OPTIMISING MIXED-ABILITY GROUPING FOR EFFECTIVE INSTRUCTION
AT THE JUNIOR SECONDARY SCHOOL LEVEL IN BOTSWANA

by

ONIAS MAFA

submitted in accordance with the requirements
for the degree of

DOCTOR OF EDUCATION

in the subject

DIDACTICS

at the

UNIVERSITY OF SOUTH AFRICA

PROMOTER: PROF. MM NIEMAN

NOVEMBER 2003
STATEMENT OF DECLARATION

“I declare that OPTIMISING MIXED-ABILITY GROUPING FOR EFFECTIVE INSTRUCTION AT THE JUNIOR SECONDARY SCHOOL LEVEL IN BOTSWANA is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references”.

_________                                                        November 2003.

(Mr. O. Mafa)
ACKNOWLEDGEMENTS

I am indebted to the following individuals for the successful completion of this thesis; my promoter, Prof. MM Nieman, for her scholarly advice, constructive criticism, guidance and encouragement throughout the duration of the study, my wife Esther for her unwavering support, encouragement and for editing and proof reading the script, the Chief Education Officer (North), for according me permission to conduct the study in the schools in the Northern Region of Botswana and teachers who took part in the focus group interviews. I am also indebted to Ms. Jowa for her assistance in the translation of some information from Setswana into English in the focus group interview transcripts.
OPTIMISING MIXED-ABILITY GROUPING FOR EFFECTIVE INSTRUCTION
AT THE JUNIOR SECONDARY SCHOOL LEVEL IN BOTSWANA

by O MAFA

DEGREE: DOCTOR OF EDUCATION

SUBJECT: DIDACTICS

PROMOTER: PROF. MM NIEMAN

Summary of the study

Mixed-ability classes are now the norm at the junior secondary school level in Botswana as a result of annexing this level to the primary school level in pursuance of the goal of basic education. This has pedagogic and didactic implications. Literature reviewed on grouping revealed that there is no consensus regarding how students of different abilities should be grouped and taught in schools. Proponents of ability grouping base their argument on academic excellence, while exponents of mixed-ability grouping draw support from egalitarian concepts of equity, equality, fairness and social justice. Their argument is that ability grouping is unfair since it denies a section of students some worthwhile educational opportunities. The reviewed literature also revealed that there is an emerging trending in the realm of education, which views learner diversity as offering teachers opportunities to bring about effective instruction. There is unequivocal evidence from research that mixed-ability grouping complemented by student-centred teaching strategies, results in improved academic, social and affective outcomes across the ability levels. The empirical phase of the investigation made use of focus group interviews, follow-up interviews and lesson observations for data collection. The major findings were that teachers are not currently optimising mixed-ability grouping for effective instruction. Frequently cited reasons by teachers were: the need to cover the syllabi before examinations, content-laden syllabi, the mode of assessment which seem to reward rote learning, lack of skills by teachers in the use of mixed-ability teaching strategies, class sizes and students’ lack of proficiency in English (language of instruction). Mixed-ability grouping could be optimised through the use of teaching strategies that capitalise on students’ individual differences as well as adopting the concept of differentiation in teaching.
ABSTRACT

The debate on how students of different abilities should be organised and taught is probably as old as the introduction of formal schooling. It has generated a lot of debate in the past and continues to do so in the present millennium. This debate has invariably divided the world of educational research into two distinct camps. On one hand are proponents of ability grouping who claim that this grouping approach creates homogeneity which make it possible to tailor teaching to individual needs and thus raise achievement. On the other hand, are the exponents of mixed-ability grouping, who argue that ability grouping denies equality of educational opportunities to many young people, limiting their life chances and increasing social segregation. However, there is an emerging trend which posits that teachers should view students’ mixed-abilities as an asset, which if properly exploited can result in effective instruction for the benefit of all students regardless of their many individual differences. This emanates from the realisation that there are different types of intelligences, and that it is not always possible for an individual student to possess all the types of intelligences. Therefore, students from diverse backgrounds, endowed with multiple intelligences, can help one another understand the content better as they will perceive the content from their diverse experiential backgrounds.

