6.3 | A summary of primary school teacher training qualifications in SACMEQ countries | 132 |
| Table 6.4 | Means, percentages, and sampling errors for age, gender, and socio-economic background of reading and mathematics teachers | 134 |
| Table 6.5 | Percentages and sampling errors for teacher ratings of most commonly occurring reasons for job satisfaction | 138 |
| Table 6.6 | Academic level of reading and mathematics teachers in Mozambique | 140 |
| Table 6.7 | Average number of years of training for reading and mathematics teachers, and years of experience | 142 |
| Table 6.8 | Percentages and sampling errors for academic level of reading and mathematics teachers | 144 |
| Table 6.9 | Means and sampling errors for experience and training of reading and mathematics teachers | 146 |
| Table 6.10 | Percentages for professional training and academic level of reading teachers in Mozambique | 147 |
| Table 6.11 | Percentages of teachers, for professional training and academic level of reading teachers in SACMEQ countries | 149 |
| Table 6.12 | Percentages for professional training and academic level of reading teachers in each SACMEQ country | 150 |
| Table 6.13 | Percentages for professional training and academic level of mathematics teachers in Mozambique | 153 |

| | | |
|------------|--|-----|
| Table 6.14 | Percentages for professional training and academic level of reading teachers in SACMEQ countries | 154 |
| Table 6.15 | Percentages for professional training and academic level of mathematics teachers in each SACMEQ country | 155 |
| Table 6.16 | Means, percentages, and sampling errors for pupil age, sex, and home-related characteristics | 158 |
| Table 6.17 | Means and sampling errors for the general quality of pupils' homes | 161 |
| Table 6.18 | Percentages, mean, and sampling errors for language, days absent, and repetition | 163 |
| Table 6.19 | School location | 165 |
| Table 6.20 | Means, percentages, and sampling errors for the pupils' age, sex, and home-related background (SACMEQ II) | 166 |
| Table 6.21 | Means and sampling errors for the general quality of pupils' homes | 168 |
| Table 6.22 | Percentages, mean, and sampling errors for the language, days absent, and repetition | 169 |
| Table 6.23 | School location | 171 |
| Table 7.1 | Percentages and sampling errors for pupils having sitting and writing places | 177 |
| Table 7.2 | Percentages and sampling errors for pupils having own reading and mathematics textbooks | 178 |
| Table 7.3 | Percentages and sampling errors for SACMEQ pupils having sitting and writing places | 183 |
| Table 7.4 | Percentages and sampling errors for SACMEQ pupils who have own reading and mathematics textbooks | 184 |
| Table 7.5 | Percentages and sampling errors for schools with general facilities in Mozambique | 187 |
| Table 7.6 | Mean and sampling errors for total school resources | 188 |
| Table 7.7 | Percentages and sampling errors for the extra tuition taken by pupils outside schools hours with details of payment | 189 |
| Table 7.8 | Percentages and sampling errors for the frequency of advice to a teacher from a school head | 190 |
| Table 7.9 | The importance of various school director tasks | 191 |
| Table 7.10 | Percentages and sampling errors for the extra tuition taken by pupils outside school hours, and payment | 193 |
| Table 7.11 | Percentages and sampling errors for the frequency of advice to a teacher from a SACMEQ school head | 195 |
| Table 7.12 | The importance of various school director tasks | 196 |
| Table 9.1 | Overview of the findings from the correlations between the domain and constructs of the teacher competence model and pupil performance in reading and mathematics at national and regional level | 266 |