This qualitative study concerned itself with investigating how mixed-ability grouping can be optimised for effective instruction at the junior secondary school level in Botswana. The study made use of literature study, focus groups, follow-up interviews and lesson observations. Major findings were that teachers are not optimising mixed-ability grouping for effective instruction. Instead, teachers have problems in teaching mixed-ability classes, with most of their teaching being teacher-centred. However, teachers can optimise mixed-ability grouping through the use of student-centred instructional strategies such as cooperative learning, small-group instruction, peer teaching and student research. Gifted students could be catered for through curriculum compaction, enrichment and extension work, while mentally challenged students could be offered remedial work. These cited teaching strategies are differential and they make use of the diverse abilities found in mixed-ability classes.

Key terms: optimising, grouping, mixed-ability grouping, ability grouping, effective instruction, Botswana, junior secondary schools, teaching strategies, differentiation, equality of educational opportunities.
DEDICATION

This thesis is dedicated to my wife Esther, and our children Noah, Tariro and Tatenda.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement of declaration</td>
<td>ii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>iii</td>
</tr>
<tr>
<td>Summary of the study</td>
<td>iv</td>
</tr>
<tr>
<td>Abstract</td>
<td>v</td>
</tr>
<tr>
<td>Dedication</td>
<td>vi</td>
</tr>
<tr>
<td>1.0 CHAPTER ONE</td>
<td>1</td>
</tr>
<tr>
<td>STATEMENT OF THE PROBLEM AND METHOD OF</td>
<td></td>
</tr>
<tr>
<td>INVESTIGATION</td>
<td></td>
</tr>
<tr>
<td>1.1 Introduction</td>
<td>1</td>
</tr>
<tr>
<td>1.2 Awareness of the problem</td>
<td>4</td>
</tr>
<tr>
<td>1.2.1 Background to the problem</td>
<td>4</td>
</tr>
<tr>
<td>1.2.2 Exploration of the problem in the Botswana context</td>
<td>8</td>
</tr>
<tr>
<td>1.2.3 Statement of the problem</td>
<td>13</td>
</tr>
<tr>
<td>1.3 The aim of the research</td>
<td>14</td>
</tr>
<tr>
<td>1.4 Method of investigation</td>
<td>15</td>
</tr>
<tr>
<td>1.4.1 Literature study</td>
<td>15</td>
</tr>
<tr>
<td>1.4.2 Empirical investigation</td>
<td>16</td>
</tr>
<tr>
<td>1.5 The significance of the study</td>
<td>18</td>
</tr>
<tr>
<td>1.6 Clarification of concepts</td>
<td>18</td>
</tr>
<tr>
<td>1.7 Research programme</td>
<td>21</td>
</tr>
</tbody>
</table>
2.0 CHAPTER TWO

THE GROUPING DEBATE

2.1 Introduction

2.2 A brief historical background to the grouping of students for instructional purposes

2.2.1 From ability grouping to mixed-ability grouping

2.2.2 Grouping and equality in education

2.3 The commonly used grouping practices

2.3.1 Whole-class instruction (Mixed-ability grouping)

2.3.2 Between-class grouping (XYZ skill grouping/Homogeneous grouping within grades)

2.3.3 Within-class ability grouping (Homogeneous grouping within classes)

2.3.4 Cross-grade grouping (Joplin Plan/Homogeneous grouping across grades)

2.4 Ability grouping

2.4.1 Ability grouping defined

2.4.2 Arguments in favour of ability grouping

2.4.2.1 Academic achievement outcomes

2.4.2.2 Organisational and instructional strategies

2.4.3.2 Organisational and instructional strategies

2.4.3.3 Affective and social outcomes

2.4.3 Arguments against ability grouping

2.4.3.1 Academic achievement outcomes

2.4.3.2 Organisational and instructional strategies

2.4.3.3 Affective and social outcomes
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5</td>
<td><strong>Mixed-ability grouping</strong></td>
<td>54</td>
</tr>
<tr>
<td>2.5.1</td>
<td>Mixed-ability grouping defined</td>
<td>54</td>
</tr>
<tr>
<td>2.5.2</td>
<td>Arguments in favour of mixed-ability grouping</td>
<td>56</td>
</tr>
<tr>
<td>2.5.2.1</td>
<td>Academic achievement outcomes</td>
<td>57</td>
</tr>
<tr>
<td>2.5.2.2</td>
<td>Organisational and instructional strategies</td>
<td>58</td>
</tr>
<tr>
<td>2.5.2.3</td>
<td>Affective and social outcomes</td>
<td>60</td>
</tr>
<tr>
<td>2.5.3</td>
<td>Arguments against mixed-ability grouping</td>
<td>62</td>
</tr>
<tr>
<td>2.5.3.1</td>
<td>Academic achievement outcomes</td>
<td>62</td>
</tr>
<tr>
<td>2.5.3.2</td>
<td>Organisational and instructional strategies</td>
<td>64</td>
</tr>
<tr>
<td>2.5.3.3</td>
<td>Affective and social outcomes</td>
<td>66</td>
</tr>
<tr>
<td>2.6</td>
<td>Problems associated with using ability as a basis for grouping students</td>
<td>66</td>
</tr>
<tr>
<td>2.6.1</td>
<td>Problems with defining ability</td>
<td>68</td>
</tr>
<tr>
<td>2.6.2</td>
<td>Grouping and gifted children</td>
<td>70</td>
</tr>
<tr>
<td>2.6.3</td>
<td>Grouping and students with special educational needs</td>
<td>73</td>
</tr>
<tr>
<td>2.6.4</td>
<td>The use of psychometric tests to group students</td>
<td>79</td>
</tr>
<tr>
<td>2.6.5</td>
<td>The use of teachers’ assessments to group students</td>
<td>81</td>
</tr>
<tr>
<td>2.7</td>
<td>Deductions from the grouping debate</td>
<td>83</td>
</tr>
<tr>
<td>2.8</td>
<td>Conclusion</td>
<td>85</td>
</tr>
</tbody>
</table>

| 3.0     | **CHAPTER THREE**                                                     | 89   |
| 3.1     | Introduction                                                          | 89   |
3.2 Mixed-ability teaching defined