| | | |
|------------|---|-----|
| Table 9.2 | Overview of the findings from the correlations between the domain and constructs of the teacher competence model within Mozambique and pupil performance in reading and mathematics | 267 |
| Table 9.3 | Overview of the findings from the correlations between variables in domain and construct and pupil performance in reading and mathematics in SACMEQ countries | 270 |
| Table 9.4 | Correlations between variables in cognitive, affective and behavioural domains and pupil performance in reading and in mathematics in Mozambique | 272 |
| Table 9.5 | Correlations between variables in cognitive, affective and behavioural domains and pupil performance in reading and in mathematics in SACMEQ countries | 273 |
| Table 9.6 | Correlations between variables for teacher training and teachers' characteristics and pupil performance in reading and in mathematics in Mozambique | 275 |
| Table 9.7 | Correlations between variables for teacher training, teachers' characteristics and pupil performance in reading and mathematics in SACMEQ countries | 276 |
| Table 9.8 | Correlations between variables for internal and external teaching context and pupil performance in reading and in mathematics in Mozambique | 277 |
| Table 9.9 | Correlations between variables in external and internal teaching context in SACMEQ countries and pupil performance in reading and in mathematics | 278 |
| Table 9.10 | Correlations between variables in pre-existing pupils' characteristics and pupil performance in reading and in mathematics in Mozambique | 279 |
| Table 9.11 | Correlations between variables in pre-existing pupils' characteristics and parent involvement in SACMEQ countries and pupil performance in reading and in mathematics | 280 |
| Table 9.12 | Correlations between variables in cognitive and affective domains and pupil performance in reading and in mathematics across Mozambican provinces | 282 |
| Table 9.13 | Correlations between the variables in behavioural domain and pupil performance in reading and in mathematics across Mozambican provinces | 285 |
| Table 9.14 | Correlations between variables in cognitive and affective domains and pupil performance in reading and in mathematics in SACMEQ II tests | 288 |
| Table 9.15 | Correlations between variables in behavioural domains and pupil performance in reading and in mathematics in SACMEQ II tests | 291 |
| Table 9.16 | Correlations between variables for teacher training and teachers' characteristics and pupil performance in reading and in mathematics across Mozambican provinces | 293 |

| | | |
|------------|--|-----|
| Table 9.17 | Correlation between variables for teacher training and teachers' characteristics constructs and pupil performance in reading and in mathematics in SACMEQ II tests | 296 |
| Table 9.18 | Correlations between variables in the external and internal teaching context and pupil performance in reading and in mathematics across Mozambican provinces | 299 |
| Table 9.19 | Correlations between variables for external and internal teaching constructs and pupil performance in reading and in mathematics in SACMEQ II tests | 301 |
| Table 9.20 | Correlations between variables for pre-existing pupil characteristics and parent and community involvement and pupil performance in reading and in mathematics across Mozambican provinces | 304 |
| Table 9.21 | Correlations between variables for pre-existing pupils' characteristics and parent school involvement constructs and pupil performance in reading and in mathematics in SACMEQ II tests | 307 |
| Table 9.22 | Results of stepwise regression showing main predictors of pupil performance in reading and mathematics in Mozambique and in SACMEQ countries per domain and construct | 310 |
| Table 9.23 | Results of stepwise regression showing main predictors of pupil performance in reading and mathematics across all SACMEQ countries per domain and construct | 311 |
| Table 9.24 | Stepwise regression model in reading in Mozambique | 314 |
| Table 9.25 | Stepwise regression model in reading in SACMEQ countries | 316 |
| Table 9.26 | Stepwise regression model in reading in each SACMEQ country | 318 |
| Table 9.27 | Stepwise regression model for mathematics in Mozambique | 323 |
| Table 9.28 | Stepwise regression model in mathematics in SACMEQ countries | 325 |
| Table 9.29 | Stepwise regression model in mathematics in each SACMEQ country | 328 |
| Table 10.1 | Main predictors of pupil performance in reading and in mathematics in Mozambique and in SACMEQ countries | 358 |