3.3 Factors affecting the choice of teaching strategies

3.3.1 Students’ individual abilities and motivational differences

3.3.2 Students’ learning styles

3.3.3 Lesson objectives to be achieved

3.4 Teaching strategies and their suitability for mixed-ability teaching

3.4.1 Teaching strategies defined

3.4.2 The lecture strategy

3.4.2.1 Advantages of the lecture strategy

3.4.2.2 Disadvantages of the lecture strategy

3.4.2.3 Evaluating the lecture strategy for mixed-ability teaching

3.4.3 The discussion strategy

3.4.3.1 Advantages of the discussion strategy

3.4.3.2 Disadvantages of the discussion strategy

3.4.3.3 Evaluating the discussion strategy for mixed-ability teaching

3.4.4 The demonstration strategy

3.4.4.1 Advantages of the demonstration strategy

3.4.4.2 Disadvantages of the demonstration strategy

3.4.4.3 Evaluating the demonstration strategy for mixed-ability teaching

3.4.5 The project strategy

3.4.5.1 Advantages of the project strategy

3.4.5.2 Disadvantages of the project strategy

3.4.5.3 Evaluating the project strategy for mixed-ability teaching
3.4.6 Study trips

3.4.6.1 Advantages of study trips

3.4.6.2 Disadvantages of study trips

3.4.6.3 Evaluating study trips for mixed-ability teaching

3.4.7 The discovery strategy

3.4.7.1 Advantages of the discovery strategy

3.4.7.2 Disadvantages of the discovery strategy

3.4.7.3 Evaluating the discovery strategy for mixed-ability teaching

3.4.8 The problem solving strategy

3.4.8.1 Advantages of the problem solving strategy

3.4.8.2 Disadvantages of the problem solving strategy

3.4.8.3 Evaluating the problem solving strategy for mixed-ability teaching

3.4.9 The small-group work strategy

3.4.9.1 Advantages of the small-group work strategy

3.4.9.2 Disadvantages of the small-group work strategy

3.4.9.3 Evaluating the small-group work strategy for mixed-ability teaching

3.4.10 Cooperative learning

3.4.10.1 Advantages of cooperative learning

3.4.10.2 Disadvantages of cooperative learning

3.4.10.3 Evaluating cooperative learning for mixed-ability teaching

3.4.11 Student research strategy

3.4.11.1 Advantages of the student research strategy

3.4.11.2 Disadvantages of the student research strategy
3.4.11.3 Evaluating student research strategy for mixed-ability teaching 134
3.5 Differentiation as a prerequisite for effective mixed-ability teaching 136
3.5.1 Differentiation defined 136
3.5.2 How to achieve differentiation 137
3.5.3 Factors that affect differentiation 138
3.6 Teaching competences needed for effective mixed-ability teaching 141
3.6.1 Understanding students 142
3.6.2 Mentoring ability 143
3.6.3 Flexibility 143
3.6.4 Developing skills that are beyond subject matter content 144
3.7 Conclusion 146

4.0 CHAPTER FOUR 149
SCHOOLING IN BOTSWANA 149
4.1 Introduction 149
4.2 The quest for educational equality: The Botswana case 150
4.2.1 The post-independent educational developments 152
4.2.2 The philosophy and general aims of education 155
4.3 The structure of the education system 158
4.3.1 Pre-primary education 162
4.3.2 Primary education 165
4.3.3 Secondary education 167
4.4 The Botswana government’s position on mixed-ability grouping 170
4.4.1 Special education 172
4.5 Assessment of the junior secondary school curriculum 177
4.6 Literature review on classroom life in Botswana’s secondary schools 184
4.7 Conclusion 193

5.0 CHAPTER FIVE 196
RESEARCH DESIGN AND METHODOLOGY 196
5.1 Introduction 196
5.2 Research methodology 197
5.2.1 Advantages of qualitative research methodologies 199
5.2.2 Disadvantages of qualitative research methodologies 200
5.2.3 Justification for the adoption of a qualitative research design 202
5.3 Sampling 203
5.3.1 Justification for the sampling of the three junior secondary schools 205
5.4 Data collection 205
5.5 The researcher as instrument 206
5.6 Methods 207
5.6.1 Focus groups 207
5.6.2 Follow-up interviews 213
5.6.3 Rationale for content validation of interview guides 216
5.6.4 Lesson observations 216
5.6.5 Field notes 218
5.7 Measures to ensure trustworthiness 218
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.8</td>
<td>Data processing</td>
<td>219</td>
</tr>
<tr>
<td>5.8.1</td>
<td>Segmenting</td>
<td>219</td>
</tr>
<tr>
<td>5.8.2</td>
<td>Coding</td>
<td>220</td>
</tr>
<tr>
<td>5.8.3</td>
<td>Compiling a coding master list</td>
<td>220</td>
</tr>
<tr>
<td>5.8.4</td>
<td>Checking for intercoder and intracoder reliability</td>
<td>221</td>
</tr>
<tr>
<td>5.8.5</td>
<td>Enumeration</td>
<td>221</td>
</tr>
<tr>
<td>5.8.6</td>
<td>Identification of broad categories</td>
<td>221</td>
</tr>
<tr>
<td>5.9</td>
<td>Conclusion</td>
<td>222</td>
</tr>
<tr>
<td>6.0</td>
<td>CHAPTER SIX</td>
<td>223</td>
</tr>
<tr>
<td></td>
<td>RESEARCH FINDINGS</td>
<td>223</td>
</tr>
<tr>
<td>6.1</td>
<td>Introduction</td>
<td>223</td>
</tr>
<tr>
<td>6.2</td>
<td>Composition of the focus groups</td>
<td>223</td>
</tr>
<tr>
<td>6.2.1</td>
<td>Focus group one</td>
<td>224</td>
</tr>
<tr>
<td>6.2.2</td>
<td>Focus group two</td>
<td>224</td>
</tr>
<tr>
<td>6.2.3</td>
<td>Focus group three</td>
<td>224</td>
</tr>
<tr>
<td>6.3</td>
<td>Findings from the empirical phase of the study</td>
<td>225</td>
</tr>
<tr>
<td>6.3.1</td>
<td>Advantages of mixed-ability classes</td>
<td>225</td>
</tr>
<tr>
<td>6.3.1.1</td>
<td>Advantages related to the optimising of mixed-ability grouping</td>
<td>225</td>
</tr>
<tr>
<td>6.3.1.2</td>
<td>Affective and social outcomes</td>
<td>227</td>
</tr>
<tr>
<td>6.3.1.3</td>
<td>Teacher related advantages</td>
<td>227</td>
</tr>
<tr>
<td>6.3.2</td>
<td>Problems associated with the teaching of mixed-ability classes</td>
<td>228</td>
</tr>
<tr>
<td>6.3.2.1</td>
<td>Problems related to the teaching-learning process</td>
<td>228</td>
</tr>
</tbody>
</table>
6.3.2.2 Problems related to the language of instruction 229
6.3.2.3 Problems related to policy issues 230
6.3.3 Teaching strategies that are suitable for mixed-ability classes 231
6.3.3.1 Mixed-ability teaching strategies versus ability grouping teaching strategies 231
6.3.3.2 Teaching strategies that teachers claimed to be using 231
6.3.4 How teachers claimed to be differentiating instruction 232
6.3.4.1 Teaching strategies that are being used by teachers 233
6.3.4.1.1 The nature of verbal interactions during lessons 233
6.3.4.1.2 Use of textbooks and other related teaching aids 236
6.3.4.1.3 The nature of written work assigned to students 237
6.3.5 Norm referenced versus criterion referenced assessment 238
6.3.5.1 Teachers’ knowledge of assessment systems 238
6.3.5.2 Teachers’ views regarding the shift to criterion referenced assessment 238
6.3.5.3 Preparedness of teachers to implement criterion referenced assessment 239
6.3.6 Views of teachers on the adequacy of teachers’ training 239
6.3.6.1 Views related to pre-service teachers’ training 239
6.3.6.2 Views related to in-service teachers’ training 240
6.3.7 Organisational and instructional competences that are needed by teachers 240
6.4 Interpretation of the findings 241
6.5 Conclusion 247
7.0 CHAPTER SEVEN 250

SUMMARY, LIMITATIONS, CONCLUSIONS AND RECOMMENDATIONS 250

7.1 Introduction 250

7.2 Summary of the study 250

7.3 Limitations of the study 254

7.4 Conclusions 256

7.4.1 Conclusions drawn from literature study 257

7.4.2 Conclusions drawn from the empirical phase of the study 259

7.5 Recommendations 263

7.5.1 Recommendations for further research 268

List of tables and figures

1.1 Primary school leaving examination results 9

4.1 The structure of Botswana’s education system 160

4.2 Existing schools, units or classes for special education 173

7.1 Mixed-ability teaching model 267

BIBLIOGRAPHY 269

Appendix 1: Focus groups interview guide 289

Appendix 2: Follow-up interview guide 291

Appendix 3: Interview transcripts for focus groups one and two 293
Appendix 4: Interview transcripts for follow-up interviews 350
Appendix 5: Field notes for the Science lesson 365
Appendix 6: Field notes for the Mathematics lesson 370
Appendix 7: Coding master list 373