LIST OF FIGURES

| | | |
|------------|--|-----|
| Figure 2.1 | Provinces of Mozambique | 13 |
| Figure 2.2 | The Mozambican School System | 17 |
| Figure 2.3 | Levels of management and responsibility in the Ministry of Education and Culture | 21 |
| Figure 3.1 | A competence model, according to common definitions | 39 |
| Figure 3.2 | Competences as sub-skills | 40 |
| Figure 3.3 | Competences as sub-skills in the teacher's context | 42 |
| Figure 3.4 | Medley's structure of teacher effectiveness | 47 |
| Figure 3.5 | Teacher evaluation and professional development | 50 |
| Figure 3.6 | Levels of teacher effectiveness | 52 |
| Figure 4.1 | Outline of standardised phases and stages for the SACMEQ II study | 85 |
| Figure 5.1 | Key elements related to teacher effectiveness | 102 |
| Figure 6.1 | Percentages of teachers whose housing is perceived to be in an acceptable condition | 128 |
| Figure 6.2 | Percentage of teachers that had electricity at home | 128 |
| Figure 6.3 | Percentages of teacher housing in acceptable conditions (SACMEQ II) | 135 |
| Figure 6.4 | Percentage of teachers that had electricity at home | 136 |
| Figure 6.5 | Percentage of pupils that had candles/oil lamps or electricity at home | 162 |
| Figure 6.6 | Percentage of pupils that had candles/lamps or electricity at home | 170 |
| Figure 7.1 | Mean for classroom resources index | 176 |
| Figure 7.2 | Percentages of pupils who did not have any basic classroom materials: Exercise book, notebook and pencil | 179 |
| Figure 7.3 | Percentages of pupils who do not have basic classroom materials: Eraser, pen and ruler | 180 |
| Figure 7.4 | Means for the SACMEQ classroom resources index | 182 |
| Figure 7.5 | Percentage of the SACMEQ shortages of basic classroom materials: exercise books, notebooks and pencils | 185 |
| Figure 7.6 | Percentage of SACMEQ pupil without basic classroom materials: eraser, pen, and ruler | 186 |
| Figure 7.7 | Country income (2001) and mean for total school resources index | 192 |
| Figure 8.1 | Percentage of teachers, mean scores and attained reading levels of Mozambican reading teachers | 203 |
| Figure 8.2 | Percentage of teachers mean scores and attained reading levels of regional reading teachers | 205 |
| Figure 8.3 | Percentage of pupils' means scores and attained reading levels of Mozambican reading pupils | 207 |

| | | |
|-------------|---|-----|
| Figure 8.4 | Percentage of pupils' mean scores and attained reading levels of SACMEQ countries' reading pupils | 210 |
| Figure 8.5 | Mean scores of reading pupils and teachers in Mozambique | 214 |
| Figure 8.6 | Percentage of Mozambican teachers and pupils' performance in reading at different levels of competency | 215 |
| Figure 8.7 | Mean scores of reading pupils and teachers in SACMEQ countries | 216 |
| Figure 8.8 | Percentage of SACMEQ teachers and pupils' performance in reading at different levels of competency | 217 |
| Figure 8.9 | Percentage of pupils' mean scores and attained reading categories of Mozambican reading pupils by gender, socio-economic status and school location | 218 |
| Figure 8.10 | Mean scores of reading pupils in SACMEQ countries by gender | 220 |
| Figure 8.11 | Percentage of pupils' reading categories in SACMEQ countries by gender | 221 |
| Figure 8.12 | Means scores of reading pupils by SACMEQ countries by socio-economic status | 223 |
| Figure 8.13 | Percentage of pupils' reading categories in SACMEQ countries by socio-economic status | 224 |
| Figure 8.14 | Mean scores of reading pupils in SACMEQ countries by school location | 225 |
| Figure 8.15 | Percentage of pupils' reading categories in SACMEQ countries by school location | 227 |
| Figure 8.16 | Average of pupils' reading scores and variation in pupils' reading scores in SACMEQ countries | 229 |
| Figure 8.17 | Percentage of teachers, mean scores nad attained mathematics levels of Mozambican mathematics teachers | 231 |
| Figure 8.18 | Percentage of teachers' man scores and attained mathematics levels of regional mathematics teachers | 233 |
| Figure 8.19 | Percentage of pupils' mean scores and attained mathematics levels of Mozambican mathematics pupils | 235 |
| Figure 8.20 | Percentage of pupils' mean scores and attained mathematics levels of SACMEQ countries | 237 |
| Figure 8.21 | Mean scores of reading pupils and teachers in Mozambique | 240 |
| Figure 8.22 | Percentage of Mozambican teachers and pupils' performance in mathematics at different levels of competency | 241 |
| Figure 8.23 | Mean scores of reading pupils and teachers in SACMEQ countries | 242 |
| Figure 8.24 | Percentage of SACMEQ teachers and pupils' performance in mathematics at different levels of competency | 243 |
| Figure 8.25 | Percentage of pupils' mean scores and attained mathematics categories of Mozambican mathematics pupils by gender, socio-economic status and school location | 245 |

| | | |
|-------------|---|-----|
| Figure 8.26 | Mean scores of mathematics pupils of SACMEQ countries by gender | 248 |
| Figure 8.27 | Percentage of pupils' mathematics categories in SACMEQ countries by gender | 249 |
| Figure 8.28 | Mean scores of mathematics pupils of SACMEQ countries by socio-economic status | 250 |
| Figure 8.29 | Percentage of pupils' mathematics categories in SACMEQ countries by socio-economic status | 251 |
| Figure 8.30 | Mean scores of mathematics pupils in SACMEQ countries by school location | 253 |
| Figure 8.31 | Percentage of pupils' mathematics categories in SACMEQ countries by school location | 254 |
| Figure 8.32 | The average of pupils' mathematics scores and variation in pupils' mathematics scores in SACMEQ countries | 257 |
| Figure 10.1 | Levels of teacher effectiveness | 355 |
| Figure 10.2 | A model for developing teachers training competence in Mozambique | 372 |

LIST OF APPENDICES

- Appendix 1 Specific Research Questions and Dummy Tables
- Appendix 2 Contents of the Teachers, School Heads and Pupils Questionnaires
- Appendix 3 Number of Variables and Scoring
- Appendix 4 Factory Analysis Behavioural Domain SACMEQ Countries - Reading
- Appendix 4 Factory Analysis Cognitive Domain SACMEQ Countries - Reading
- Appendix 4 Factory Analysis External Teaching Context Construct SACMEQ Countries - Reading
- Appendix 4 Factory Analysis Internal Teaching Context Construct SACMEQ Countries - Reading
- Appendix 4 Factory Analysis Parent and Community School Involvement SACMEQ Countries - Reading
- Appendix 5 Factory Analysis Behavioural Domain SACMEQ Countries - Mathematics
- Appendix 5 Factory Analysis Cognitive Domain SACMEQ Countries – Mathematics
- Appendix 5 Factory Analysis External Teaching Context Construct SACMEQ Countries - Mathematics
- Appendix 5 Factory Analysis Internal Teaching Context SACMEQ Countries - Mathematics
- Appendix 5 Factory Analysis Parent and Community School Involvement SACMEQ Countries - Mathematics
- Appendix 6 Percentages and Sampling Errors for Mozambican Teacher Housing in Acceptable Conditions
- Appendix 7 Percentages and Sampling Errors for the type of Lighting in Mozambican Reading and Mathematics Teachers' Homes
- Appendix 8 Percentages and Sampling Errors for Teacher Housing in Acceptable Conditions in SACMEQ Countries
- Appendix 9 Percentages for the type of Lighting in Reading and Mathematics Teachers' Homes in SACMEQ Countries
- Appendix 10 Percentages for Professional Training and Academic Level of Reading Teachers in each SACMEQ Country (T/Qual-Professional * T/Qualif-Academic Cross Tabulation)

- Appendix 11 Percentages for Professional Training and Academic Level of Mathematics Teachers in each SACMEQ Country (T/Qual-Professional * T/Qual-Academic Cross tabulation)
- Appendix 12 Percentages and Sampling Errors for the Lighting in Mozambican Pupils' Homes
- Appendix 13 Percentages and Sampling Errors for the Lighting in Pupils' Homes in SACMEQ Countries
- Appendix 14 Percentages and Sampling Errors for the Mozambican availability of Classroom Resources for the Teachers
- Appendix 15 Means and Sampling Errors for the Mozambican Classroom Resources Index
- Appendix 16 Percentages and Sampling Errors for *shortages* of Basic Classroom Materials: Exercise Books, Notebook and Pencil in Mozambique
- Appendix 17 Percentages and Sampling Errors for *shortages* of Basic Classroom Materials: Eraser, Pen, and Ruler in Mozambique
- Appendix 18 Percentages and Sampling Errors for availability of Classroom Resources for the Teachers in SACMEQ Countries
- Appendix 19 Means and Sampling Errors for Classroom Resources Index in SACMEQ Countries
- Appendix 20 Percentages and Sampling Errors for shortages of Basic Classroom Materials: Exercise Books, Notebook, and Pencil in SACMEQ Countries
- Appendix 21 Percentages and Sampling Errors for shortages of Basic Classroom Materials: Eraser, Pen, and Ruler in SACMEQ Countries
- Appendix 22 Percentages and Sampling Errors for Schools with General Facilities (SACMEQ II)
- Appendix 23 Total School Resources Index in SACMEQ Countries
- Appendix 24 Percentage of Teachers, Means Scores and Attained Reading Levels of Mozambican Reading Teachers
- Appendix 25 Percentage of Teachers, Means Scores and Attained Reading Levels of Regional Reading Teachers in SACMEQ Countries
- Appendix 26 Percentage of Pupils, Means Scores, Sampling Error and Attained Reading Levels of Mozambican Reading Pupils
- Appendix 27 Percentage of Pupils, Means Scores, Sampling Error and Attained Reading Levels of Regional Reading Pupils
- Appendix 28 Mean Scores and Sampling Error of Reading Pupils and Teachers in Mozambique

- Appendix 29 Percentage and Sampling Error of Mozambican Teachers and Pupil Performance in Reading in different Levels of Competency
- Appendix 30 Mean Scores and Sampling Error of Reading Pupils and Teachers of SACMEQ Countries
- Appendix 31 Percentage and Sampling Error of SACMEQ Teachers and Pupil Performance in Reading at different Levels of Competency
- Appendix 32 Percentage of Pupils, Means Scores and Attained Reading on the Combined Category Competence Levels by Gender, SES and School Location of Mozambican Reading Pupils
- Appendix 33 Means and Sampling Error of Pupil Performance in Reading of Regional Pupils by Gender
- Appendix 34 Percentage of Reading Pupils results by Gender on the Combined Reading Competence Level
- Appendix 35 Means and Sampling Error of Pupil Performance in Reading by Socio-economic Status
- Appendix 36 Percentage of Reading Pupils results by Socio-economic Status on the Combined Reading Competence Level
- Appendix 37 Means and Sampling Error of Pupils' Performance in Reading by School Location
- Appendix 38 Percentage of Reading Pupils Results by School Location on the Combined Reading Competence Level
- Appendix 39 Percentage of Teachers, Means Scores and attained Mathematics Levels of Mozambican Mathematics Teachers
- Appendix 40 Percentage of Teachers, Means Scores and attained Mathematics Levels of Regional Mathematics Teachers in SACMEQ Countries
- Appendix 41 Percentage of Pupils, Means Scores, Sampling Error and attained Mathematics Levels of Mozambican Mathematics Pupils
- Appendix 42 Percentage of Pupils, Means Scores, Sampling Error and attained Mathematics Levels of Regional Mathematics Pupils
- Appendix 43 Mean Scores and Sampling Error of Mathematics Pupils and Teachers in Mozambique
- Appendix 44 Percentage and Sampling Error of Mozambican Teachers and Pupil Performance in Mathematics in different Levels of Competency
- Appendix 45 Mean Scores and Sampling Error of Mathematics Pupils and Teachers of SACMEQ Countries
- Appendix 46 Percentage and Sampling Error of SACMEQ Teachers and Pupil Performance in Mathematics in different Levels of Competency

- Appendix 47 Percentage of Pupils, Means Scores and attained Mathematics on the Combined Category Competence Levels by Gender, SES and School Location of Mozambican Mathematics Pupils
- Appendix 48 Means and Sampling Error of Pupil Performance in Mathematics of Regional Pupils by Gender
- Appendix 49 Percentage of Mathematics Pupils Results by Gender on the Combined Mathematics Competence Level
- Appendix 50 Means and Sampling Error of Pupil Performance in Mathematics by Socio-economic Status
- Appendix 51 Percentage of Mathematics Pupils Results by Socio-economic Status on the Combined Mathematics Competence Level
- Appendix 52 Means and Sampling Error of Pupils' Performance in Reading and Mathematics by School Location
- Appendix 53 Percentage of Mathematics Pupils Results by School Location on the Combined Mathematics Competence Level
- Appendix 54 Reading and Mathematics Number of Items
- Appendix 55 Mozambique Overview Correlation – Reading and Mathematics
- Appendix 56 SACMEQ Overview – Reading and Mathematics
- Appendix 57 Mozambique Cognitive Domain – Reading and Mathematics
- Appendix 58 Mozambique Affective Domain – Reading and Mathematics
- Appendix 59 Mozambique Behavioural Domain – Reading and Mathematics
- Appendix 60 SACMEQ Cognitive Domain – Reading and Mathematics
- Appendix 61 SACMEQ Affective Domain – Reading and Mathematics
- Appendix 62 SACMEQ Behavioural Domain – Reading and Mathematics
- Appendix 63 Mozambique Teacher Training – Reading and Mathematics
- Appendix 64 Mozambique Teacher Characteristics – Reading and Mathematics
- Appendix 65 SACMEQ Teacher Training Construct – Reading and Mathematics
- Appendix 66 SACMEQ Teachers' Characteristics Construct – Reading and Mathematics
- Appendix 67 Mozambique External Teaching Context – Reading and Mathematics
- Appendix 68 Mozambique Internal Teaching Context – Reading and Mathematics

- Appendix 69 SACMEQ External Teaching Context – Reading and Mathematics
- Appendix 70 SACMEQ Internal Teaching Context – Reading and Mathematics
- Appendix 71 Mozambique Pre-existing Pupil Characteristics – Reading and Mathematics
- Appendix 72 Mozambique Parent and Community School Involvement – Reading and Mathematics
- Appendix 73 SACMEQ Pre-existing Pupil Characteristics – Reading and Mathematics
- Appendix 74 SACMEQ Parent and Community School Involvement – Reading and Mathematics
- Appendix 75 Main Predictors of Pupil Performance in SACMEQ Countries

LIST OF ACRONYMS

| | |
|---------|--|
| CES | Classroom Environment Study |
| CFPP | Curso de Formação de Professores Primários (Primary Teacher Training Course) |
| CIDA | Canadian International Development Agency |
| DANIDA | Danish International Development Agency |
| DINEB | Direcção Nacional do Ensino Básico (National Directorate for Basic Education) |
| EFEP | Escola de Formação e Educação de Professores (Teacher Training and Education School) |
| EP1 | Ensino Primário do 1º Grau (Low Primary Education) |
| EP2 | Ensino Primário do 2º Grau (Upper Primary Education) |
| EHPPE | Escolas de Habilitação de Professores do Posto Escolar (Teacher Training School) |
| FRELIMO | Frente de Libertação de Moçambique (Mozambique Liberation Front) |
| FIMS | First International Mathematics Study |
| GDP | Gross Domestic Product |
| HDI | Human Development Index |
| IEA | Evaluation of Educational Achievement |
| IMAP | Instituto do Magistério Primário (Teacher Training Institute) |
| IMP | Instituto Médio Pedagógico (Pedagogical Medium Institute) |
| INE | Instituto Nacional de Estatística (National Institute of Statistics) |
| INDE | Instituto Nacional do Desenvolvimento de Educação (National Institute for Educational Development) |
| LLECE | Laboratorio Latinoamericano de Evaluación de la Calidad de la Educación (Latin American Laboratory for Assessment of the Quality of Education) |
| MEC | Ministério da Educação e Cultura (Ministry of Education and Culture) |
| MINED | Ministry of Education |
| MPM | Multiple Regression Model |
| NRC | National Research Co-ordinator |
| PASEC | Programme d'Analyse des Systèmes Éducatifs de la CONFEMEN (Programme on the Analysis of Education System) |
| PIRLS | Progress International Reading Literacy Study |
| PCA | Principal Component Analysis |
| PISA | Program for International Student Assessment |
| SES | Socio-Economic Status |
| SACMEQ | Southern and Eastern Africa Consortium for Monitoring Education Quality |
| SIMS | Second International Mathematics Study |
| SIDA | Swedish International Development Authority |

| | |
|--------|---|
| SISS | Second International Science Study |
| SNE | Sistema Nacional de Educação (National Education System) |
| TIMSS | Third International Mathematics and Science Study |
| UEM | Universidade Eduardo Mondlane (Eduardo Mondlane University) |
| UP | Universidade Pedagógica (Pedagogical University) |
| UNDP | Unit Nations Development Programme |
| UNESCO | United Nations Education Scientific and Cultural Organization |

ABSTRACT

Several cross-national studies, which monitor the quality of education in many countries across the world, have been conducted over the recent years. The International Association for the Evaluation of Educational Achievement (IEA), founded in 1958 by a group of European and American researchers (Grisay and Griffin, 2004), wanted to measure the achievement of comparable samples of students in various subjects and in diverse school systems, with the view of investigating the relationships between possible differences in achievement and differences in inputs, processes and educational contexts.

Since Mozambique's independence in 1975 there have been many small research studies undertaken by the Ministry of Education and universities, which have not been nationally representative. One exception is a nationally representative study conducted under the auspices of the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) implemented in 2000 and comprising 15 systems of education, namely Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique Namibia, Seychelles, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zanzibar and Zimbabwe.

This thesis is a quantitative study and undertakes a secondary analysis using a sample from the SACMEQ database archive collected in 2000 in all countries except Zimbabwe in reading and in mathematics. The Mozambican sample was drawn from 3 177 pupils in 168 schools, while in the SACMEQ study the sample was composed of 41 686 pupils within 2 305 schools. The purpose of this study was to describe and explore the main factors that have an effect on Grade 6 teacher competence and pupil performance in reading and mathematics.

Findings reveal that the relationship between teacher competence and pupil performance in reading and mathematics in upper primary schools in Mozambique, as well as in SACMEQ countries, is influenced by a cognitive domain, an affective domain and a behavioural domain. In addition, teacher competence and pupil performance are affected by many constructs but in this study 10 main predictors related to teacher competence and pupil performance, were identified.

The Cheng and Tsui model (1998) was adopted and adapted as a conceptual framework for this study and findings reveal that for SACMEQ countries as a whole, the data in some way is consistent with the adapted model and fill two domains, namely cognitive and behavioural within the following six constructs: teacher training, teacher characteristics, internal and external teaching

context, pre-existing pupils' characteristics and parent and community involvement. However, no individual country is completely consistent with the adapted model.

This study, taking into account the role of the teacher on pupil performance, as emphasized by many researchers such as Chapman and Mähle (1997), Châu (1996), Darling-Hammond (1999) and Kanu (1996), is intended to be a modest contribution for the Ministries of Education in SACMEQ countries although it has particular reference for the Ministry of Education and Culture in Mozambique. For instance, on the one hand, the Ministry has conducted few studies in upper primary schools related to the pupil and teacher performance and, on the other hand, Mozambique as a Portuguese speaking country, has a unique history, tradition and system of education which differs from that of the other participating countries.

The SACMEQ studies have provided valid and reliable data on which important decisions could be based. Specifically, SACMEQ II provided relevant, high quality data about the academic profile of teachers, the level of performance in the areas assessed, school management and other aspects that are relevant for policymaking. A comparative analysis, using such a cross-national study, is important for the Ministry of Education and Culture in order to have an overview of the performance of teachers and pupils in other school systems within the SACMEQ countries. By identifying the weaknesses and the strengths in each system, all SACMEQ countries can learn from one another. However, the results of this analysis should be used with caution, taking into consideration the history, location, economy and culture of each country.

Within the educational context of the region, many benefits are also apparent. The data collected through SACMEQ II can be considered to be of extreme importance for Mozambique's education system, since it provides the country with important data to promote a reflection on its primary education sector, to identify the position of Mozambique's education system within the region, and to work towards its improvement.

ACKNOWLEDGEMENTS

First and foremost, I wish to thank God for the strength, courage, and wisdom He provided to complete this doctoral thesis. It was a lengthy journey which would not have been possible without Him. I pray that the Lord will enable me to use the knowledge and wisdom that I have attained to serve and honour Him.

I would like to thank the Ministry of Education and Culture for giving me this opportunity to further my studies as well as the financial support to make it possible. My deepest wish is to make a lasting contribution through this research in order to improve the education systems in SACMEQ countries. I also hope to make further contributions in the Ministry of Education where I am employed, aiming specifically at improving the quality of education in Mozambique. I am likewise grateful to the top management team at INDE for their support and understanding during my studies.

I am very grateful for Professor Sarah Howie, my supervisor, for all her support and professional guidance throughout my study. It would not have been possible without the guidance of such an excellent leading professional in this field. I am also very honoured and grateful for Professor Jonathan Jansen who was my supervisor for the research proposal. Your patience, guidance, support and encouragement are highly valued and appreciated.

I am deeply grateful to Cilla Nel for the proofreading of my thesis; I will remember forever her professionalism and friendship. I am very gratefully for Carlos Lauchande and Robert Coe for their wonderful guidance with the statistical analysis and to Celso Albino for his help in processing statistical analysis. My thanks to the members of the CEA, especially to Vanessa Scherman, Elsie Venter, Lisa Zimmerman, Kim Draper, Zélda Snyman and Zanele Matlou for their help and support.

My sincere thanks to my colleagues of the Ministry of Education and Culture, namely Manuel Rego, Ilidio Buduia, Kauxique Maganlal and Sergio Martins for their help with the statistics and processing of the Grade 6 data.

My heartfelt thanks to my colleagues, Trindade Nahara and Flávio Magaia, the deputy co-ordinators of SACMEQ for continuing SACMEQ activities in Mozambique during my stay in South Africa. I would like to thank Trindade Nahara for the preliminary proofreading of my assignments and thesis and Flávio Magaia for his help in organizing all the variables with the SACMEQ database related to my study.

I am deeply grateful to my colleagues at INDE, especially my colleagues from the *Departamento de Formação de Professores* for their support and comprehension during the periods of my stay in South Africa.

I want to thank Laura Gomes who gave me statistical information related to the country, I really appreciate it very much.

My sincere thanks to my colleague, Dinis Guibundana, for lending me his computer to work on in South Africa while mine was broken. Thank you for your generosity. I will also remember that.

To my colleagues in the postgraduate computer centre, I want to thank you for your wonderful moral support and help. For all my colleagues that directly or indirectly helped me during my study, I want to express my deepest appreciation and gratefulness.

I would like to express my innermost gratefulness to all the sisters of the Congregation of Presentation of Mary. You were the people that inspired me and that gave me moral support throughout my career.

Finally, I am deeply gratefully for my family and relatives for all the support especially my husband, my daughter and son, my mother and my brothers. Thank you for your understanding, especially my mother for the understanding during my absence even in a very difficult period for our family. Thanks, Mama.